

**FOR
AGENDA**

SM/08/266
Correction 1

September 4, 2008

To: Members of the Executive Board
From: The Secretary
Subject: **Republic of Korea—Selected Issues**

The attached corrections to SM/08/266 (8/15/08) have been provided by the staff.

Factual Errors Not Affecting the Presentation of Staff's Analysis or Views

- Page 5, para. 4, line 2:** for “2003” read “2004”
line 4: for “7-day repo rate in March” read “7-day repo rate (Base Rate) in March”
- Page 26, para. 34, line 11:** for “7 percent” read “10 percent”
for “in 2007” read “as of the second half of 2007”
line 12: for “W40 trillion” read “W49 trillion”
line 13: for “13 percent” read “23 percent”
“as of end-2008” and accompanying footnote 13, removed
last sentence: removed
- Page 27, para. 35, line 3:** for “7–13” read “10–23”
- Page 28, para. 38, last line:** “another 2–2.5 percentage points of GDP” removed
- Page 40, para. 52, line 2:** for “standing repo facility” read “standing facility”
lines 2-3: for “(government guaranteed bonds)”
read “(government bonds, government guaranteed bonds, and
monetary stabilization bonds)”
line 4: for “companies” read “financial companies”
- Page 59, para. 109, lines 4-5:** for “Normally, only government...municipal)”
read “Normally, government bonds, government guaranteed
bonds, and monetary stabilization bonds”

Questions may be referred to Mr. Schiff (ext. 38717) and Mr. Khatri (ext. 38270) in APD.

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seeks to achieve on average. The central bank targets headline inflation, except for the period 2000–06, when it targeted core inflation, and since 2004 the target band has been 2.5-3.5 percent. Once a month the bank's monetary policy committee decides on the policy interest rate, which was changed from the overnight call rate to the 7-day repo rate (Base Rate) in March 2008.

