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External Adjustment under Increasing Integration in Korean Economy

Inkoo Lee and In Huh

KIEP Korea Institute for International Economic Policy

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Executive Summary

In this paper, we study the external adjustment of Korea under international product and financial integration by examining the evolution of the external balances, changes in international transactions and trends of the terms of trade. We first discuss changes in Korean external balances with a focus on the impacts of recent global financial crisis on the exchange rates and net exports in order to understand external adjustments by the external shocks. We then discuss external adjustment under increasing integration in Korean economy by examining changes in international transaction behaviors. We show that (1) trade channel supplements the net foreign debts in Korea, (2) Korea exhibits more risk sharing behavior under increasing economic integration, while home bias in equity market still remains as a puzzling phenomenon, and (3) a crucial factor contributing to the slowdown of private consumption has been a reduction of national income caused by a deterioration of the terms of trade.

국문요약

이 논문에서 교역조건, 국제교역, 대외수지 등의 변화를 통해 금융시장의 국제적 통합과정에서 나타나는 우리나라의 대외조정과정을 살펴본다. 대외충격에 대한 우리나라의 대외조정과정을 보기 위해 이번 금융위기 충격으로 일어났던 환율과 순수출의 변화를 살펴보았으며, 이어서 대외거래 행위의 증가에 따른 우리나라 경제의 국제화 진행과정에서의 대외조정에 대해서 분석한다. 이 논문에서 (1) 무역이 우리나라의 순 대외채무를 상쇄하고 있고, (2) 아직까지 주식시장에서 자국선호(home bias)가 존재하나, 대외개방도가 높아지면서 위험분산행위는 높아지며, (3) 교역조건 악화로 인한 국민소득(National Income)의 감소가 민간소비의 침체를 가져오는 중요한 요인으로 분석되었다.

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『KOSDAQ 지수선물의 거래 부진에 관한 연구』(공저, 2009) 외

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I. Introduction

In the late 1990s, the Korean currency lost nearly half of its value during the Asian financial crisis. The currency had been pegged at 900/U.S. dollar, but by early 1998 it had depreciated past 1700/U.S. dollar because of massive capital outflows as foreign investors began to view Korea as increasingly risky. After a short but severe recession, the weak currency enabled Korea to rebound with strong export-driven growth, and the currency moved to more normal levels. There was another round of weakening in 2001, as the global slowdown hit Korea's export growth and lowered demand for the currency. However, this too proved to be only a temporary setback, with Korea returning to a growth path and the exchange rate again strengthening.

More recently, the Korean currency had been on a depreciating

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trend as a result of prolonged turmoil in global financial markets. With the Korean banks heavily relying on foreign debt for their financing needs, the closure of global credit markets since September 2008 had resulted in a shortage of US dollars in local financial markets, which led Korean currency to experience substantial volatility against a range of major currencies.

In this paper, we examine the external adjustment of Korea under international product and financial integration. For this purpose, we discuss recent changes in the exchange rates and the net exports of Korea. We then examine external adjustment under increasing integration in Korean economy from the perspective of changes in its international transaction behaviors. We also discuss key factor that contributes to slowdown of private consumption in Korea since 2000.

Ⅱ. Global Financial Crisis and External Balances of Korea

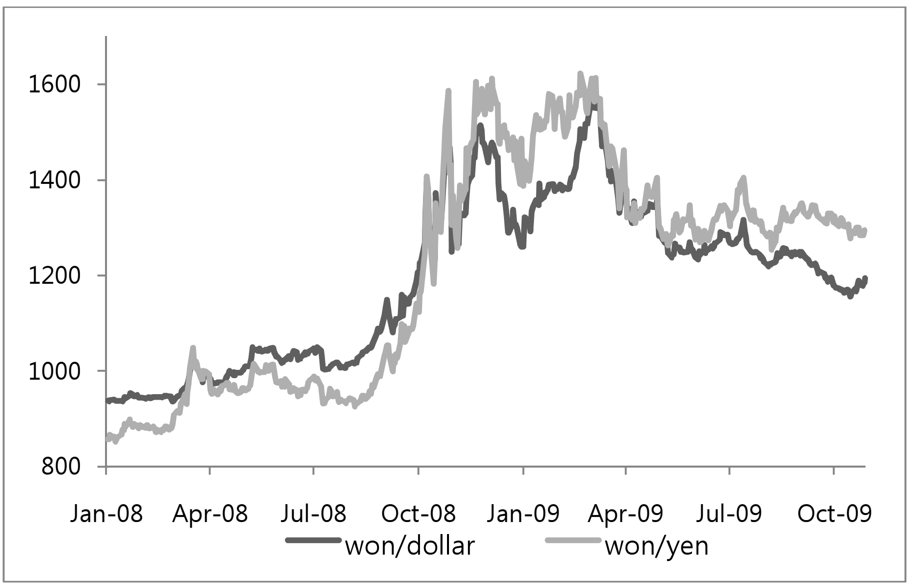
The financial crisis from 2008 has been the one of the most significant events along the modern economic history. Not like the previous Asian currency crisis, the epicenter of the crisis was not domestic. So it must be insightful to know what happened during the financial crisis in order to understand how the external adjustment done with the external shocks.

