Abstract

Essays on Financial Globalization, Financial Exchange Rates, and Valuation Effects

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The recent financial globalization addresses important global issues on external accounts, such as stocks of foreign assets and foreign liabilities, capital transactions, and their influence on a country's economy. This study focuses on valuation effects in foreign assets and liabilities due to variations in exchange rates and asset prices. In addition, this study highlights Korea in light of its need for an appropriate exchange rate index to precisely investigate relations among financial variables.

Chapter I constructs a monthly financial effective exchange rate index for Korea and investigates the relationship between a financial effective exchange rate and an external position and that between a financial effective exchange rate and capital flows. Results show that

the exchange rate index and the traditional BIS trade-weighted index move in opposite directions. Moreover, empirical results indicate that an increase in the rate of change of the financial effective exchange rate significantly leads to capital outflows, especially in portfolio investment and bond investment. The use of the financial effective exchange rate may be better than the traditional trade-weighted exchange rate in explaining and estimating the wealth effects of the changes in net external positions and, furthermore, exchange rate effects in overall financial sector.

Chapter II identifies the determinants of valuation changes, focusing on a long-term perspective. The size of foreign assets and liabilities and their compositions are important in determining the direction and extent of valuation effects. In addition, financial exchange rates show a more significant relationship than other exchange rate measures do. Other variables related to a country's macro economy and financial environment, such as GDP growth, GDP per capita, real interest rates, financial development, and age-dependency ratio, are also considered.

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Keywords: Financial Effective Exchange Rate, International Investment Position, Capital Outflows, Net Foreign Exposure, Valuation Effects

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Chapter I

금융글로벌화와 금융실효환율[1]

1. 서론

지난 수십 년 간 세계 경제의 글로벌화가 급속히 진행되었다. 특히 전통적으로 세계경제의 연계를 설명하는 국제 무역의 규모가 크게 증가했을 뿐 아니라, 보다 최근에는 국제 금융 자산 거래가 점차 활발해짐에 따라 대외자산과 부채가 급격히 증가하였고, 이는 새로운 종류의 세계 경제 연계인 금융 연계가 급속히 증가한 것이라고 볼 수 있다.

이러한 과정에서 한국은 경제의 글로벌화가 진행된 대표적인 국가이다. 경제개발 초기부터 수출중심 발전전략을 추구하여 일찍이 국제무역이 확대되었고, 1990년대 초반에는 본격적으로 자본자유화를 추진하였다. 1997년 외환위기를 거치면서 자본자유화가 더욱 확대되었으며, 국제 금융거래가 급증하면서 대외 금융자산 및 대외 금융부채 또한 크게 증가하였다.

대외 금융자산과 금융부채의 증가와 함께 환율이 한국경제에 미치는 영향의 경로도 변화하였다. 환율은 전통적으로 수출입을 통해 경제에 영향을 미치는 경로가 중시되어 왔으나, 국제금융거래의 증가로 대외자산과 대외부채가 누적되면서 환율의 변화가 자본의 유

1 본 장은 김소영·민경희·이윤석(2017), “금융글로벌화와 금융실효환율,” 계량경제학보, 28(2)에 게재되었음.

출입과 대외 포지션 변화를 통해 경제에 영향을 미치는 경로도 중요해졌다. 즉 환율 변화가 국내외 자산의 상대 수익률을 통해 자본 유출입에 영향을 미치고, 자본 유출입이 자산 가격의 변동을 통해 실물경제에 영향을 주는 현상이 나타날 수 있다. 또한 환율의 변화가 대외자산 및 대외부채의 가치변화, 즉 자산효과(wealth effect)를 통해 실물경제에도 영향을 미칠 수 있다.

본 연구에서는 환율의 변화가 대외 금융자산 및 금융부채, 즉 국제투자포지션과 자본 유출입에 어떠한 영향을 미치는지 한국을 대상으로 분석한다. 국제 투자포지션은 다양한 외국통화로 구성되어 있어, 양자 간(bilateral) 환율보다는 실효환율을 사용해야 한다. 또한 기존의 무역실효환율에서 사용한 무역 가중치 대신 국제투자포지션의 통화별 가중치를 사용한 금융실효환율을 구축하여 이를 분석에 사용하였다.

Lane and Shambaugh(2010a)는 총외환노출(aggregate foreign currency exposure)과 가치변화효과(valuation effect)라는 개념을 이용하여 금융실효환율이 국제투자포지션에 미치는 영향을 측정하였는데, 본 연구도 같은 방법을 사용하였으며 추가적으로 금융실효환율이 자본유출입에 미치는 영향을 분석하고자 한다. 또한 Lane and Shambaugh(2010a)는 세계 각국을 대상으로 1990-2004년에 대한 연도별 자료를 사용하였으나, 본 연구에서는 한국의 최신 자료를 활용하여 월별 금융실효환율지수를 구축함으로써 보다 유용하고 정밀한 분석을 시도하고자 하였다.

Lane and Shambaugh(2010)는 기존 무역실효환율이 환율변동에 따른 자산효과를 완전히 설명하지 못하며, 국제수지 조정 과정에서 점차 중요성이 커지고 있는 금융부문과 환율 간 관계를 보다 명확히 파악하기 위해서는 새로운 금융환율지수를 구축할 필요가 있음을 강조하였다. 이와 같이 환율의 변화와 그 영향을 국제수지 전체의 관점에서 분석할 때, 국가별 무역 비중에 근거한 기존의 실효환율지수는 한계가 있음을 인식하고 대안을 제시하려는 시도로 다음

과 같은 연구들이 있다.

Benetrix et al.(2015)은 전 세계적으로 순 외화자산이 증가함에 따라 환율변동에 따라 자산가치가 변화하는 정도 또한 커지고 있다고 지적하고, 외환노출에 영향을 미치는 영향을 분석하였다. Gelman et al.(2014)은 Lane and Shambaugh(2010)가 구축한 금융환율지수가 대외자산과 부채의 통화별 비중에만 근거하고 있음을 지적하며, 국제 자본시장에서 환율변동의 요인과 결과를 모두 나타낼 수 있도록 MSCI 지수와 같은 금융시장의 가격 관련 지수를 포함하는 방안을 제시하였다. Makin and Robson(1999)에서는 호주 달러의 경우 무역환율지수보다 자본환율지수(capital-weighted)를 사용할 때 강세를 보였으며, 지수들 간 양의 상관관계가 존재하지만 서로 수렴하지는 않는 것으로 분석되었다. 동 연구에서 전통적인 무역환율지수의 대안으로 제시한 가중치들은 경상수지의 대변과 차변, 자본의 유입 및 유출, 대외투자 및 외국인투자, 통화별 순 해외차입, 인플레이션율을 고려한 통화의 상대 가치 등이다.

한편 자본 유출입의 결정요인과 관련된 기존 연구들은 다양한 방법을 이용하여 주로 대외요인(push factors)과 대내요인(pull factors)의 상대적인 중요성에 초점을 맞춰왔다. 대외요인은 주로 선진국인 자본수출국의 경제적 요인을 말하는데, 일반적으로 세계 또는 미국 금리, 세계 성장률 등을 사용하는 경우가 많으며 분석 대상국 입장에서 통제할 수 없는 외생적 요인을 말한다. 반면, 대내요인은 해당 국가의 경제적 요인을 의미하는 것으로, 해당국의 금리, 성장률, 자산가격 등을 나타낸다.

자본 유출입의 결정요인으로 대외요인의 역할을 강조한 연구들 중 Calvo et al.(1992), Fernandez-Arias(1996), Haque et al.(1997), Montiel and Reinhard(1999) 등은 미국 경제의 성장 둔화와 낮은 금리수준을 가장 중요한 대외요인으로 꼽고 있다. Fratzscher(2011)은 2008년 글로벌 금융위기 기간 중, 그리고 이후 기간 모두 글로벌 유동성이나 리스크 지표와 같은 대외요인의 역할이 컸음을 강조하고

있다. 그러나 Hernandez et al.(2001)이 강조했듯, 동 연구들은 자료 주기와 분석 대상 국가 및 기간에 따라 결과가 다르게 나타나고 있다.

대내요인의 경우 앞서 대외요인의 중요성을 지적한 연구들 중 Fernandez-Arias(1996)는 신흥국의 신용등급, Montiel and Reinhard(1999)는 해당국의 주식 또는 채권의 투자수익률의 중요성을 강조하였다. 이 외에도 De Vita and Kyaw(2007)는 자본계정 전체가 아닌 직접투자와 포트폴리오 투자에 중점을 두어 외국의 생산수준과 국내 생산성의 중요성을 강조한 한편, Kim et al.(2013)은 대외요인 중 세계금리가 가장 유의한 변수이며 대내요인 중에서는 경상수지가 자본의 유출입에 영향을 미치지만 시간이 지남에 따라 대내요인의 중요성이 점차 감소하고 있음을 발견하였다.[2]

본 연구에서는 기존 연구에서 사용된 다양한 대외요인(push factors)와 대내요인(pull factors)에 금융실효환율을 추가적으로 고려하여 금융실효환율이 자본 유출입에 어떠한 영향을 미치는지 분석한다.

2절에서는 금융실효환율을 구축하고 한국의 총 외환노출, 가치변화효과를 논의한다. 3절에서는 금융실효환율이 자본 유출입에 미치는 영향을 분석한다. 4절에서는 주요 결과를 요약하고 시사점을 제시한다.