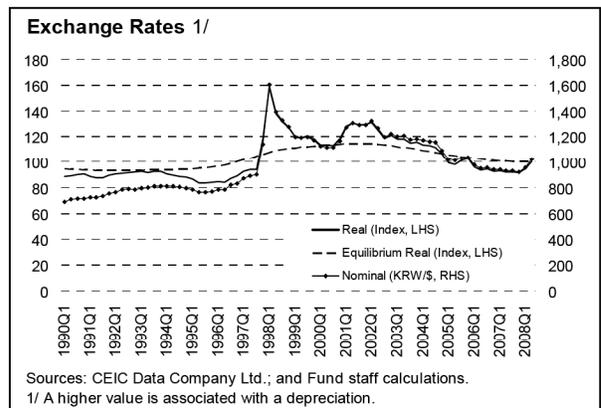
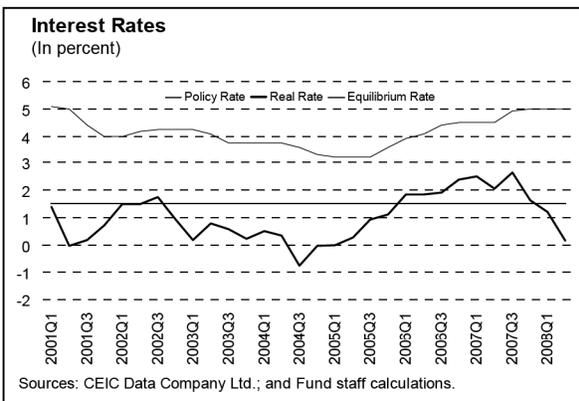
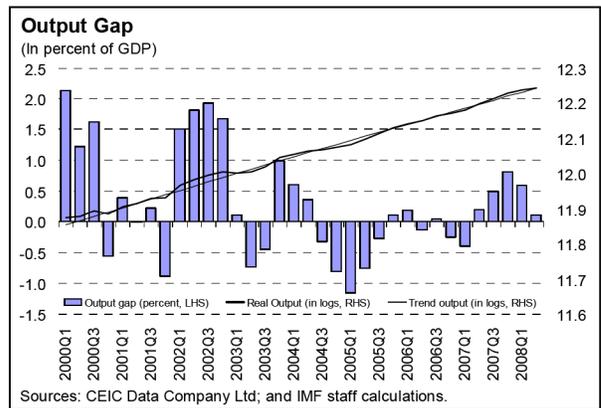
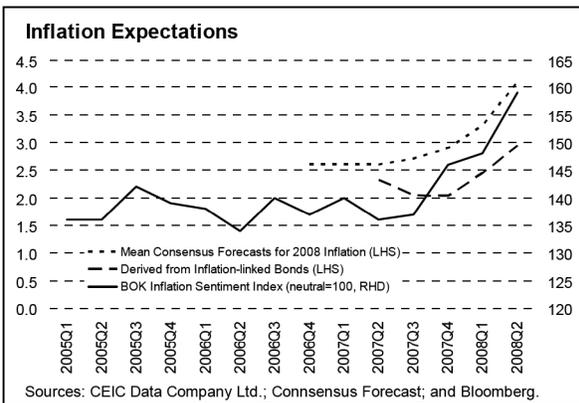
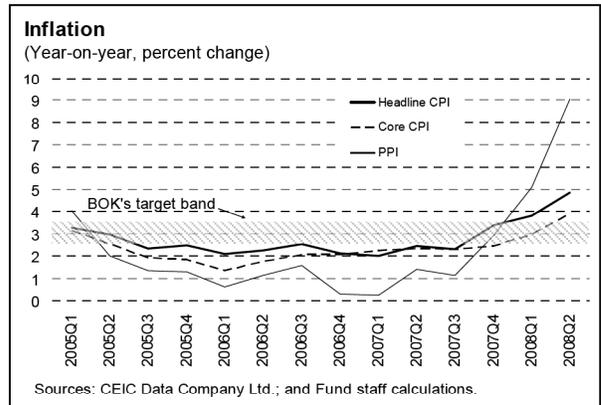
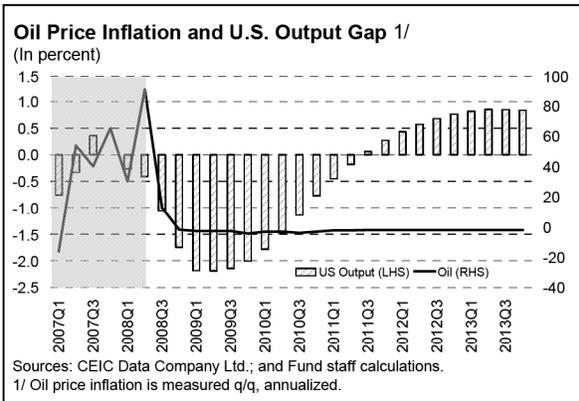
5. **The inflation targeting framework has served the country well.** Between 1998 and late-2007, the year-on-year inflation rate exceeded the upper target band on only one occasion lasting for two months. In addition, Kim and Park (2006) observe that inflation has been lower and less volatile under inflation targeting even after controlling for the size of shocks. Also, inflation expectations seem to be better anchored under the new framework as evidenced by lower inflation persistence and a lower influence of actual inflation on inflation expectations.

6. **However, until recently the inflation targeting framework had not been put to a real test.** The relative success of inflation targeting may owe much to the special economic circumstances of the last years. For one thing, the sizeable and steady increase in the exchange rate—the won appreciated by 70 percent in NEER terms between 1998 and mid-2007—helped keep inflation at bay. Also, inflation targeting in Korea may have been helped by the integration of China's and India's vast labor pool into the global economy and the wage moderation that this induced.