The Korean financial market has been open to international players through Asian currency crisis. The IMF, which supplied dollar liquidity by answering the call for help of Korean government, implements several financial market reforms which include the free floating foreign exchange rate system. So we can say that the international integration in Korean market has been achieved from then. Therefore, to see how the Korean economy has been adjusted by the external shocks during the financial crisis make us understand the external adjustments under the financial integration.

1. Foreign Exchange Market

The foreign exchange rate is the most influential financial variable for the external adjustments, and the foreign exchange market has been the most-affected among Korean financial markets by the financial crisis. Before the crisis the won exchange rate per dollar has been decreased steadily for an extended period of time. Since the subprime mortgage problems were not domestic, people expected that the Korean won would get stronger in 2008. However, the Korean won depreciated significantly with the financial crisis. As already noted, foreign investors in the Korean stock market have sold their stocks during the crisis and Korea was experiencing current account deficits before the crisis. In addition, Korean banks relied heavily on short term debt from abroad in their dollar financing, which turned out to be problematic during the financial crisis.

Figure 1. Exchange Rates of Korean Currency



Source: Bloomberg.

The exchange rate (figure1) moved with the flow of the financial crisis. In March 2008, Bear Stearns' merger was the first event to influence Korean won depreciations. It triggered trends in risk avoidance, and investors moved out of the Korean market. Some analysts even indicated that the won is the only currency with current deficits among Asian currencies. Due to the current deficit, the authorities concerned were reluctant to subdue the exchange rate. The second event was the Fannie Mae and Freddie Mac's subprime mortgage-related troubles in May 2008. Their effects on foreign exchange market lasted slightly longer than previous ones. Due to increasing inflation risks, the authorities concerned tried to manage the exchange rate between 1,030 to 1,050 won per dollar. Then the third event occurred: the Lehman brothers' bankruptcy. This event not only affected the Korean exchange market but also changed the financial market as we know. The Korean won depreciated dramatically, and the daily volatility of exchange rates increased also. In October 2008, the Bank of Korea settled a swap agreement with the Federal Reserve; this tamed the foreign exchange market, which might have been unpredictable without it. The fourth event was rumors of a moratorium in March 2009 concerning Eastern European countries. After the Lehman Brothers' bankruptcy, the market was very unstable and there were worries about double dip and reappearance of financial crises. So when rumors on possibilities of Eastern European countries declaring moratoriums were spread, the avoid-developing-countries sentiments reached their peaks. Then the situations around the foreign exchange market eased with increased trade surplus and recovering risk appetites.

Even though the market has stabilized to a significant degree, the exchange rate has not subdued to pre-crisis levels. Before the crisis, shipbuilders were one of the biggest suppliers of the dollar through forward trading with their received orders. But new orders for ships have virtually stopped after the crisis, not to mention some orders being met with the risk of outright cancellations. Other exporting industries such as semiconductor manufacturing and automakers were typically not involved in the foreign exchange markets with forward trading and they are known to have their own dollar demands and preparatory reserves of dollars for emergencies. Therefore the dollar supply in the Korean foreign exchange market was not enough to bring exchange rates back to pre-crisis levels.