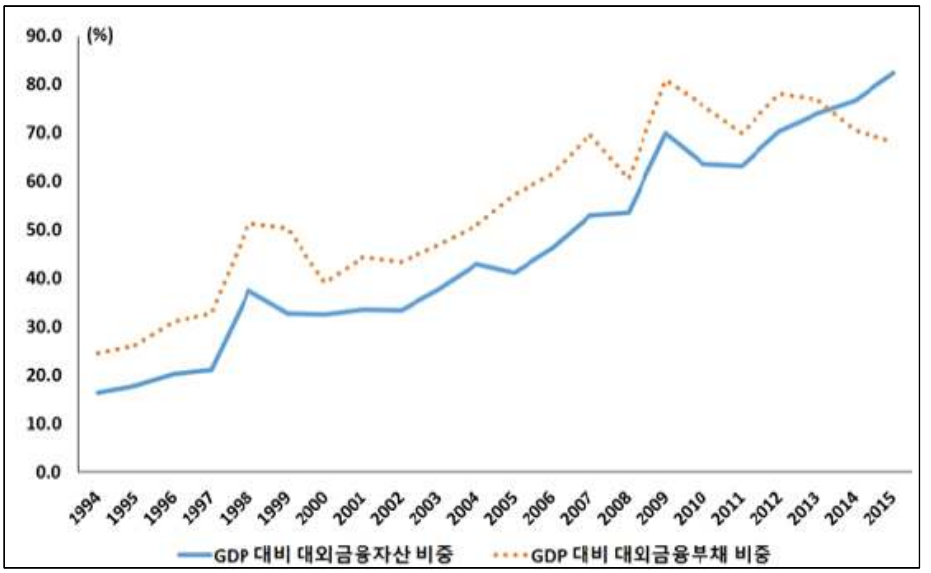
2. 금융실효환율의 구축과 총 외환노출

금융실효환율지수의 구축에 앞서 우리나라의 대외자산 및 부채의 추이를 간단히 살펴보자. [그림 1-1]은 한국의 GDP 대비 자산과 부채의 규모를 보여주고 있다. 1994년 20% 내외에 불과하던 GDP

2 본 연구에서처럼 자본 유출입의 결정요인으로 금융실효환율을 포함시킨 국내 연구는 아직까지 없는 상태이며, 자본 유출입과 무역실효환율 간 관계를 고찰한 연구로는 김정한 외(2001)가 있음.

대비 대외자산과 대외부채의 비중은 지속적으로 증가하여 2015년에는 70-80%에 달하고 있다. 1997년 외환위기 및 2008년 글로벌 금융위기 직후에는 GDP 대비 자산 및 부채 비중이 일시적으로 증가하였는데, 이는 대외자산 및 부채규모의 증가에 기인하기 보다는 GDP가 일시적으로 감소한데에 따른 것이다. 2014년부터는 대외자산의 규모가 대외부채를 상회하면서 순 대외자산이 양(+)의 포지션을 기록하고 있다.

[그림 1-1] 한국의 GDP 대비 대외자산 및 대외부채



이렇게 대외자산 및 대외부채가 국민경제에서 차지하는 비중이 커지면서 국제수지에서 환율의 변동이 무역수지 뿐 아니라 금융계정의 순 자본이득(net capital gain)에도 많은 영향을 미치게 된다. 이들 사이의 관계를 관찰하기 위해서는 기존의 무역 비중에 근거한(trade-weighted) 실효환율지수가 아닌 대외자산 및 부채의 부문별 구성 및 통화 비중에 근거한(currency-weighted) 금융실효환율지수를 구축하는 중요하다. 이와 관련하여 Lane and Shambaugh(2010a)

은 1990-2004년까지 117개국의 대외 금융부문의 통화비중을 감안한 연도별 금융환율지수를 구축하였다. 본 연구에서는 보다 정밀한 분석을 위해 이들의 환율지수 도출 방법론에 의거하여 한국을 대상으로 월별지수를 구축하였다. Lane and Shambaugh(2010a)의 경우 여러 국가를 대상으로 하므로 국가별 데이터 가용성에 따라 IMF의 CPIS 및 COFER, UNCTAD, BIS 등 다양한 데이터베이스를 이용하였는데, 특히 대외자산 중 준비자산 부문은 IMF COFER에서도 국가별 통화 비중을 공개하지 않고 있기 때문에 이를 추정하기 위한 다양한 기법들이 사용되었다.[3] 본 연구에서는 한국의 금융실효환율지수 구축을 위해 한국에 대해 보다 자세하고 정확한 정보를 제공하는 한국은행의 국제투자대조표와 연차보고서 등을 활용하였다.

금융실효환율지수는 우선 자산(대외투자) 환율지수(Asset index)와 부채(외국인투자) 환율지수(Liability index)를 따로 구하고, 대외투자와 대외부채를 통합한 총투자환율지수(Aggregate index), 대외투자에서 외국인투자를 뺀 순투자환율지수(Net index)를 구할 수 있으며, 계산 과정에 필요한 데이터는 크게 두 가지로 구분된다. 첫 번째는 한국의 대외자산 및 대외부채를 구성하는 세부 항목별 비중에 대한 자료, 두 번째로 이들의 통화별 구성비에 대한 자료이다. 이러한 데이터를 기반으로 자산환율지수(Asset index)는 국제투자대조표 상 대외투자 항목의 직접투자, 증권투자, 기타투자, 준비자산으로 구성하였는데, 이 중 증권투자는 다시 지분증권과 부채성증권으로 구분된다. 부채환율지수(Liability index) 또한 국제투자대조표에서 외국인투자 항목의 직접투자, 증권투자, 기타투자로 구성하였고, 자산 부문과 마찬가지로 증권투자를 지분증권과 부채성증권으로 구분하였다. 그러나 이와 같이 한국의 월별 환율지수를 구할 때 데이터에 제약이 몇 가지 존재한다. 한국은행의 데이터는 부문별 투자액 및 통화 비중의 월별 자료가 수록되어 있지 않고, 준비자산의 경우 통화별 비중 자체가 비공개로 되어 있으며, 통화별 자료에 '기타 통

3 국가별 통화별 외환보유액 추정 관련 내용은 Lane and Shambaugh(2010a) 참조.

화’ 항목이 포함되어 있어 이를 적절히 처리해야 한다. 이와 관련한 각 항목별 환율지수 도출 과정에 대한 내용은 다음과 같다.

한국은행의 국제투자대조표는 2002년부터 부문별 투자액은 분기별로, 각 부문의 통화 구성 자료는 연도별로 제공하고 있다. 이를 활용하여 월별 금융환율지수를 작성하기 위해, 먼저 부문별 투자액의 분기 간 변화율이 각 통화별 비중에도 동일하게 적용된다고 가정하고 분기별 통화별 비중을 도출하였다. 그 다음으로는 한 분기 내에서 투자액 및 통화별 비중이 매월 1/3씩 변화한다고 가정하고 한 분기 내의 변화분을 해당 분기의 3개월에 균등하게 배분하여, 2003년 1월부터 2015년 1월까지의 월별 환율지수를 생성하였다.[4]

통화별 국제투자대조표는 각 부문별 투자액을 미달러화, 엔화, 원화, 유로화, 홍콩달러화, 파운드화, 위안화, 기타로 구분하고 있다. 환율지수를 계산할 때 이들 통화들의 대 원화 환율 변동률에 대해 가중평균을 하게 되는데, 기타통화를 계산에서 제외할 경우 이 부분의 환율 변동률이 0이라고 가정하는 것과 같아지므로 문제가 발생한다. 따라서 기타통화 부분은 원화를 제외한 나머지 6개 통화가 각 부문별로 차지하는 비중에 따라 가중치를 두어 6개 통화로 배분하였다. 그 결과 본 연구에서 사용한 통화별 비중은 한국은행의 통화별 투자대조표에 가중치에 따른 기타통화의 비중의 일부를 더한 값이 된다.

항목별로 살펴보면, 직접투자의 경우 대외투자는 해당 투자국의

4 국제투자포지션의 분기별 차액은 순자본유입과 가치변화효과의 합이라고 할 수 있다. 먼저 순자본유입분은 월별자료가 존재하므로 이를 활용하여 순자본유입으로 인한 월별 국제투자포지션의 변화를 구할 수 있다. 다음 국제투자포지션의 분기별 차액에서 순자본유입으로 인한 국제투자포지션의 변화의 3개월 합을 차감한 것은 가치변화효과로 인한 국제투자포지션의 분기별 차액이라고 할 수 있다. 이를 월별로 같은 액수로 배분하여 가치변화효과로 인한 월별 국제투자포지션의 변화를 구할 수 있다. 다음 순자본유입으로 인한 월별 국제투자포지션의 변화와 가치변화효과로 인한 월별 국제투자포지션의 변화를 합하여 월별 총국제투자포지션의 변화를 구성할 수 있다. 이러한 방법으로 구축된 금융실효환율은 본 연구에서 사용된 금융실효환율과 거의 비슷하게 나타났다. 순투자, 대외투자, 외국인투자에 대해 계산해본 결과 상관계수는 각각 0.90, 0.95, 0.90으로 나타났다.

통화로 이루어지므로 원화의 비중이 0이 되고, 외국인투자는 우리나라가 투자를 받는 것이므로 모두 원화로 표시되어 있다. 직접투자 중 지분투자와 채무상품을 모두 포함한 스톡(stock) 데이터를 사용하였다.

증권투자 중 지분증권의 경우 중앙은행, 일반정부, 예금취급기관, 기타부문을 모두 포함하였으며 부채성증권의 경우 장·단기를 구분하지 않았다. 직접투자와 마찬가지로, 외국인투자 부문의 지분증권 투자는 원화의 비중이 크다. Lane and Shambaugh(2010a)에서 언급한 바와 같이, 미국과 같은 일부 국가들은 주로 자국통화로 채권을 발행하기도 하지만 대부분의 국가들은 외화표시 채권을 발행하며, 이 때 통화구성은 자국이 판단하는 상대적 중요도에 따라 미달러화, 유로화, 엔화 등 주요 통화들로 이루어져 있다. 한국의 경우, 외국인투자 부문에서 지분증권의 대부분이 원화와 미달러화로 이루어져 있다. 특히 원화의 비중은 2002년 76.3%에서 2014년 94.1%로 증가한 반면, 미달러화는 2002년 23.6%에서 2014년 5.9% 수준으로 감소하였다.

기타투자에는 무역신용, 차입, 현금 및 예금, 기타 자산 및 부채 기타지분이 포함되어 있다.