7. **Meanwhile global and domestic circumstances have become more challenging** (Figure I.1). Real oil prices are at historical highs at a time when the global economy is slowing and key domestic variables point to a risk of sustained inflation:

- Oil price inflation reached 90 percent q/q annualized, in the second quarter of 2008 and is projected to stay above 10 percent through the third quarter. Beyond that oil prices are projected to stay broadly flat.
- The U.S. output gap is estimated to have fallen to a negative 0.4 percent in the second quarter of 2008. By the first quarter of 2009 U.S. GDP is projected to fall 2.2 percent below potential and remain close to this value throughout 2009.
- Headline inflation in Korea reached 4.8 percent y/y in the second quarter and 8.2 percent q/q annualized, breaching the Bank of Korea's target band for the second quarter running. Core inflation has been trending up for some time and stood at 3.9 percent y/y in the second quarter. The gap between producer and consumer price inflation and measures of inflation expectations are also trending upward boding ill for a quick reversal of inflationary trends.

Figure I.1. Korea: Recent Inflationary Developments

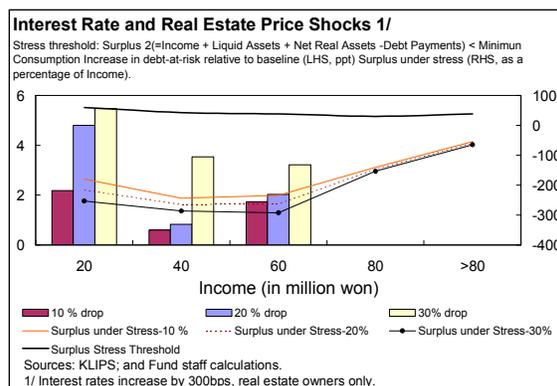
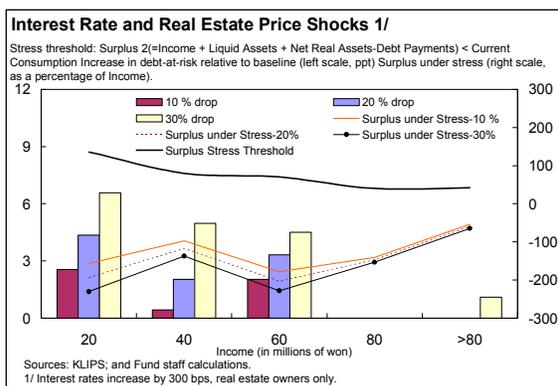


pledgeable value of real estate is given by the difference of its market value and household's total debt from financial institutions.¹² Although real estate assets are not liquid, they could be pledged for additional debt to smooth consumption. The latter approximation to W is defined for real estate owners only and can be used to test the impact of real estate price changes on their balance sheets.

31. **When household surplus is used to define financial stress, a 100–300 bps increase in interest rates could increase distressed household debt by 8–17 percentage points from the respective baseline.** Allowing households to smooth income with their liquid assets reduces the impact of the shocks as compared to DSTI-based definitions of stress used above. Nonetheless, the baseline share of debt that can not be covered by surplus without altering current consumption is 38 percent, pointing to underlying balance sheet weaknesses of indebted households, especially at lower income levels. If alternatively, the threshold is lowered to the minimum consumption share in income observed in the sample, the baseline stressed debt drops to 11 percent on average. The debt-at-risk under a 300 bps interest rate shock would reach on average 28–54 percent of total debt depending on the households' willingness to reduce their consumption expenditures. The debt servicing cost, on the other hand, could increase to 30–47 percent of income depending on the threshold consumption share chosen. The impact would be more severely felt by low income households, who also tend to have very limited liquid assets to smooth consumption.