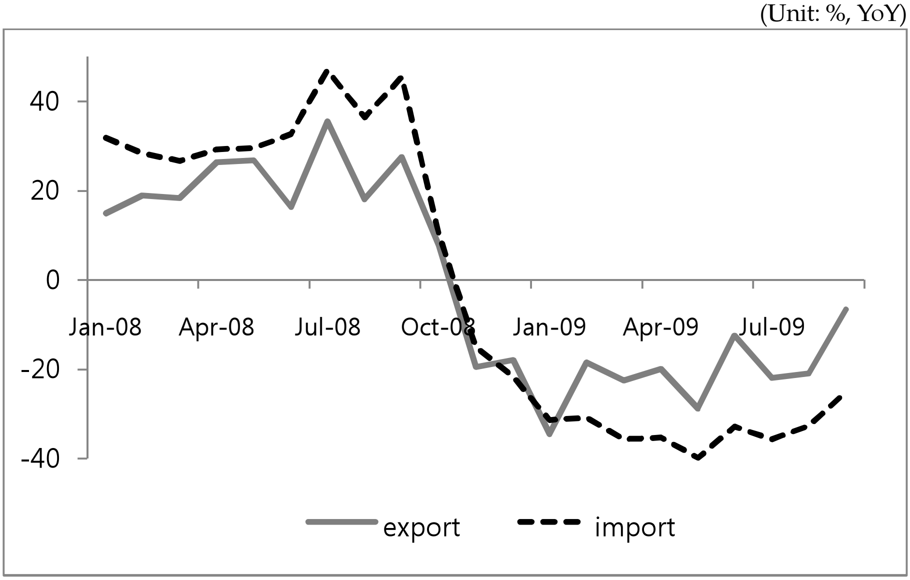
The foreign debt by banks has been affected by the financial crisis, too. Before the crisis, the foreign debts by domestic banks and branches of international banks in Korea were high since there was a huge demand from shipbuilders in order to trade their forwards. The nature of foreign debt was not typically harmful for the banks' balance sheet, since they were matched by assets of lending dollars to shipbuilders. During the financial crisis, however, this has been questioned by media and treated as problems in Korean financial systems. The problems with the foreign debt of Korean banks subdued, because the forwards trade were seized during the financial crisis due to lack of new shipbuilding orders and exports. As the forwards matured and new forwards trade limited, the foreign debts by the Korean banks gradually reduced.

2. Net Exports

Until the third quarter of 2009, exports grew at a double digit rate relative to previous year (figure 2). As the oil prices skyrocketed, the price of petrochemical products increased; about the half of crude oil Korea imports is processed for re-exporting. So, even though Korea did not produce any raw petroleum, it was an exporter of petroleum products. As petroleum prices increased, revenues from exports of petroleum products' increased even though same amount was exported. Moreover the world trade stayed within normal levels until the Lehman Brothers' bankruptcy, and Korean exports remained consistent.

Figure 2. Exports and Imports

(Unit: %, YoY)



Source: Korean Statisitical Information Service.

The financial crisis created a credit crunch, and the trade financing became limited for exporters. Exporters have experienced a hard time accessing appropriate funds for their operations. There was also the collapse of implicit trust between financial institutions, meaning letters of credit which had been used to finance the exporter's operations were not readily recognized by banks. In addition to distrust among financial institutions, the lack of the US dollar during the financial crisis was the other reason why the trade finance became limited. Since the problem in exporting was in finance during the financial crisis to begin with, exports plummeted immediately as the external demand stumbled.