마지막으로 준비자산의 경우, 다른 부문과 달리 총액만 제공되고 있으며 통화별 구성은 공개되어 있지 않다. 다만, 한국은행의 연차보고서에서 2007년 이후 우리나라 외환보유액의 연도별 미달러화 비중만을 보고하고 있다. 여기에 나타나 있는 데이터와 IMF의 Currency composition of Official Foreign Exchange Reserves (COFER)의 세계 준비자산의 미달러화 비중에 큰 차이가 없으므로, 한국 준비자산의 다른 통화 비중도 세계 자료와 유사하다고 가정하고, 미달러화로 표시되지 않은 준비자산에 대해 IMF COFER가 보고하고 있는 세계 외환보유액의 통화별 구성비를 사용하였다. 또한 대외자산 및 부채의 다른 항목들을 구성하고 있는 통화들과의 일관성을 위해, IMF COFER가 세계 외환보유액의 주요 구성 통화로 제

시하고 있는 7개 통화(미달러화, 유로화, 파운드화, 엔화, 캐나다 달러화, 호주 달러화, 스위스 프랑) 중 한국의 대외자산 및 부채에 대해 명시적으로 통화비중이 보고되어 있는 6개 통화[5]에 속하지 않아 한국의 외환보유액에도 상대적으로 적은 비중을 차지할 것으로 예상되는 3개 통화(캐나다 달러화, 호주 달러화, 스위스 프랑)를 제외한 나머지 4개 통화(미달러화, 엔화, 유로화, 파운드화)로 이루어져 있는 것으로 가정하였다. 한국 외환보유액의 미달러화 비중조차 공개되어 있지 않은 2007년 이전에도 IMF 데이터에서 세계 외환보유액이 4개 통화로만 이루어져있을 경우의 각 통화 비중을 구하여 사용했다. 이와 같은 가정들은 세계 외환보유액의 대부분이 이들 4개 통화로 이루어져있다는 것을 감안할 때 무리가 없을 것으로 판단하였다.

지수 구축 과정에서 사용한 연도별 우리나라의 대외자산 및 부채의 통화별 구성은 <표 1-1>, <표 1-2>와 같다.

<표 1-1> 대외투자 통화별 비중(%)

	대외투자							
연도	계	미달러화	엔화	원화	유로화	홍콩달러화	파운드화	위안화
2002	100	85.2	3.3	1.1	7.6	1.4	1.4	0.0
2003	100	85.9	3.1	1.1	7.1	1.3	1.4	0.0
2004	100	82.6	4.3	1.4	8.8	1.2	1.7	0.0
2005	100	82.6	4.1	1.2	9.3	1.2	1.7	0.0
2006	100	77.7	4.5	1.4	10.5	3.7	2.2	0.0
2007	100	60.0	4.0	2.0	9.0	14.6	1.7	8.6
2008	100	69.9	3.8	0.9	7.2	7.0	0.9	10.3
2009	100	63.4	3.4	1.3	9.0	9.2	2.3	11.5
2010	100	60.7	4.4	1.4	9.7	7.9	3.6	12.3
2011	100	63.6	4.2	1.5	9.0	6.1	2.7	13.0
2012	100	63.3	3.9	1.6	10.0	5.7	3.0	12.5
2013	100	60.3	3.8	1.9	10.4	4.8	3.2	15.8
2014	100	61.1	3.4	1.7	10.4	4.0	2.8	16.5

5 미달러화, 유로화, 엔화, 홍콩달러화, 영국파운드화, 위안화

<표 1-2> 외국인투자 통화별 비중(%)

	외국인투자							
연도	계	미달러화	엔화	원화	유로화	홍콩달러화	파운드화	위안화
2002	100	45.3	5.5	48.2	0.7	0.0	0.3	0.0
2003	100	39.2	5.4	54.0	1.1	0.0	0.3	0.0
2004	100	35.1	4.5	58.8	1.3	0.0	0.3	0.0
2005	100	30.3	3.2	64.5	1.7	0.0	0.3	0.0
2006	100	34.5	3.3	59.4	2.4	0.0	0.4	0.0
2007	100	35.1	3.2	58.6	2.7	0.0	0.4	0.0
2008	100	47.3	5.7	42.7	3.8	0.0	0.5	0.0
2009	100	37.6	4.0	54.3	3.3	0.3	0.4	0.0
2010	100	32.1	4.0	60.7	2.5	0.3	0.4	0.0
2011	100	34.0	4.4	58.6	2.1	0.3	0.4	0.3
2012	100	30.5	3.6	63.3	1.9	0.3	0.3	0.2
2013	100	28.9	2.2	65.9	2.2	0.3	0.3	0.3
2014	100	30.1	1.5	64.8	2.6	0.3	0.3	0.5

다음으로, 앞에서 구한 통화별 비중에 각 통화별 원화 대비 환율 변동률을 곱하고, 이를 부문별 비중에 따라 가중평균 하는 방법으로 환율지수를 계산하였다. Lane and Shambaugh(2010a)는 환율지수 산식을 다음과 같이 제시하고 있다.

$$I_{t+1}^{A} = I_{t}^{A}(1+\sum \omega_{j,t}^{A} \times \%\triangle E_{j,t+1});$$
$$I_{t+1}^{L} = I_{t}^{L}(1+\sum \omega_{j,t}^{L} \times \%\triangle E_{j,t+1}) \quad (1.1)$$

$$\omega_{jt}^{A} = \sum_{k=1}^{k=N} \lambda_{t}^{Ak} \omega_{j,t}^{Ak};$$
$$\omega_{jt}^{L} = \sum_{k=1}^{k=N} \lambda_{t}^{Lk} \omega_{j,t}^{Lk} \quad (1.2)$$

식 (1.1)에서 I_{t+1}^{A}과 I_{t+1}^{L}은 각각 자산(A)과 부채(L) 부문의 환율지수를 나타내는데, 대외투자 및 외국인투자 항목의 통화별 환율

변동률의 가중평균으로 산정된다. 즉, 자산(A) 및 부채(L) 부문 전체의 t시점의 통화 j의 비중($\sum\omega_{j,t}^{A}$, $\sum\omega_{j,t}^{L}$)을 구해 이를 원화 대 통화 j의 환율 변동률과 곱하게 된다. 이 때 사용되는 통화(j)별 비중은 식 (1.2)와 같이 자산(A) 및 부채(L)를 부문별(직접투자, 지분증권 투자, 부채성증권 투자, 기타투자, 준비자산)로 나눈 각 항목별 통화 비중의 가중평균이 된다. 즉, 대외투자(A)와 외국인투자(L) 항목들(k)의 부문별 비중(λ_t^{Ak}, λ_t^{Lk})과, 개별 항목을 구성하고 있는 통화(j)별 비중($\omega_{j,t}^{Ak}$, $\omega_{j,t}^{Lk}$)으로 계산한다. 이와 같은 방법으로 본 연구에서는 순 대외자산을 고려한 환율지수(Net index)와, 자산 및 부채를 통합하여 계산한 총 대외자산 환율지수(Aggregate index)도 함께 계산하였다.

$$I_{t+1}^{N} = I_t^{N}(1+\%\triangle I_{t+1}^{A} s_t^{A} - \%\triangle I_{t+1}^{L} s_t^{L}) \tag{1.3}$$

$$I_{t+1}^{AGG} = I_t^{AGG}(1+\sum w_{j,t}^{AGG} \times \%\triangle E_{j,t+1}) \tag{1.4}$$

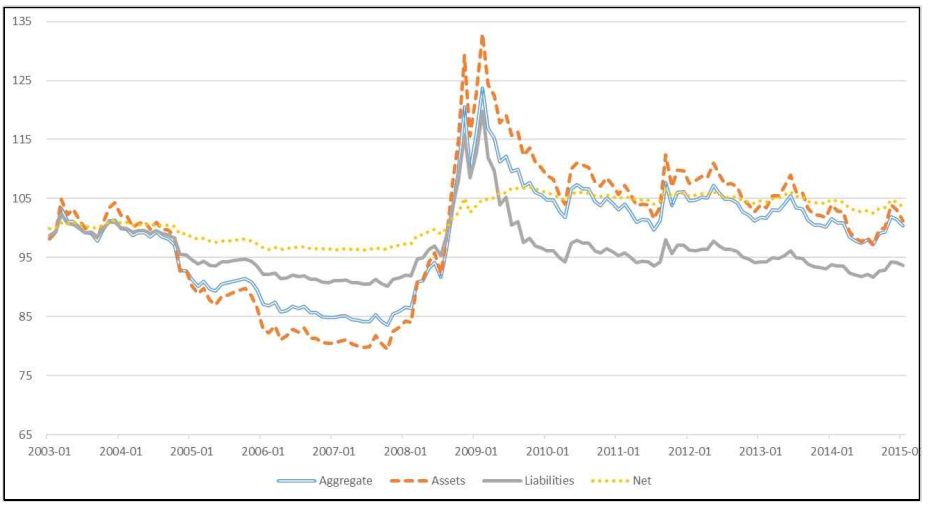
$$\omega_{j,t}^{AGG} = \sum_{k=1}^{k=N} \lambda_t^{(A+L)k} \omega_{j,t}^{(A+L)k} \tag{1.5}$$

식 (1.3)의 순투자 환율지수 I_{t+1}^{N}의 변동률은 앞에서 구한 대외투자 부문 환율지수의 변동률 $\%\triangle I_{t+1}^{A}$에서 외국인투자 부문 환율지수 변동률 $\%\triangle I_{t+1}^{L}$을 뺀 부분이다. 이때 각 환율지수에 대외투자와 외국인투자가 총투자에서 차지하는 비중(s_t^{A}, s_t^{L})으로 가중치를 부여한다. 식(1.4)는 총투자 환율지수 I_{t+1}^{AGG}를 나타내는데, 대외투자와 외국인투자를 통틀어 이를 구성하고 있는 통화들의 대 원화 환율 변동률을 통화별 구성비에 따라 가중합한다. 이 때 총투자를 구성하고 있는 통화 j의 비중 w_{jt}^{AGG}은 식 (1.5)와 같이 투자 항목(k)

별 비중($\lambda_t^{(A+L)k}$)에 따라 산출한다.