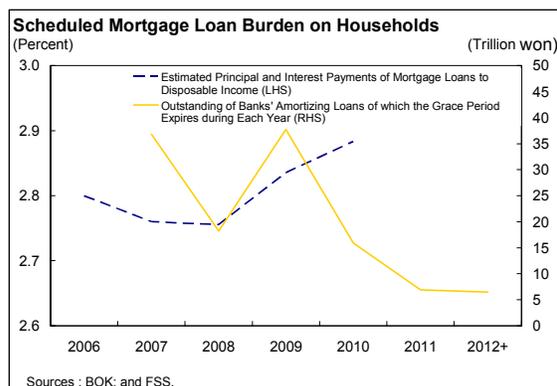
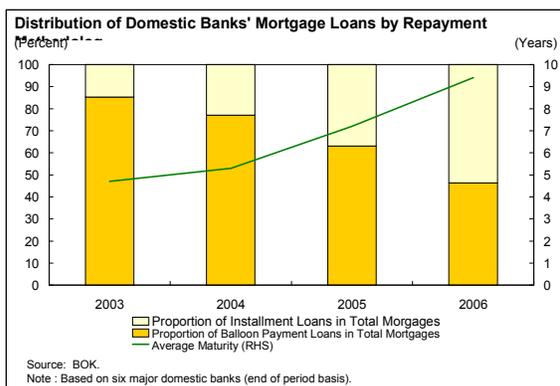
32. **The effects of a decline in real estate prices in the sample are difficult to examine without regard to the macroeconomic environment in which they are falling.** The household financial distress need not increase if real estate prices fall in an unchanged macroeconomic environment. This is because financial distress is primarily a function of the household's ability to service the mortgage, which is more closely linked to households' net total asset position rather than their gross real estate debt or the value of the real estate alone. Hence in the simulations we consider a combined shock of an interest rate increase and decline in real estate prices. Since the latter shock applies only to real estate owners, this stress test should be interpreted as analyzing the additional marginal impact of a real estate price shock on real estate owners, above and beyond the impact of an interest rate shock on all debtors, while allowing the real estate owners to smooth income with net real assets.

¹² This simplification may underestimate the pledgeable net equity value of real estate if majority of debt was unsecured to begin with and the real estate holdings at end-2006 were not encumbered. However, in the sample real estate ownership and indebtedness are closely linked, limiting the scope of underestimation.



33. **An additional shock to real estate prices (10–30 percent) is likely to increase debt-at-risk for real estate owners by 4–5 ppt beyond the impact of an interest rate shock on all debtors.** The primary reason behind the small marginal impact is the large positive net asset position of real estate owners. While an interest rate shock of 300 bps alone increases debt for all households by about 16–17 ppt depending on compression in consumption allowed, an additional shock of a 30 percent drop in real estate prices would put an additional 4–5 percent of debt of real estate owners at risk.

34. **A potentially more pressing risk related to estate ownership in Korea is linked to the changing structure of housing finance.** As mentioned above, mortgages increasingly are of longer maturities and also are of amortizing-type rather than bullet loans, lowering the average monthly payments and reducing the rollover and refinance risk to households. However, around 94 percent of all mortgages remain linked to 91-day CD rates exposing the households to interest rate risk. In addition, the BOK estimates that during the shift from bullet-type loans to amortizing loans, 88 percent of all outstanding amortizing loans in June-2007 offered grace periods during which no principal payments are required. For 57 percent of such loans grace periods are between two and three years. Based on the age and grace period profile of outstanding mortgages, the BOK estimates that each year about W20 trillion of mortgage loans, or 10 percent of total outstanding mortgage loans as of the second half of 2007, will reach the end of their grace period. For 2009 the estimated figure is about W49 trillion or about 23 percent of estimated total outstanding mortgage loans. This transition is expected to increase the aggregate principal and interest payment burden from W13.2 trillion in 2006 to W14.7 trillion in 2007 and W14.4 trillion in 2008. For Korean households, the ratio of interest payments to disposable income increased to 9 percent in 2007.



35. **These aggregate numbers point to a potentially substantial aggregate impact, although delinquency rates on mortgages are currently at a low 0.37 percent.** The affected mortgages in 2008–09 represent about 10–23 percent of total outstanding housing loans. If a significant share of these mortgages are held by lower income groups, who tend to have higher debt servicing costs to begin with, their ability to service the additional installment payments could be stretched leading to a rise in nonperforming housing loans. However, if the distribution of home ownership and indebtedness in the panel data is taken into account, it is more likely that a larger portion of indebted households to have above median income levels and sufficient liquid assets to service their debt. This is also reflected in the low levels of mortgage delinquency since the beginning of transition in 2007, limiting the potential for a systemic financial impact, but close monitoring of these trends would be needed in the period ahead, as economic cycle turns.