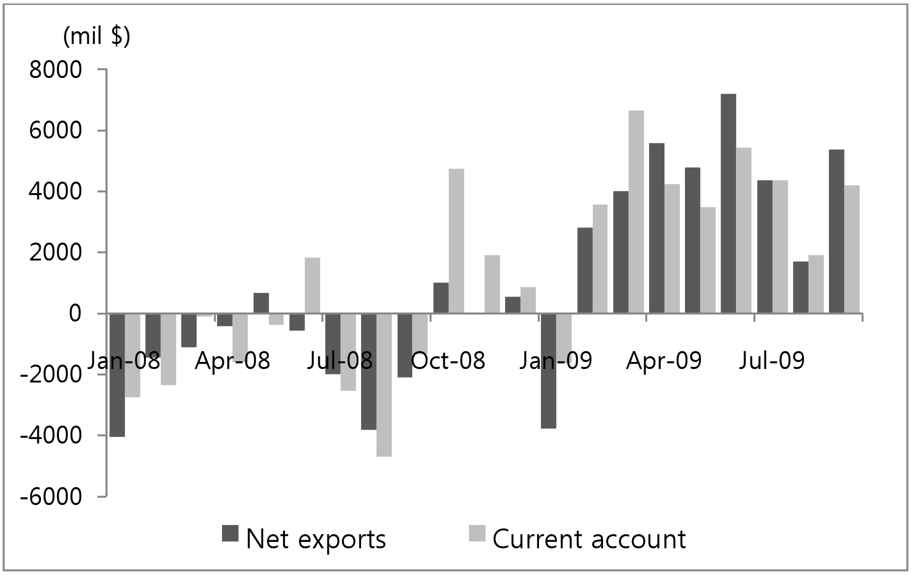
With a slow but steady recovery of the economy came recovery in exports. The depreciation of the Korean won helped to increase the price competitiveness of exports. And the consumers in advanced economies have recognized the Korean products as a rational choice for purchase during the crisis, as products that balanced high quality with reasonable prices. For example, the market share of Korean automobiles have increased in the US, being considered good alternatives to Japanese and US cars that did not sacrifice quality.

The same seesaw movements seen in exports were also seen in imports, the only different being a range of movement wider than that of the exports. At the beginning of 2008, a reasonable domestic demands and commodity price hikes have increased imports at very rapid pace. At the start of the financial crisis, the crude oil price was at 150 dollar per barrel, which caused about 50 percent rise in money spent on imports.

In the middle of the financial crisis, crude oil prices, consumption and the investment have decreased significantly. Therefore, imports have dropped after October of 2008. Though recovery of consumption and investments has been very slow, imports have not recovered to any significant degree. However, the crude oil price has reached its nadir during the first quarter of 2009 and began increasing as the world economy slowly moved out of the recession; imports have been growing steadily and rates of decrease has slowed.

The trade balance has swung from deficit to surplus through the crisis (figure 3). The commodity and oil price hikes have increased both exports and imports, but the effects on imports have been larger than that on the exports. Therefore, trade account recorded deficits before crisis, which turned around temporarily after March of 2008, as the Korea won has depreciated significantly and trade deficit was reduced for the time being, but commodity price hike resulted in deficits again in the third quarter of 2008. The drop in commodity prices would have a significant influence on the trade account in the fourth quarter of 2008. Due to the lack of trade finance and drop in export prices, exports have stumbled. But weak domestic demand and the dropping commodity prices have led to greater decreases in imports than exports. The exchange rate hike was an additional factor in creating a surplus in trade and current account. There has been significant discontinuity in trade account in January of 2009; which recorded a large and sudden deficit. It has been largely due to the lunar New Year holidays; affecting the business days in January. However, the holidays did not reduce domestic demands.

Figure 3. Net Exports and Current Account



Source: Bank of Korea.

In fact, the domestic demand increased as consumption increased during the holidays. Except the month of January, the current account has maintained the surplus from fourth quarter of 2008. The trade surplus of 2009 is expected to be more than 40 billion dollars. This large surplus certainly has helped the Korean economy recover from the financial crisis.