[그림 1-2]는 이와 같은 과정을 통해 도출한 한국의 금융실효환율의 변동률을 지수화한 것이다. 전체적인 틀에서 보면 외화의 비중이 큰 대외투자 부문 환율지수의 변동폭이 가장 큰 반면, 원화 비중이 큰 외국인투자 부문의 환율지수는 상대적으로 안정적인 것으로 나타났다. 또한 대외투자에서 외국인투자를 차감하고 난 부분의 환율변동만을 고려한 순투자환율지수의 경우 수평선에서 거의 벗어나지 않는 모습을 보였는데, 이는 Lane and Shambaugh(2010a)가 언급하고 있듯 대외투자포지션에 미치는 환율변동의 영향이 외화 자산부문과 부채부문에서 상쇄되는 것과도 관계가 있다. 총투자 중 대외투자와 외국인투자의 비중을 가중평균하여 도출한 총투자환율지수는 중간 정도의 변동성을 보였다. 또한 급격한 자본유출이 발생한 2008년 금융위기 직후에는 금융환율지수가 모든 부문에서 큰 폭으로 상승한 이후 점차 안정화되는 모습을 보이고 있으나, 여전히 위기 이전보다는 높은 수준에 머물러있다.

[그림 1-2] 금융실효환율지수



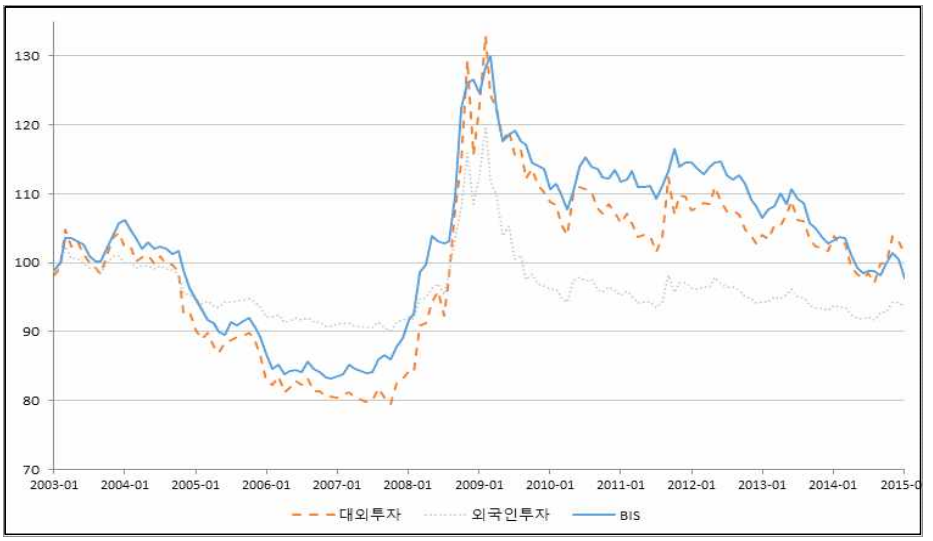
위와 같이 구축한 금융실효환율지수를 기존의 무역가중치에 근거한 무역실효환율지수와 비교한 것이 <표 1-3> 및 [그림 1-3]에 나타나 있다. 금융실효환율지수 중 대외투자와 외국인투자 환율지수 간 상관계수는 0.951로 강한 상관관계를 보인 반면, 이들과 무역 비중으로 계산한 BIS Broad 환율지수와의 상관계수는 각각 0.502와 0.470으로 상대적으로 낮은 것을 확인할 수 있다. 특히 원화 비중이 높은 외국인투자 환율지수의 경우 BIS 지수와 상대적으로 더 약한 상관관계가 관찰되었다. 마찬가지로 외국인투자 환율지수의 변동성은 BIS 지수에 비해 오히려 크게 나타났다. 총투자 및 순투자 환율지수와 BIS 지수 간 상관관계는 각각 0.490과 0.429로, 다른 금융환율지수들과 유사하게 나타났다. 총투자환율지수의 변동성은 순투자환율지수의 변동성보다 크게 관찰되었다. [그림 1-3]에서 각 환율지수들은 전반적으로 유사한 움직임을 보이나 외국인투자 부문의 환율지수가 상대적으로 안정적이며, 특히 최근 시점에 가까워질수록 지수들 간 차이가 두드러진다.

<표 1-3> 금융실효환율과 BIS Broad 환율지수 비교 (월별)

상관관계 (correlation)	대외투자, 외국인투자	대외투자, BIS	외국인투자, BIS	총투자, BIS	순투자, BIS
	0.951	0.502	0.470	0.490	0.429
변동성 (volatility)	대외투자	외국인투자	BIS	총투자	순투자
	0.031	0.018	0.021	0.024	0.006

주: 환율지수별 변동성은 각 지수의 월별 변화율의 표준편차임.

[그림 1-3] 금융실효환율과 BIS Broad 환율지수 (월별)



다음으로 대외투자 및 외국인투자의 구성을 외화와 자국통화로만 구분하여 외화 대비 자국 통화의 가치 변동이 대외자산에 얼마나 민감하게 영향을 미치는지를 파악하는데에 유용한 개념으로 '총외환노출(aggregate foreign currency exposure)'이 있다. 식 (1.6)에서, 총외환노출(FX_t^{AGG})은 총투자 중 대외자산 부문(s_t^A)의 외화 표시 비중(w_t^A)에서 대외부채 부문(s_t^L)의 외화 표시 비중(w_t^A)을 뺀 값으로 나타난다.

$$FX_t^{AGG} = w_t^A s_t^A - w_t^L s_t^L \tag{1.6}$$

$$NFX_t = FX_t^{AGG} \times IFI_t \tag{1.7}$$

Lane and Shambaugh(2010a)에 따르면, 총외환노출이 양(positive)인 경우 외국 대비 자국통화 가치 하락의 영향이 대외자산 가치가 상승하는 방향으로 작용한다는 것을 의미하며, 이것이 증가하는 경우 그러한 효과가 더 크다는 것을 의미한다. 선진국들은 양

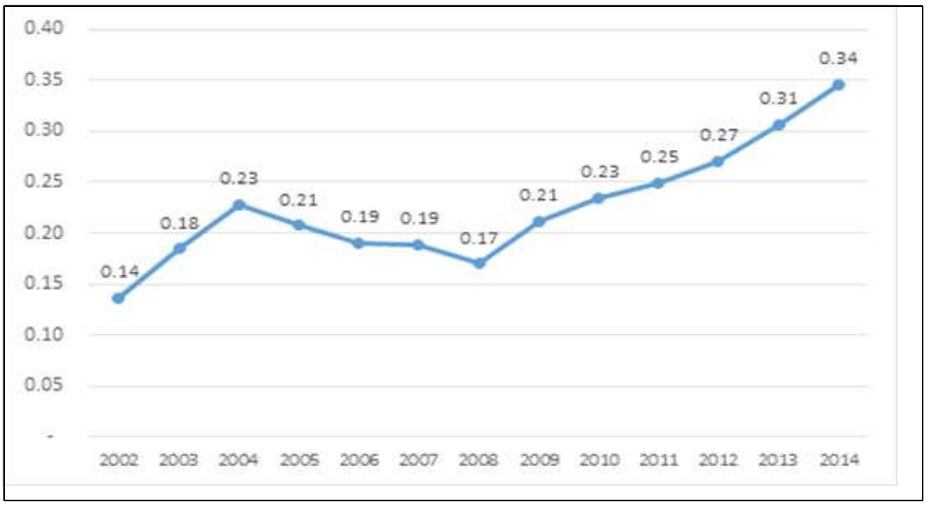
의 포지션을 유지하는 경우가 많다. 이러한 환율변동 효과의 크기를 알기 위해 해당 국가의 총투자 규모를 도입하면 식 (1.7)과 같이 나타난다. 즉, GDP 대비 총투자(대외자산+대외부채, IFI_t) 비율 중 총 외환노출(FX_t^{AGG}) 정도를 자국통화 가치 변동의 순 효과(NFX_t)로 상정한다. 자국통화 가치 변동의 순효과는 국제투자포지션, 즉 대외자산과 대외부채가 환위험에 노출되어 있는 수준을 GDP 대비 비율로 나타낸 것이다.

[그림 1-4]는 본 연구에서 도입한 가정들을 통해 도출한 대외투자 및 외국인투자의 연도별 통화별 비중을 사용한 한국의 총외환노출을 나타내고 있다. 분석 대상 기간인 2002년부터 2014년까지 대외투자의 외화비중과 외화표시 외국인투자 비중의 차인 총외환노출이 양의 포지션을 유지하고 있다. 이는 원화가 해외 통화에 대해 약세를 보이는 경우 국제투자포지션에 미치는 영향은 양(+)이라는 것을 의미한다. 2004년부터 2008년까지는 감소하고 있으나, 전체 기간을 보면 상승하는 추세를 볼 수 있는데, 2003년 초 0.14에 불과했으나 2015년 초 0.34에 달하고 있다. 이는 환율 변화에 노출된 한국의 대외자산과 부채가 더욱 많아진 것으로 해석할 수 있다.