D. Conclusions

36. **The rise in household debt appears to be driven by both supply and demand side factors.** The decline in real interest rates and competition to extend retail market share by banks appear to have played an important role in increasing debt levels. Household level analysis, on the other hand, suggests that most of the increase in debt can be attributed to increased indebtedness of above-median-income and older households and is closely linked to homeownership. Access to credit by lower income and younger age groups improved only marginally in the sample and does not appear to be a leading cause of higher debt levels.

37. **A set of stress tests analyzing the impact of interest rate and real estate price shocks point to potentially large risks to households** (Figure II. 2). Depending on the shock size and the definition of financial stress applied, the results indicate that on average an increase in interest rates of 100–300 bps could lead to about 8½–17 percentage points increase in household debt-at-risk. Debt servicing costs relative to income could increase by 6–16 ppt, reaching 43–53 percent of disposable income on average. A real estate shock, on the other hand, could increase distressed debt on average by an additional 4–5 ppt for real

estate owners, beyond the impact of an interest rate shock on all debtors. Indebted lower income groups, as expected, appear more vulnerable to any shock.

38. **The jump in mortgage installment payments could add to household strains as converted loans' grace periods end.** Although the recent conversion of bullet type short term mortgages to longer term amortizing mortgages will reduce overall vulnerability of households in the longer term, the adjustment could be bumpy in the next two years adding to already high debt service payments.

39. **Low levels of nonperforming loans and high bank capitalization levels limit systemic financial risks, but potential risks to household balance sheets point to a need for vigilance and further strengthening risk management capacities.** Ensuring that the debt payment ability of households at the end of grace periods is taken into account when loans are extended would help reduce future vulnerabilities. Financial institutions would also need to be more pro-active in monitoring potential credit problems before the end of the grace periods. Going forward, there may also be a need to reconsider tax incentives for loans with such grace periods to discourage these nontraditional mortgages. With an economic downturn and stagnant real estate prices, provisioning levels for all household debt may also need to be revisited. Consistent with the move to Basel II, banks and supervisors could also extend stress testing to household loan portfolios taking into account the impact of lapsing grace periods. In the long run, deregulation measures to increase supply elasticity of housing could help reduce the amplitude of housing price cycles, which exacerbate debt accumulation by households.

Box III.1. Global Banking Sectors Trends

Deregulation between different financial activities and financial institutions is a global trend. The trend began in Europe in the late 1980s, following the adoption of a European Commission Directive that extended the German system of universal banking throughout Europe. In 1993, Japan allowed banks and insurance companies to enter each others' sectors through subsidiaries, and financial holding companies were permitted in 1998. The global trend accelerated in the United States when the Gramm-Leach-Bliley Act replaced Glass-Steagall in 1999 which opened up competition between banks, securities firms, and insurance companies (Semblat, 2006). An associated trend has been the consolidation of financial sector regulatory/supervisory agencies.

There are also well-documented trends of bank consolidation, conglomeration and internationalization (De Nicolo and others, 2003). The financial consolidation trend has been driven by real and financial sector globalization, deregulation, technological developments, increased performance pressures from shareholders, bank privatization, and in some cases (such as Korea) banking crises. Consolidation has been contributing to greater banking sector concentration, although the concentration trend presents uneven patterns across different regions and/or countries. Internationalization, as evidenced by the number financial institutions that operate across national borders and the ratio of foreign-controlled assets to total assets, also exhibits uneven trends but has increased markedly.

Banks in developed countries have been increasingly reliant on wholesale funding and liquid asset ratios have been declining, IMF (2008). Rather than retail deposits, banks have increasingly been relying on interbank borrowing, short- and long-term debt, or the sale of marketable securities. Evidence for the period 1995–2000 shows that banks in developed countries relied mainly on wholesale deposit or nondeposit liabilities to fund asset growth. In contrast, major emerging markets showed greater reliance on deposit funding. (De Nicolo and others, 2003).