Ⅲ. External Adjustment under Integration

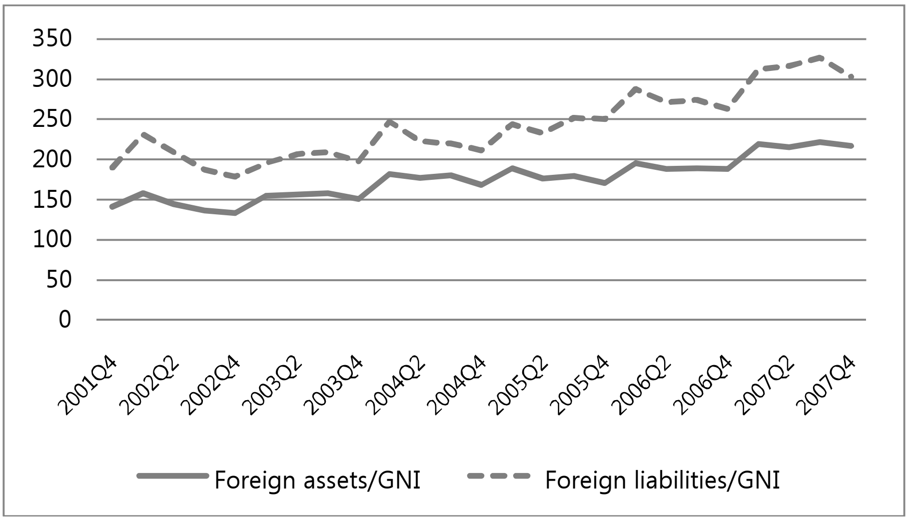
1. Dynamics of External Adjustment

The dynamics of external adjustment mainly rely on the following key variables: net export, foreign asset and liability positions at market value and rates of return on foreign assets and liabilities. We first take a look at the evolution of gross external assets and liabilities at market value. The measures in Figure 4 are expressed as fractions of gross national income (GNI) in Korea. Before 1995, gross external assets of Korea accounted for about 45 percent of GNI with liabilities accounting for about 60 percent of GNI. Both external assets and liabilities increased sharply after 1995, reaching roughly 220 percent and 300 percent respectively by the end of 2007. The rise of external accounts was largely associated with the upward tendency of asset cross-holdings in recent years.

Figure 5 illustrates the net foreign asset positions and net exports as fractions of GNI in Korea. Korea's net foreign debt plunged to over one fold of GNI between 1997-1998 mainly due to a sharp depreciation of Korean currency during the financial crisis, which increased the burden of foreign borrowing and worsened the net foreign asset position. The net foreign debt ranges around 80 percent at the end of 2007. This external imbalance, however, alleviated through the channel of international trade. Korea's net export ratio dramatically bounced from

1998 and remains relatively stable around 3 percent by the end of 2007. This is quite different situation compared with the U.S. where the net foreign asset position supplements the trade imbalance.

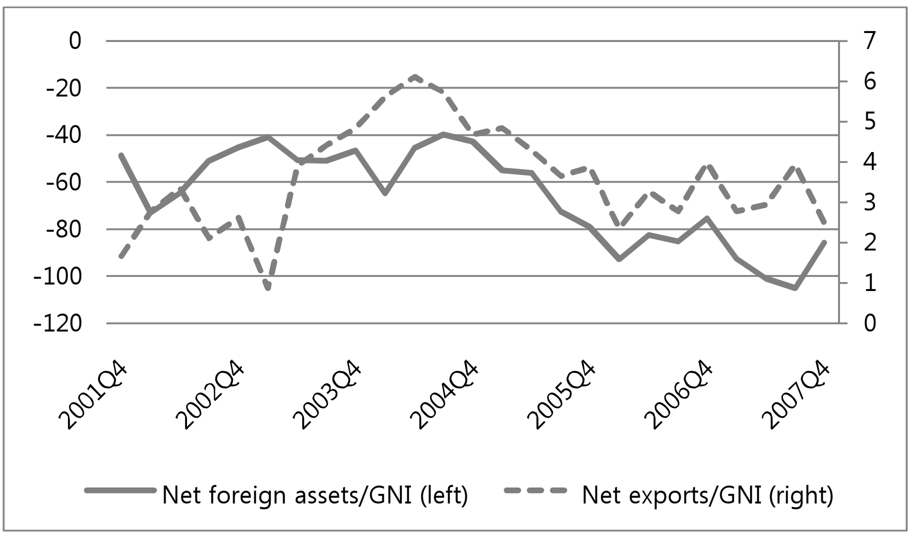
Figure 4. Foreign Assets and Liabilities of Korea



Source: IMF, *International Financial Statistics* and the Bank of Korea.

The rate of return on the net foreign portfolio in Korea is quite volatile but not consistent. For example, Pan (2006) shows that the standard deviation of real rate of return on the net foreign portfolio is as large as 17.8 percent while the autocorrelation coefficient is less than 0.10. More importantly, the valuation adjustment channel is not as effective as expected because valuation effects of exchange rate fluctuations on assets and liabilities tend to cancel out each other. Moreover, the traditional trade adjustment and the conventional intertemporal approach turn out to be significant in case of Korea. For example, Pan (2006) estimates the valuation and trade channels in external adjustment of Korea and shows that 73~92 percent and 4.7~5.9 percent of the variance of the actual external imbalances is explained by trade channel and valuation channel respectively in case of Korea.