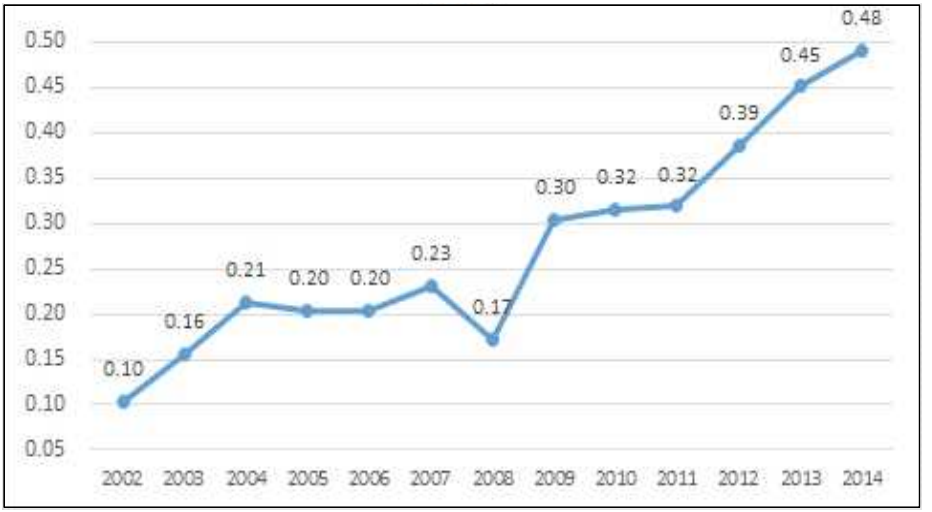
[그림 1-5]는 식 (1.7)에서 설명한 한국의 자국통화 가치변동의 순효과(NFX_t)로, GDP 대비 총투자 중 외환노출 정도에 따라 영향을 받게 되는 부분을 나타낸다. 한국의 외환노출 순 효과는 2008년 급감한 것을 제외하고는 2002년 10%에서 2014년 48% 수준까지 지속적으로 증가해온 것으로 나타났다. 예를 들어 2014년 한국의 총외환노출이 34%, GDP 대비 총투자(IFI_t)가 140%일 때 이를 통해 계산한 순 외환노출 효과(NFX_t)는 48%가 되며, 이는 원화가 1% 절하할 때 GDP의 0.48%만큼 대외자산의 가치가 상승한다는 것을 의미한다. 이는 원화가 절하할 때 무역수지가 개선되는 효과 뿐 아니라 순 대외자산의 가치가 상승하는 긍정적인 부의 효과가 나타난다는 것이다. 또한 이러한 추론을 할 때 일반적인 무역실효환율이 아

닌 금융실효환율을 사용해야 한다는 점에 유의해야 한다. 즉 순 외환노출 효과가 48%인 경우 무역실효환율이 아닌 금융실효환율이 1% 절하할 때 GDP의 48%만큼 대외자산의 가치가 상승한다는 것이다.

[그림 1-4] 한국의 총외환노출



[그림 1-5] 원화가치 변동의 순 효과 (NFX_t)



이와 같은 대외자산의 가치변동은 Valuation 효과로 설명할 수 있다. 세계적으로 대외자산 및 부채 규모가 증가하고 자본의 이동이 활발해지면서 순 대외자산의 증감이 경상수지만으로 설명될 수 없고 환율이나 자산 가격이 변하면서 기존에 보유하고 있던 대외자산과 부채의 가치가 변동하는 부분이 존재하여, 이를 식 (1.8)과 같이 가치변화 효과(valuation 효과)라고 칭한다. 예를 들어, 경상수지(CUR_t)가 적자일 때 양(+)의 가치변화 효과(VAL_t)가 이를 상쇄할 경우 순 대외자산(NFA_t)이 증가할 수도 있게 된다. 총 가치변화효과 중에서도 환율 변동에 의한 효과($VALXR_{t+1}$)를 따로 구분할 수 있는데, 식 (1.9)와 같이 GDP 대비 총투자 중 식(3)에서 구한 순투자 환율지수 변동률($\%\Delta I_{t+1}^N$)의 영향을 받는 부분으로 나타난다.

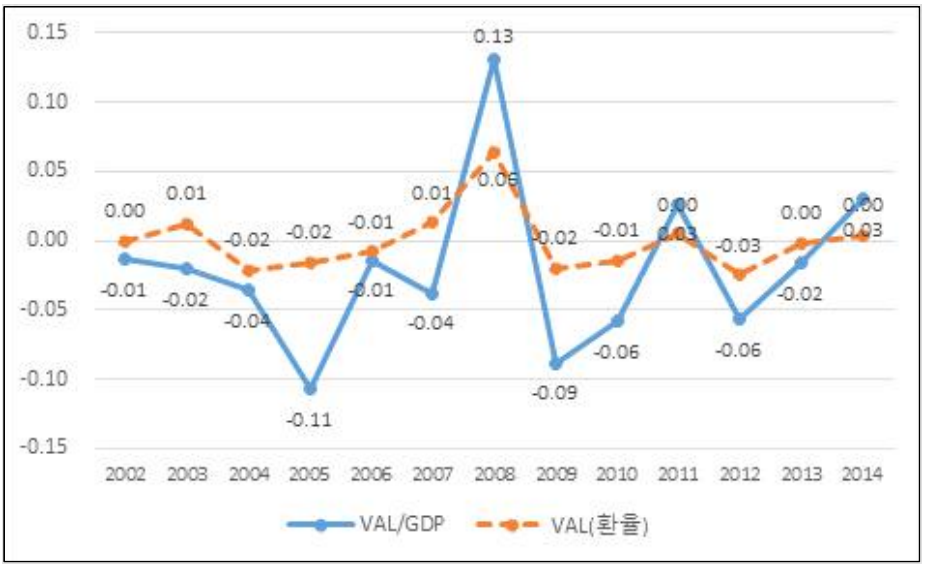
$$NFA_t - NFA_{t-1} = CUR_t + VAL_t \tag{1.8}$$

$$VALXR_{t+1} = \%\Delta I_{t+1}^N \times IFI_t \tag{1.9}$$

[그림 1-6]은 한국의 GDP 대비 총 valuation 규모(VAL_t)와 통화가치 변동에 의한 가치변화 효과 부분($VALXR_t$)을 보여준다. 분석 기간의 대부분에서 한국의 가치변화효과는 일정하지 않지만 주로 음(-)의 방향으로 나타나며, 글로벌 금융위기가 있었던 2008년에 GDP 13% 수준으로 가장 컸다. 환율변동과 관련한 가치변화효과의 경우 대부분 연도들에 있어서 절대값이 GDP 대비 1% 이상으로 나타났고, 평균 GDP 2% 정도로 관심을 가질만한 수준으로 판단된다. 특히 2008년에는 GDP 대비 6%로 상당히 높은 수준을 보였다. 글로벌 금융위기 시 원화가 급격히 절하하면서 상대적으로 대외자산의 가치가 더 많이 증가하여 이러한 양의 가치변화효과가 나타난 것으로 판단할 수 있다. 또한 경제적으로 어려워진 이 시기에 환율변동으로 인한 자산가치가 상대적으로 증가했으므로 경제에 도움이 되

었다고도 해석할 수 있다.

[그림 1-6] 한국 대외자산의 Valuation 효과



3. 실증분석

본 절에서는 제2절에서 구축한 금융실효환율지수를 이용하여 환율이 자본유출입에 미치는 영향을 분석하고자 한다. 앞서 논의하였듯 자본유출입에 영향을 미치는 요인은 대외요인(pull factors)과 대내요인(push factors)으로 구분할 수 있는데, 기존 연구를 보면 대상국가 및 분석대상 시기에 따라 대외요인 또는 대내요인의 유의성이 다르게 나타나고 있다. 본 연구에서는 환율을 대내요인의 하나로 고려하여 환율이 자본유출입에 미치는 영향을 함께 분석하고자 한다.

3.1. 데이터 및 변수 설명

종속변수는 금융계정(FA), 직접투자(DI), 증권투자(PL), 기타투자(OI), 증권투자 중 지분성증권투자(EQ), 증권투자 중 부채성증권투자(DB)로 구성되어 있으며, 모두 GDP의 선형추세 대비 비율[6]로 계산되었다.

설명변수는 대외변수(push factors) 3개와 대내변수(pull factors) 4개 등 총 7개로 구성하였으며, 각 변수에 대한 자세한 설명은 <표 1-4>에 정리되어 있다. 우선 대외변수로는 세계산업생산(WRIP), 세계실질금리(WRIR), 미국 CBOE의 변동성지수(VIX) 3개를 포함하였다. 세계 산업생산증가율은 미국, 유로존, 일본, 중국 각각의 산업생산지수에 4개국 중 해당 국가의 GDP 비중을 가중치로 적용하여 도출한 산업생산지수에 대한 증가율로 계산하였다. 이들 4개 국가(또는 지역)를 전 세계를 대용하는 변수로 사용한 이유는 두 가지이다. 첫째, 이들 4개 국가(또는 지역)는 전 세계 GDP의 67%를 차지하고 있다. 둘째, 우리나라 대외자산 및 대외부채를 구성하는 주요 외국통화는 이들 4개 국가(또는 지역) 통화로 주로 이루어져있다. 세계실질금리는 4개 국가(또는 지역)의 5년물 국채금리에서 물가상승률을 차감한 값에 대해 4개국 중 해당국가의 GDP 비중을 가중치로 적용하여 계산한 금리를 사용하였다.

대내변수는 GDP의 선형추세 대비 비중으로 계산한 경상수지(CUR), 5년 국채 금리에서 물가상승률을 차감한 값으로 계산한 실질금리(RIR), 전월대배 산업생산(IP), 각 항목별 금융실효환율지수로 구성하였다.

금융실효환율지수는 금융계정(FEERF), 직접투자(FEERD), 증권투자(FEERP), 기타투자(FEERO), 증권투자 중 지분성 증권투자(FEEREQ), 증권투자 중 부채성 증권투자(FEERDB) 각각에 대한

6 선형추세수준을 추정하기 위해 산업생산의 대용변수로 명목 GDP(달러표시)를 사용하였고, 해당 데이터가 분기별로만 제공되는 관계로 선형추세를 추정한 후, 각 종속변수의 월별 데이터와 매치하여 해당시점의 비중을 계산하였다.

실효환율을 지수화한 값으로 구성하였으며, 2003년 1월부터 2014년 12월까지의 월별 데이터를 사용하였다.