Globally, banks are increasing reliance on nontraditional activities that generate fee, trading and other types of non-interest income. This trend might be explained in large part by new technologies (such as the introduction of ATMs and associated fees), and regulatory changes (including deregulation which has created greater competition and reduced net interest margins, creating a push for new areas of income growth). Banks may also have been attempting to benefit from diversification of income sources. However, some empirical evidence suggests that expansion into nonbanking activities may increase the variability of profits and thus offset some of the benefits of diversification; and the benefits may decline as the share of non-interest income grows.¹

¹ Stiroh (2002) finds for U.S. banks that declining volatility of net operating income reflects reduced volatility of net interest income and is not a benefit of diversification as non-interest income has been quite volatile and is increasingly correlated with interest income. Also, reliance on non-interest income such as trading income, is associated with higher risk and lower risk-adjusted returns.

C. Liquidity Risk Management—Recent Developments and Next Steps

49. **In recognition of the elevated liquidity risks, regulators have strengthened their monitoring of short-term liquid asset ratios and other indicators of possible liquidity strains.** Banks and financial regulators have been pushing to diversify funding sources, revenues, and scope of operation. Recent international experiences provide an opportunity for Korea to learn from shortcomings in LRM elsewhere.

Key Elements of LRM in Korea

50. **Beyond reserve requirements, the main liquidity risk management (LRM) mechanisms are the statutory won and foreign currency liquidity ratios.** Banks are required to ensure that their won liquidity ratio (the ratio of their assets and liabilities with maturities of 3 months or less) is at least 100 percent; and banks are subject to 7, 30, and 90-day liquidity ratios in foreign currency.²¹ Nonquantitative aspects of regulators evaluations of liquidity risk include assessing the adequacy of banks' LRM and the reasons for changes in liquidity; and the reasonableness of fund raising and operation structures. Reporting intervals for the won liquidity ratio were shortened in September 2007 from a quarterly to a monthly basis and regulators have stepped up monitoring of liquidity indicators on a daily basis.

51. **Banks are also required to undertake stress tests on a regular basis and prepare contingency plans.** How the stress tests are conducted and whether senior management develop effective contingency plans are also non-quantitative elements of the risk assessment system. Stress testing is also a minimum requirement for banks applying to use the internal-ratings based (IRB) approach in the move to Basel II. However, stress tests focus on credit and market risks.

52. **If banks face liquidity difficulties, the BOK can provide liquidity support.** Banks can access BOK's standing facility using eligible collateral (government bonds, government guaranteed bonds, and monetary stabilization bonds). BOK can, if required, relax collateral requirements and under exceptional circumstances, could extend liquidity to individual banks or financial companies.

What Does Recent International Experience Suggest for Korea's LRM?

53. **The global financial turmoil has revealed that liquidity risk is far more pervasive than previously thought—liquidity can dissipate very quickly and stresses can persist for**

²¹ The ratio of asset/liabilities with residual maturity of three months should be at least 85 percent. The ratio of assets exceeding liabilities to total assets, when the residual maturity is 7 days and 30 days should be zero and 10 percent respectively. There is also a requirements that banks foreign currency loans of one year or longer should be at least 80 percent funded by foreign currency borrowing with a maturity of one year or more (unless the outstanding foreign currency loans are less than \$50 billion).

these managers are important, so too is the ability to maintain market surveillance and if larger amounts of investments are being channeled through such nontransparent financial firms then the effective market monitoring will become more challenging.

107. **Korean authorities also need to ensure that financial firms maintain capital commensurate with risk exposures from complex financial instruments and commitments for liquidity funding.** Korea has already adopted Basel II capital requirements and should be ready to adopt efforts by the Basel Committee on Bank Supervision to update those financial policies according to the new recommendations. The areas of Korea's financial regulatory framework applying to nonbanks should be similarly updated, where appropriate, to better govern risk taking in light of the greater risks exposed by the financial crisis.