Figure 5. Net Foreign Assets and Net Exports of Korea



Source: IMF, *International Financial Statistics* and the Bank of Korea.

2. Changes in International Transaction Behavior

Ongoing international product and financial integration is expected to affect external adjustment through the channel of changes in foreign asset holdings, saving-investment decision behavior, risk sharing behavior and international arbitrage costs. In this sub-chapter, we examine this channel of adjustment using several representative measures of market integration.

Foreign asset holdings.

The traditional model of international portfolio diversification suggests all investors allocate their portfolios across countries in proportion to their size in world market. Thus, if Korea accounts for 1.8 percent of world output, then all investor everywhere should hold approximately 1.8 percent of their assets in Korea. Similarly, Korean investors should hold roughly 98.2 percent of their assets elsewhere. But this is not what is observed in practice. Table 1 shows that Korea holds significantly home-biased equity portfolios, where 97.4 percent of the total equity portfolio is invested in domestic stocks. This is a substantially large number compared with the U.S. (41.7 percent), Germany (54.6 percent), UK (57.7 percent) and other Asian countries like Japan (78.8 percent), Singapore (74.3 percent), Hong Kong (77.9 percent), while comparable with Indonesia (99.7 percent), Malaysia (98.6 percent), Philippines (99.4 percent) and Thailand (98.5 percent). The fact that Korea and other emerging economies hold most of their equity portfolio in domestic market means that either domestic investors bear a substantial amount of unrewarded country-specific risk, or international investors are not willing to invest in an expected return for a risk that is diversified away.

Table 1. Foreign Asset Holdings of Korea (2005)

(Unit: US$ million, %)

Country	Domestic market capitalization	Foreign assets	Foreign liabilities	Domestic equity holdings	% Market cap in world market	% domestic in total equity
Korea	718,011	13,913	187,502	530,508	1.7	97.4
U.S.	17,000,805	3,317,705	1,664,493	15,336,311	40.5	82.2
U.K.	3,058,182	992,737	1,217,227	1,840,856	7.3	65.0
Germany	1,221,106	528,153	507,419	713,687	2.9	57.5
Japan	5,542,716	408,575	929,135	4,613,580	13.2	91.9
Singapore	257,341	67,592	54,970	202,370	0.6	75.0
Hong Kong	1,054,999	227,834	119,234	935,765	2.5	80.4
Malaysia	180,518	1,550	23,240	157,278	0.4	99,0
Indonesia	81,428	93	17,275	64,153	0.2	99.9
Thailand	123,885	1,217	25,746	98,139	0.3	98.8
Philippines	39,818	184	5,696	34,122	0.1	99.5

Source: Sercu and Vanpee (2007).

Saving-Investment correlations.

In a world of increasingly integrated capital markets, one would expect savings to migrate to the country offering the highest rate of return. Barring perfect correlation of productivity shocks across countries, one would therefore expect to see massive capital flows between countries, resulting in massive current account deficits and surpluses. In reality, however, current accounts are seldom very large relative to net investment or national saving. For example, one of the most stable regularities observed in the data is that national saving rates are highly correlated with national investment rates. These findings have been interpreted as indicating that the world is characterized by capital immobility, yet most economists believe that the world is characterized by an increasingly high degree of international capital mobility. Between 1990 and 1997, saving-investment correlation of Korea was as high as 0.85 reflecting low degree of capital mobility and high degree of capital regulations. However, the correlation dramatically decreases to 0.49 between 2000 and 2007, implying that increases in domestic investment are substantially financed by capital inflows. Although 0.49 is still quite a bit higher than one would expect in world of perfectly integrated market, it reflects the fact that product and capital markets are increasingly integrated in the region.

Risk sharing.