<표 1-4> 변수 정보

종속변수		출처
FA	금융계정 (GDP 선형추세 대비 비중)	한국은행
DI	직접투자 (GDP 선형추세 대비 비중)	한국은행
PI	증권투자 (GDP 선형추세 대비 비중)	한국은행
OI	기타투자(GDP 선형추세 대비 비중)	한국은행
EQ	증권투자 중 지분성증권투자 (GDP 선형추세 대비 비중)	한국은행
DB	증권투자 중 부채성증권투자 (GDP 선형추세 대비 비중)	한국은행
설명변수		
대외변수(Push Factors)		**출처**
WRIP	주요 4개국의 산업생산 (4개국 GDP비중으로 가중치 부여)	OECD STAT (산업생산지수), Worldbank (GDP비중)
WRIR	주요 4개국의 실질금리 (4개국 GDP비중으로 가중치 부여)	Bloomberg (각국 5년 국채금리, 물가상승률), Worldbank (GDP비중)
VIX	변동성지수	Bloomberg
대내변수(Pull Factors)		**출처**
CUR	경상수지(GDP 선형추세 대비 비중)	한국은행
RIR	실질금리(5년 국채금리-CPI변화율)	한국은행
IP	산업생산(전월 대비)	통계청
FEERF	금융실효환율지수(금융계정)	저자 계산
FEERD	금융실효환율지수(직접투자)	저자 계산
FEERP	금융실효환율지수(증권투자)	저자 계산
FEERO	금융실효환율지수(기타투자)	저자 계산
FEEREQ	금융실효환율지수(증권투자 내 지분성증권)	저자 계산
FEERDB	금융실효환율지수(증권투자 내 부채성증권)	저자 계산

추정에 앞서 시계열의 안정성(stationarity)을 검정하기 위해 각 변수들에 대해 단위근 검정(Unit root test)을 시행하였는데, 통상 표본수가 많지 않은 경우 검정력(power)이 낮아지는 것을 보완하기 위해 보다 효율성이 높은(efficient) 단위근 검정인 DF-GLS 검정[7]을 추가로 실시하였다. 검정결과 종속변수인 자본유출입 변수들은 모두 단위근이 존재하지 않는 것으로 나타났으며, 설명변수 중에서는 세계실질금리와 국내실질금리 모두 ADF나 PP에서 단위근 존재 가능성이 나타났으나 DF-GLS 검정에서는 단위근 존재가 기각되었다. 실질금리의 경우 단위근 검정결과가 아주 명확하게 나타나지는 않았지만 기존 연구에서도 종종 단위근이 없다고 가정하고 진행하고 있으므로 본 연구에서도 단위근이 없는 것으로 가정하였다. 국내산업생산의 경우 모든 검정에서 단위근이 존재하는 것으로 나타났다. 환율지수들의 경우 ADF, PP, DF-GLS 모두 단위근의 존재를 기각할 수 없었다. 따라서 실제 추정에서는 세계 및 국내산업생산, 그리고 모든 환율지수에 대해 로그 차분한 변수를 사용하였다.

3.2. 분석 모형 및 결과

실증분석 시 동시성 문제(simultaneity)[8]를 해결하기 위해 GMM을 이용하여 추정하였으며, 분석 모형은 식 (1.10)과 같다.

$$CF_t = \alpha + \beta_1 X_t + \beta_2 Y_t + \epsilon_t \qquad (1.10)$$

종속변수 CF_t는 자본유출입, X_t는 대외변수, Y_t는 대내변수를 의미한다. GMM 추정에 있어 도구변수로는 t~t-4기의 대외변수[9]와

7 보다 자세한 사항은 Elliot, Rothenberg and Stock (1996) 참조.
8 자본유출입과 환율 등의 변수가 상호 영향을 미치기 때문에 일반적인 회귀분석을 사용하면 추정방법에 일치성 문제가 발생할 수 있다.
9 대외변수는 대내변수에는 영향을 미치지만 대내변수는 대외변수에 영향을 주지

t-1~t-4기의 대내변수를 사용하였다. 이는 분석데이터가 월별 데이터이므로 도구변수의 시차를 적어도 3개월 이상으로 확장하는 것이 필요하다고 판단하였기 때문이다. 그리고 Newey-West의 automatic variable bandwidth selection 방식으로 추정한 이분산-자기상관 일치 표준오차를 Barlett kernel에 근거한 GMM 방식으로 추정하였다.

추정결과에 대한 설명에 앞서 각 설명변수에 대해 예상되는 부호를 간략히 살펴보기로 한다. 우선 본고의 관심변수인 환율변수의 경우 로그차분한 값, 즉 환율변화율을 설명변수로 사용하였다. 따라서 환율변화율이 자본유출입에 어떤 영향을 미치는가에 따라 부호가 결정될 것이다. 이론적으로는 음(-)과 양(+)의 부호가 모두 가능하다.

음(-)의 경우 환율변화율이 증가하면 자본이 유출된다는 것을 의미하는데, 예를 들어 환율절하율이 증가한 상황에서 투자자들이 향후 절하가 더욱 확대될 것으로 예상하는 경우, 해외통화 대비 원화에 대한 기대수익률이 상대적으로 낮아지므로 자본유출이 발생한다. 반대로 양(+)이 나타나는 것은 환율절하율이 증가한 상황에서 환율이 이미 높은 수준에 도달하여 향후 환율이 절상되거나 덜 절하될 것으로 예상한다면 자본유입이 발생할 수 있기 때문이다.

대외변수들의 경우, 세계산업생산 증가율로 대변되는 세계성장률의 경우 음(-)의 영향이 나타날 가능성이 크다. 세계경제 성장률이 증가하는 경우 국내에 투자하는 것보다 세계 경제에 투자하는 것의 기대 수익률이 더 클 것이므로 자본유출이 발생할 수 있다. 하지만 세계경제가 호전됨에 따라 세계경제의 투자 여력이 증가하여 국내로의 자본유입이 일어나 양(+)의 부호가 나타날 가능성도 배제할 수 없다.

세계실질금리의 경우도 음(-)의 영향이 나타날 가능성이 크다. 세계실질금리의 상승은 상대적으로 국내에 비해 세계 경제에 대한

못한다는 점을 감안하여 대외변수의 경우 같은 시기의 변수를 도구변수로 포함하였다.

투자 수익률이 증가하는 것을 의미하고, 따라서 자본유출로 이어질 수 있다. 하지만 외국인 투자자들 뿐 아니라 내국인 투자자들도 투자를 회수하는 경우 순 자본유입이 발생할 수 있고, 이에 따라 양(+)의 부호가 나타날 수도 있다.

다음으로 대내변수들 중 경상수지의 경우 무역수지가 대부분을 차지하며, 일반적으로 자본의 이동은 수출입거래의 반대 방향으로 나타나므로 음(-)의 영향이 자연스럽게 예상된다. 그러나 경상수지에 수반되는 자본의 움직임 외에도 경상수지의 움직임 자체가 기초경제여건을 반영하는 하나의 지표로 인식되는 경우, 경상수지 흑자가 자본유입으로 이어져 양(+)의 부호가 나타날 가능성도 있다.

국내실질금리의 경우는 양(+)의 부호가 나타날 가능성이 크다. 국내실질금리의 증가로 국내 투자에 대한 수익률이 상대적으로 증가하므로 자본 유입이 나타날 수 있는 것이다. 하지만 금리의 상승이 국내 경기의 호황을 반영하는 경우 해외투자 증가로 이어질 수 있고, 또한 금리상승은 채권 가격의 하락을 의미하므로 추가적인 금리 상승이 예상되는 경우 채권시장에서 자본 유출이 나타날 수 있다. 결국 이러한 경우 음(-)의 부호가 나타나게 된다.

마지막으로 국내산업생산 증가율도 양(+)의 부호로 나타날 가능성이 크다. 국내 경제의 호황으로 국내 투자 수익률이 증가할 수 있고, 이에 따라 자본 유입이 나타날 수 있는 것이다. 하지만 국내 경제의 호황이 해외투자 증가로 이어지면 음(-)의 부호가 나타날 수도 있다. 이와 같은 변수별 예상 부호는 <표 1-5>에 정리되어 있다.

<표 1-5> 설명변수별 예상 부호

	환율	세계 산업생산 증가율	세계 실질금리	VIX 지수	경상 수지	국내 실질금리	국내 산업생산 증가율
예상 부호	(+),(-)	(-)	(-)	(-)	(-)	(+)	(+)

주: 각 변수가 자본 유출입에 미치는 영향에 대한 기본 이론의 예측임. 하지만 본문에 설명하였듯 보다 다양한 이론을 고려하면 반대부호를 예측하는 것도 가능함.

<표 1-6>은 종속변수인 자본유출입 변수를 금융계정 뿐 아니라 여러 하위 항목으로 구분하여 추정한 결과이다. 자본유출입 변수로 금융계정, 직접투자, 증권투자, 증권투자 중 지분성증권(이하 '주식투자'), 증권투자 중 부채성증권(이하 '채권투자'), 기타투자를 각각 사용하였다.

우선 본 연구의 관심변수인 환율변화율을 살펴보면 유의한 변수는 증권투자, 주식투자, 채권투자로 관찰되었다. 부호는 증권투자와 채권투자가 음(-), 주식투자가 양(+)으로 나타났다. 이는 증권투자와 채권투자의 경우 환율변화율이 증가하면 자본이 유출되고, 주식투자의 경우 자본이 유입된다는 것을 의미한다. 따라서 증권투자와 채권투자의 경우 환율변화율이 증가할 때 향후 추가적인 환율 절하가 일어날 것으로 기대하여 자본이 유출된다는 것으로 해석할 수 있다.[10] 주식투자의 경우 부호가 반대로 나타났는데, 이는 환율 절하율이 증가한 상황에서 환율이 이미 높은 수준에 도달해 있으므로 향후 절상 또는 덜 절하할 것으로 예상하여 자본 유입이 일어나는 것으로 보인다.[11]

대외변수 중에서는 세계산업생산증가율(DL_WRIP)의 경우 금융계정과 채권투자가 유의한 음(-)의 부호로 나타났다. 이는 세계경제가 호황일 때 국내에 투자하는 것보다 세계 경제에 투자하는 것의 수익률이 더 높을 것으로 기대되어 자본이 유출된다는 것을 의미하며, 앞에서 예상했던 부호와 일치한다. 다음으로 세계실질금리(WRIR)의 경우 직접투자, 채권투자, 기타투자는 양(+), 금융계정과

10 내국인의 대외투자를 대상으로 분석한 <표 1-7>의 자산항목 분석결과에서도 동일한 부호가 나타났다. 결국 내국인의 해외채권투자에서 환율변화율 증가는 향후 환율의 추가 절하 예상으로 이어져 해외투자가 더 확대되는 결과가 나타난다.

11 이는 <표 1-7>에 정리한 자산항목에 대한 추정, 즉 내국인의 대외투자로 자본유출입을 측정한 경우의 분석결과를 통해 부분적으로 설명이 가능하다. 자산항목 분석결과에서는 주식투자의 유의성은 없지만 부호가 양(+)으로 나타났다. 또한 <표 1-8>은 부채항목, 즉 외국인의 국내투자로 자본유출입을 측정하여 분석한 결과인데, 여기서는 부호가 유의한 음(-)으로 나타났다. 이는 환율지수 중 자산부문 환율지수가 부채부문 환율지수에 비해 변동성이 크기 때문인 것으로 판단된다.