H. Policy Response Measures

108. **The U.S. financial crisis illustrates the importance of a central bank's ability to exercise their authority to provide funding liquidity to the financial system.** In response to the financial turmoil, the Federal Reserve expanded the range of assets that it allowed to be used as collateral for discount window borrowing and repurchase agreements. It also created a new asset swap facility in which general collateral U.S. Treasury securities could be obtained in a repo-like transaction in exchange for posting high quality but illiquid assets. Furthermore, the Federal Reserve expanded the range of financial institutions eligible for discount window lending by including all the designated primary dealers in U.S. Treasury securities. These measures succeeded in adding needed funding liquidity to the financial markets.

109. **Korea's central bank has the capacity to add liquidity to the financial system through outright loans and repurchase agreements.** The Bank of Korea has the emergency authority, for the purpose of assuring financial stability, to provide direct loans and credit through repurchase agreements to banks and nonbank financial firms. Normally, government bonds, government guaranteed bonds, and monetary stabilization bonds can be used as collateral, but under emergency authority the central bank can accept other assets. Korean banks have pursued an aggressive loan growth policy in recent years, and as a result their balance sheets are proportionally less liquid. Korean authorities should take a careful look at the experience of the U.S. Federal Home Loan Banks in providing liquidity during the 2007 credit crunch by accepting home mortgages as collateral in exchange for making direct loans to banks and similar depository institutions.

110. **Finally, it is important to point out that private repo markets in the United States and EU continued to function effectively throughout the credit crunch.** This securitized credit market facilitated central bank actions, such as the Federal Reserve's security swap program, and augmented the provision of credit to financial and nonfinancial firms alike. Korea's repo market has remained underdeveloped, and reliance remains heavy on unsecured call loan transactions; such unsecured transactions proved to be the weak point in the credit crunch that hit the Eurodollar market in 2007 when counterparty risk jumped to critical levels. In light of this, the Korean authorities should complete their plans to deepen their repo market.

V. WHAT DETERMINES INVESTMENT IN KOREA?⁴⁷

A. Introduction

111. **Promoting investment is a central part of the government's strategy for increasing the potential growth rate of the Korean economy.** The government plans to reduce corporate tax rates, currently 13 and 25 percent to 10 and 20 percent by 2010, and introduce new tax incentives to spur investment. There are also plans to streamline business regulations and improve the functioning of the labor market.

112. **This chapter assesses the extent to which there is a role for public policy to stimulate investment in Korea, and what measures are most likely to be effective.** Using disaggregated data on listed companies covering the period 1989–2007, the paper attempts to shed light on the role of fundamentals—such as expected profitability, financing constraints, uncertainty, gearing ratios as well as tax parameters—in determining the investment patterns of Korean firms. The analysis allows for differences across both types of firms and over time, and the results are compared to those from other Emerging Asian economies.

113. **It finds that while a return to pre-crisis investment levels—which are difficult to justify on the basis of fundamentals—appears to be neither likely nor warranted, the government's strategy for promoting investment should focus on small firms.** Policies most likely to be effective include: developing capital markets to promote financing on risk-based terms and venture capital; supporting SME restructuring, including by reducing credit guarantees and reform of bankruptcy laws; and lowering uncertainty about government policies affecting risk perceptions, such as tax policy and regulations. While reducing tax rates could have some impact, it is likely to be more modest, while tax incentives would likely be less cost-effective and introduce new distortions into business decisions. At the same time, international surveys suggest that further improvements to Korea's business climate, notably through deregulation and enhanced labor market flexibility, would also help.

B. Investment in Korea: Stylized Facts

Aggregate Investment

114. **Korea has witnessed a sizeable decline in investment since the Asian crisis.** Comparing the period 2000–07 to 1990–97, aggregate investment has declined by 7½ percentage points, settling at around 30 percent of GDP. With public investment rising slightly, this decline reflects a sharp fall in private investment. In particular, a sustained slump in fixed investment—investment in machinery and equipment and factories—accounts for almost ⅔ of the overall decline. By contrast, FDI flows have been considerably less volatile and more modest over this period: outflows have remained broadly constant as a

⁴⁷ Prepared by Murtaza Syed.