There is an extensive literature on the benefits of international risk sharing. This literature explicitly recognizes that capital market integration leads to international risk sharing, which should improve welfare by smoothing consumption fluctuations. If consumers can borrow and lend with foreign agents, the chance of risk sharing rises. Therefore larger pool of stocks, bonds and financial claims generates higher chance of risk sharing and smoother consumption profile. However, due to home asset preference, imperfect market integration and incomplete insurance markets, the benefits of international risk sharing are not fully realized and, consequently, the main question the literature attempts to address is to what extent the variability of consumption growth is reduced relative to variability of output growth. Table 2 shows variability of consumption growth relative to output growth variability where variability is measured by variance over time. The average ratio is 1.60 between 1980 and 2007, implying lower level of international risk sharing than would be expected under market integration. However it is worthwhile to note that relative consumption variability decreased from 2.03 for 1980-1999 to 1.36 for 2000-2007. This again confirms the view that increasing fraction of output shock is pooled by consumers with increasing level of international market integration in case of Korea.

Table 2. Relative Variability of Consumption Growth

Period	1980-2007	1980-1999	2000-2007
Var(c)/Var(y)	1.60	2.03	1.36

Source: Author's calculation.

Arbitrage cost

In an attempt to examine the effect of market integration on an arbitrage opportunity, we estimate for the optimal arbitrage costs using threshold autoregressive model. This approach basically emphasizes that price differentials decay slowly within certain level of arbitrage bands, but rapidly outside the bands as international arbitrage takes place. According to the estimation results, the arbitrage cost from the perspective of Korea decreased from 21.3 percent for 1990-1999 to 18.9 percent for 2000-2007, with the average being 20.1 percent. Although this amount of arbitrage cost is larger than other OECD countries, it is substantially smaller than other Asian countries like Indonesia (37.2 percent), Malaysia (30.9 percent) and Thailand (26.8 percent). The decreasing trend of arbitrage cost also implies that market integration makes goods more likely to be traded and hence increases the scope for international arbitrage.

Table 3. Changes in Arbitrage Cost

Period	1990-2007	1990-1999	2000-2007
Arbitrage cost	0.201	0.213	0.189

Note: Arbitrage cost is estimated from threshold autoregressive regression.
Source: Author's calculation.

3. Shifts from Domestic Demand to External Demand

Since its rapid recovery from the Asian crisis, the Korean economy has experienced modest growth, while unemployment and inflation have remained low. Growth has been largely driven by exports of manufactured goods such as information and communication technology, automobiles and ships.

Despite the Korean economy's strong performance, there is mounting concern about the country's growth potential, which is clearly reflected by the fact that the annual growth rate of Korea decreased from 6.4 percent between 1999 and 2003 to 4.2 percent between 2004 and 2008. The decline in the growth rate is largely attributable to the slowing growth of domestic demand, particularly weak private consumption.

Table 4. Growth Trends in Korea

(Unit: %)

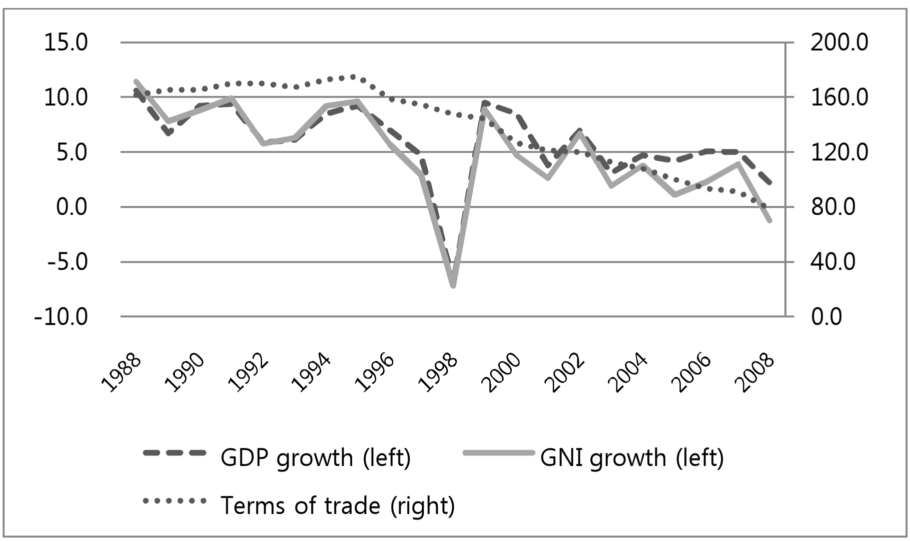
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
GDP	4.7	-6.9	9.5	8.5	3.8	7.0	3.1	4.7	4.2	5.1	5.0	2.2
Consumption	3.2	-10.6	9.7	7.1	4.9	7.6	-0.3	0.4	3.9	4.8	4.7	1.6
(Private)	3.3	-13.4	11.5	8.4	4.9	7.9	-1.2	-0.3	3.6	4.5	4.5	0.9
(Government)	2.6	2.3	2.9	1.6	4.9	6.0	3.8	3.7	5.0	6.2	5.8	4.2
Domestic investment	-5.3	-30.6	24.1	10.7	0.0	5.9	2.5	4.8	2.1	3.8	2.5	-
Exports	21.6	12.7	14.6	19.1	-2.7	13.3	15.6	19.6	8.5	11.8	12.1	5.7
Imports	3.5	-21.8	27.8	20.1	-4.2	15.2	10.1	13.9	7.3	11.3	11.9	3.7