증권투자는 음(-)의 부호가 나타났다. 이러한 경우는 음(-)과 양(+)의 영향에 대한 해석이 모두 가능하다. 즉, 세계실질금리 상승으로 세계경제에 대한 투자수익률이 상대적으로 커지므로 해외투자가 증가하기 때문에 금융계정과 증권투자 부문에서 자본유출이 확대된다. 반면, 직접투자, 채권투자 및 기타투자에서는 해외자본의 투자 증가가 궁극적으로는 국내에 대한 투자로 귀결된다. VIX 지수의 경우 금융계정, 증권투자, 채권투자 모두 유의한 양(+)의 부호를 보이고 있는데, 이는 내국인의 해외투자 행태로 인한 결과로 판단된다. 즉, 시장 변동성이 높은 시기에는 내국인과 외국인 모두 투자자금을 회수하게 된다. 따라서 내국인과 외국인의 투자자금 회수의 상대적인 크기에 따라 부호가 결정될 것이며, 양(+)으로 나타난 것은 내국인의 투자자금 회수가 더 크다는 것을 의미한다.

대내변수들의 경우 경상수지는 금융계정과 기타투자에서 일반적으로 예상할 수 있는 음(-)의 영향이 나타났다. 국내실질금리의 경우 금융계정과 증권투자에서 예상했던 유의한 양(+)의 영향을 보였으나, 채권투자에서는 유의한 음(-)으로 나타났다. 채권투자의 경우 앞에서 지적하였듯 향후 금리가 더 상승할 것으로 보여 채권가격의 하락이 예상되거나, 경기 호황으로 자금 여력이 증가하여 자본의 유출이 발생하는 것을 반영한 결과로 보인다. 국내산업생산의 경우 채권투자에서 유의한 음(-)의 부호를 보이고 있는데, 이는 국내경기 호조에 따른 자금 여력의 증가가 해외투자를 늘리는 결과로 이어진 것으로 보인다.

<표 1-6> 자본유출입 결정요인 분석 (총투자, 금융실효환율)

종속변수	FA 금융계정	DI 직접투자	PI 증권투자	EQ 지분성 증권	DB 부채성 증권	OI 기타투자
설명변수						
대외변수(Push Factors)						
DL_WRIP	-3.985*** (0.000)	-0.528 (0.265)	3.358 (0.286)	-3.758 (0.184)	-5.621*** (0.000)	3.553 (0.147)
WRIR	-0.058*** (0.000)	0.062*** (0.000)	-0.192*** (0.004)	0.024 (0.635)	0.078** (0.012)	0.079* (0.058)
L_VIX	0.066** (0.025)	-0.026 (0.284)	0.248** (0.024)	0.077 (0.348)	0.346*** (0.000)	-0.172** (0.045)
대내변수(Pull Factors)						
CUR	-0.953*** (0.000)	0.045* (0.070)	-0.188 (0.138)	0.163 (0.208)	-0.030 (0.500)	-0.653*** (0.000)
RIR	0.049*** (0.009)	-0.012 (0.290)	0.159** (0.019)	0.016 (0.736)	-0.145*** (0.000)	-0.029 (0.586)
DL_IP	-0.888 (0.194)	0.514 (0.345)	2.634 (0.344)	-1.799 (0.456)	-2.478** (0.036)	3.215 (0.133)
DL_FEERF	0.187 (0.782)					
DL_FEERD		-0.195 (0.506)				
DL_FEERP			-8.007** (0.014)			
DL_FEEREQ				18.444*** (0.000)		
DL_FEERDB					-1.503* (0.098)	
DL_FEERO						-0.558 (0.541)
Diagnostic Check						
R-squared	0.773	0.111	0.129	0.191	0.160	0.246
F-statistic	248.71 (0.000)	11.610 (0.000)	6.724 (0.000)	10.471 (0.000)	31.050 (0.000)	22.484 (0.000)
Q-statistic(4)	2.770 (0.597)	34.921 (0.000)	4.871 (0.301)	3.778 (0.437)	23.003 (0.000)	1.580 (0.812)
Q-statistic(8)	14.198 (0.077)	51.337 (0.000)	16.331 (0.038)	9.142 (0.330)	25.208 (0.001)	2.501 (0.962)
Durbin-Watson	2.016	1.374	1.769	1.751	1.382	2.002
J-statistic	16.245 (0.879)	14.295 (0.939)	26.890 (0.309)	25.147 (0.397)	14.470 (0.935)	16.588 (0.865)

주: 1) 괄호 안 숫자는 p-value를 의미.
2) ***는 1% 수준에서, **는 5% 수준에서, *는 10% 수준에서 통계적으로 유의.

<표 1-7>은 동일한 설명변수를 사용하여 종속별수인 자본유출입을 자산, 즉 내국인투자로만 한정하여 추정한 결과이다. 이와 같이 자산항목만 별도로 추정한 이유는, 내국인투자의 결정요인이 내국인과 외국인 전체를 반영한 것과 어떻게 다른지를 알아보기 위한 것이다. 우선 환율의 유의성을 살펴보면 직접투자, 채권투자 및 기타투자에서 음(-)의 영향이 나타났다. 총투자의 경우와 마찬가지로 채권투자 부문에서는 환율변화율이 상승하면 자본이 유출되는 것으로 나타났다. 그러나 총투자와 달리 해외투자의 경우 직접투자와 기타투자 항목이 유의한 변수로 새롭게 나타났다. 이는 국내투자자들이 직접투자와 기타투자에서도 환율변화율에 민감하게 반응한다는 것을 의미한다.

다음으로 대외변수들의 경우 세계산업생산은 금융계정, 증권투자 및 주식투자 부문에서 유의한 음(-)의 영향을 보여, 세계경제의 호황에 따라 내국인의 해외투자가 증가한다는 것을 보여준다. 세계실질금리의 경우 주식투자는 예상했던 음(-)의 영향이, 직접투자와 채권투자 부문에서는 유의한 양(+)의 영향이 나타났다. 직접투자와 채권투자의 경우 내국인은 세계실질금리가 상승하면 자금을 회수한다는 것을 의미하는데, 이는 세계실질금리 상승에 따른 추가적인 가격하락을 예상하여 투자자금을 회수하는 현상으로 보인다. 변동성 지표인 VIX 지수는 직접투자를 제외한 금융계정, 증권투자, 주식투자, 채권투자, 기타투자 모두에서 양(+)의 부호를 보여, 금융불안 시기에 내국인의 대외투자가 대부분 회수되고 있는 것을 반영하고 있다.

대내변수 중 경상수지는 금융계정과 주식투자에서 유의한 음(-)의 영향을 보였으며, 국내실질금리는 직접투자에서만 음(-)의 유의한 영향이 나타냈다. 국내산업생산은 금융계정에서 음(-)의 부호를 보여 총투자로 추정한 것과 동일한 결과가 관찰되었다.

<표 1-7> 자본유출입 결정요인 분석 (자산, 금융실효환율)

종속변수	FA_A 금융계정	DI_A 직접 투자	PI_A 증권 투자	EQ_A 지분성 증권	DB_A 부채성 증권	OI_A 기타투자
설명변수						
대외변수(Push Factors)						
DL_WRIP	-26.247*** (0.000)	-0.358 (0.267)	-1.929* (0.060)	-2.510*** (0.000)	0.225 (0.795)	-0.039 (0.149)
WRIR	0.022 (0.698)	0.053*** (0.000)	-0.024 (0.347)	-0.059*** (0.005)	0.031** (0.026)	0.000 (0.819)
L_VIX	1.136*** (0.000)	0.013 (0.314)	0.390*** (0.000)	0.109*** (0.000)	0.282*** (0.000)	0.001* (0.056)
대내변수(Pull Factors)						
CUR	-0.278** (0.037)	0.000 (0.997)	-0.036 (0.417)	-0.072* (0.080)	0.031 (0.259)	-0.000 (0.574)
RIR	-0.076 (0.235)	-0.028*** (0.002)	-0.007 (0.761)	0.017 (0.331)	-0.023 (0.160)	-0.000 (0.905)
DL_IP	-12.813*** (0.000)	-0.120 (0.651)	-0.622 (0.451)	0.099 (0.862)	-0.442 (0.288)	-0.008 (0.627)
DL_FEERF_A	0.558 (0.618)					
DL_FEERD_A		-0.445** (0.026)				
DL_FEERP_A			-0.308 (0.445)			
DL_FEEREQ_A				0.306 (0.322)		
DL_FEERDB_A					-0.971** (0.016)	
DL_FEERO_A						-0.020** (0.012)
Diagnostic Check						
R-squared	0.530	0.133	0.347	0.154	0.333	0.053
F-statistic	48.066 (0.000)	10.098 (0.000)	57.395 (0.000)	20.792 (0.000)	30.719 (0.000)	2.275 (0.032)
Q-statistic(4)	8.304 (0.081)	33.065 (0.000)	56.579 (0.000)	98.489 (0.000)	28.621 (0.000)	3.059 (0.548)
Q-statistic(8)	9.331 (0.315)	55.318 (0.000)	58.979 (0.000)	119.92 (0.000)	30.701 (0.000)	8.736 (0.365)
Durbin-Watson	1.606	1.311	1.127	0.927	1.134	2.244
J-statistic	15.288 (0.912)	12.675 (0.971)	13.618 (0.954)	12.069 (0.979)	14.170 (0.942)	20.059 (0.693)

주: 1) 괄호 안 숫자는 p-value를 의미.
2) ***는 1% 수준에서, **는 5% 수준에서, *는 10% 수준에서 통계적으로 유의.