Source: Global Insight.

One of the main recent developments within the Korean economy is that external demand has been growing faster than domestic demand, resulting in a smaller portion of consumption expenditure. Consumption expenditure's share of GDP has been declining since 2002, driven largely by declining private consumption. The share of private consumption decreased from 56 percent in 2002 to 53 percent in 2007, while that of exports increased from 35 percent to 46 percent. A crucial factor contributing to the slowdown of private consumption has been a reduction of national income caused by a deterioration of the terms of trade over this period. The Korean currency appreciated more than 26 percent between 2001 and 2007, which was caused mainly by a large amount of capital inflows.

The deterioration of terms of trade decelerated national income growth, widening the gap between GDP growth and national income growth from 0.7 percent point in 2001 to 3.4 percent point in 2008. The reduced growth of national income put downward pressure on domestic demand, especially private consumption. The elimination of the restrictions on capital and foreign exchange markets is also attributable to the slowdown of domestic consumption as it increases overseas consumption substantially.

Figure 6. Terms of Trade and National Income Growth in Korea



Source: Bank of Korea.

It is worthwhile noting that technology-intensive industries experiencing significant terms of trade losses are known to have made a large contribution to productivity growth in Korea. Given that terms of trade is an exogenous variable to the Korean economy, Korea should increase the productivity in other industries to promote future growth. This implies that Korea needs to implement structural reforms in the service sector to promote domestic demand and future growth.

Ⅳ. Conclusions

In this paper, we examine the external adjustment of Korea under international product and financial integration. We first discuss changes in Korean external balances with a focus on the impacts of recent global financial crisis on the exchange rates and net exports. We then investigate external adjustment under increasing integration in Korean economy by examining dynamics of external adjustment, changes in international transaction behaviors, and shift from domestic demand to external demand.

When it comes to the evolution of gross external assets and liabilities, both external assets and liabilities as fractions of GNI turn out to have increased sharply after 1995, reaching roughly 220 percent and 300 percent respectively by the end of 2007. The rise of external accounts was largely associated with the upward tendency of asset cross-holdings in recent years. The net foreign debt ranges around 80 percent, which alleviated through the channel of international trade. Korea's net export ratio dramatically bounced from 1998 and remains relatively stable around 3 percent by the end of 2007. This is quite different situation compared with the U.S. where the net foreign asset position supplements the trade imbalance. In Korea, the valuation adjustment channel is not as effective as expected as valuation effects of exchange rate fluctuations on assets and liabilities tend to cancel out each other. Meanwhile, the traditional trade adjustment and the conventional intertemporal approach account substantial part of the variance of the actual external imbalances in Korea.

This paper also studies the effects of ongoing international product and financial integration on the changes in foreign asset holdings, saving-investment decision behavior, risk sharing behavior and international arbitrage costs. We see that Korea exhibits more risk sharing behavior under increasing economic integration while home bias in equity market still remains as a puzzling phenomenon.

Although Korea has experienced modest economic growth since its rapid recovery from the crisis, there is mounting concern about the country's growth potential, which has been reflected in reduced growth rates in recent years. A crucial factor contributing to this phenomenon is the slowdown of domestic demand caused by external terms of trade losses. To cope with this challenge, we propose that Korea move forward with a more market-oriented economic system such as greater integration into the world economy, structural reforms for enhancing the productivity of the service sector, and an improvement of market conditions for attracting domestic and foreign investments.

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Inkoo Lee and In Huh

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