<표 1-8>은 종속변수인 자본유출입을 부채, 즉 외국인투자로만 한정하여 추정한 결과이다. 직접투자의 경우 외국인이 전액 원화로만 투자하기 때문에 해당 부문의 금융실효환율지수를 구할 수 없으므로 분석에서 제외하였다. 관심변수인 환율의 경우 증권투자와 주식투자에서 유의한 음(-)의 영향이 나타났으나 기타투자에서는 양(+)의 영향이 관찰되었다. 이는 환율변화율이 확대될 때 해외통화 대비 원화의 기대 수익률이 낮아져서 외국인투자자들이 증권투자와 주식투자 부문의 자금을 회수한다는 것을 의미한다. 반면, 기타투자의 경우 환율변화율이 증가하면 향후 절하가 예상되어 자본 유입이 촉진된다. 종속변수를 총투자나 대외자산으로 설정한 경우와 달리, 대외부채로 설정했을 때에는 채권투자 부문에서 환율의 영향이 유의하게 나타나지 않았다.

다음으로 대외변수들의 경우 세계산업생산은 금융계정, 증권투자, 채권투자 및 기타투자에서 유의한 양(+)의 영향을 보여, 세계경제의 호황에 따라 외국인의 국내투자가 증가한다는 것을 보여주고 있다. 이는 내국인의 투자행태와 반대의 양상이다. 세계실질금리의 경우 증권투자, 주식투자, 채권투자 모두 유의한 음(-)의 부호를 보여, 세계실질금리가 상승할 때 외국인이 해당 부문에서 투자를 회수한다는 것을 보여주었다. 변동성 지표인 VIX 지수는 주식투자를 제외한 금융계정, 증권투자, 채권투자, 기타투자 모두 음(-)의 부호를 보여, 금융불안 시기에 외국인의 국내투자가 대부분 회수되고 있는 상황을 반영하고 있다.

대내변수 중 경상수지는 채권투자를 제외하고 금융계정, 증권투자, 주식투자 및 기타투자에서 음(-)의 유의한 영향을 보였으며, 국내실질금리는 금융계정, 증권투자, 기타투자에서 양(+)의 유의한 영향을 보여 국내실질금리가 상승하면 외국인의 국내투자가 증가하는 것으로 나타났다. 국내산업생산은 금융계정과 증권투자에서 양(+)의 영향이 나타나, 국내경제가 호황일 때 외국인의 국내투자가 증가하는 결과를 보여준다.

<표 1-8> 자본유출입 결정요인 분석(부채, 금융실효환율)

종속변수	FA_L 금융계정	PI_L 증권투자	EQ_L 지분성증권	DB_L 부채성 증권	OI_L 기타투자
설명변수					
대외변수(Push Factors)					
DL_WRIP	23.789*** (0.000)	5.949*** (0.000)	-0.018 (0.993)	5.485*** (0.000)	0.079** (0.011)
WRIR	-0.101 (0.119)	-0.194*** (0.000)	-0.108*** (0.006)	-0.088*** (0.000)	0.000 (0.162)
L_VIX	-1.099*** (0.000)	-0.155*** (0.006)	-0.023 (0.729)	-0.103** (0.014)	-0.002** (0.012)
대내변수(Pull Factors)					
CUR	-0.620*** (0.000)	-0.168** (0.026)	-0.187** (0.035)	-0.027 (0.616)	-0.005*** (0.000)
RIR	0.156** (0.019)	0.175*** (0.000)	-0.003 (0.937)	0.166*** (0.000)	-0.000 (0.880)
DL_IP	10.694*** (0.000)	3.846** (0.043)	1.666 (0.326)	1.848 (0.168)	0.022 (0.344)
DL_FEERF_L	-1.779 (0.325)				
DL_FEERP_L		-10.327*** (0.000)			
DL_FEEREQ_L			-37.656*** (0.000)		
DL_FEERDB_L				0.948 (0.282)	
DL_FEERO_L					0.019** (0.019)
Diagnostic Check					
R-squared	0.534	0.154	0.115	0.110	0.230
F-statistic	48.051 (0.000)	28.208 (0.000)	6.140 (0.000)	12.877 (0.000)	10.736 (0.000)
Q-statistic(4)	9.886 (0.042)	5.339 (0.254)	19.885 (0.001)	24.688 (0.000)	1.935 (0.748)
Q-statistic(8)	12.010 (0.151)	7.946 (0.439)	34.260 (0.000)	26.718 (0.001)	6.195 (0.625)
Durbin-Watson	1.539	1.853	1.473	1.432	1.821
J-statistic	15.756 (0.896)	12.807 (0.969)	15.184 (0.915)	13.222 (0.962)	17.451 (0.828)

주: 1) 괄호 안 숫자는 p-value를 의미.
2) ***는 1% 수준에서, **는 5% 수준에서, *는 10% 수준에서 통계적으로 유의.

4. 결론 및 시사점

본 연구는 한국 뿐 아니라 세계적으로 대외자산 거래가 급속히 증가하는 현 상황에서 대외자산과 부채의 각 외화 비중을 적절히 반영하는 금융실효환율지수를 구축하고, 환율의 변화가 자본의 유출입에 미치는 영향을 분석하였다.

금융실효환율지수를 구축해 본 결과, 금융실효환율과 전통적인 무역 가중치 기반의 실효환율지수(BIS)의 움직임에는 다소 차이가 있는 것으로 나타났다. 변동성의 경우 외국인투자 환율지수의 변동성이 BIS 지수에 비해 작은 것으로 나타난 반면, 해외투자 환율지수의 변동성은 BIS 지수에 비해 오히려 크게 나타났다. 또한 총투자 환율지수의 변동성은 순투자 환율지수의 변동성보다 상당히 크게 나타났다. 또한 지수 자체에 있어서도 연도별 금융실효환율지수와 BIS 지수 간 움직임이 상이한 경우가 관찰되었다. 이는 본 연구에서 다루고 있는 환율이 자본 유출입에 미치는 영향을 분석할 때, 금융실효환율과 무역실효환율의 영향이 각각 다를 수 있다는 점을 시사한다.

금융실효환율을 이용하여 한국의 대외자산과 부채가 환위험에 노출된 정도를 추정한 결과, 외환노출 정도는 꾸준히 증가하여 2014년 기준 순 외환노출 효과가 48%로 나타났으며, 이는 원화가 1% 절하할 때 GDP의 0.48%만큼 순 대외자산의 가치가 상승한다는 것을 의미한다. 그리고 원화의 절하가 무역수지 개선 뿐 아니라 긍정적인 부의 효과를 불러옴으로써 소비의 변화 등 실물경제에 중요한 영향을 미칠 수 있음을 말해준다.

환율의 변화는 또한 대외자산과 부채의 가치를 변화시키는데, 이러한 효과는 총 대외자산 및 대외부채 규모가 급속히 증가한 현 상황에서 더욱 두드러지게 나타나고 있다. 지난 10년 간 한국의 평균 국제 투자포지션의 가치 변화는 GDP의 2% 정도로 나타났다. 특히

글로벌 금융위기가 발생했던 2008년에는 환율의 절하에 따라 외화표시 비중이 큰 대외자산의 원화 가치가 급격히 증가하여, 국제투자포지션이 GDP 대비 약 6% 만큼 개선되었다.

금융실효환율을 이용하여 환율의 변화가 자본유출입에 미치는 영향을 분석한 결과, 환율 변화율이 증가하는 경우 자본이 유출되는 경향이 큰 것으로 나타났다. 이러한 영향은 증권투자 부문에서 특히 뚜렷하게 나타났으며, 증권투자 중에서도 채권투자의 경우 더욱 두드러졌다.

현 추세가 지속된다며 세계적으로 대외 금융거래가 더욱 증가할 것으로 보인다. 따라서 환율의 변화가 무역을 통해 경제에 영향을 미치는 전통적인 경로 뿐 아니라, 국가 간 금융거래를 통해 영향을 미치는 경로가 더욱 중요해질 것이다. 환율의 변화는 자본의 유출입 뿐 아니라 축적된 대외 자산과 부채의 가격에도 영향을 주므로, 한국의 (대외 거래에서) 축적된 부에도 상당한 영향을 주게 된다. 환율변화로 인한 대외 자산의 가치 변화와 그에 따른 부의 효과가 증가하고, 부의 효과는 소비 등 실물경제에 중요한 역할을 할 수 있으므로, 이러한 효과와 경로를 분석하는 것은 학문적으로 뿐 아니라 정책적으로도 중요한 이슈라고 할 수 있다. 본 연구에서 구축된 금융실효환율은 기존에 사용되었던 무역실효환율에 비해 환율변화로 인한 순 대외자산의 가치 변화에 따른 부의 효과를 보다 정확히 추정하는 데에 유용하게 사용될 것이다. 또한 최근 한국 경제의 중요한 화두라고 할 수 있는 급격한 자본 유출입을 명확히 분석하는 데에도 개념적으로 적절하다고 볼 수 있다.

Chapter II
Long-term Determinants of Valuation Effects

1. Introduction

A country's balance of payment (BOP) records its international transactions with the rest of the world in a specific period. It is composed of the current account, capital and financial account regarding trade in goods and services, and capital transfers from international investment. Meanwhile, data in the international investment position (IIP) indicate the stocks of external assets and liabilities at the end of the reference period. They involve valuation changes due to variations in exchange rates and stock prices, which lead to a discord between the IIP data and the cumulated sum of flows in the financial account. When this valuation change is negligible for any reason, such as in the case in which the total of foreign assets and liabilities is relatively small or the international capital transfers from a previous period are not as substantial as those in the recent period, changes in the net foreign asset (NFA) position of a country should correspond to its current account balance in principle. In this regard, a country with persistent current account deficits retains substantial negative NFA position, whereas a country with prolonged current account surplus accumulates a large stock of positive NFA. However, as countries accumulate huge foreign assets and liabilities under financial globalization, the changes in the values of foreign assets and liabilities

due to asset prices and exchange rate movements (i.e., valuation effects or valuation changes) increase dramatically at the same time. At present, a sizable amount of valuation effects act as an important cross-country wealth transfer mechanism. Lane and Shambaugh (2010a) suggest that international adjustment through exchange rate movements works in two ways by affecting the values of foreign assets and liabilities and those of trade balance. Furthermore, these valuation effects better explain the changes in NFA position relative to the current account because the size of valuation effects as a portion of GDP is increasing and substantial in comparison with that of the current account balance. These details are presented in the following tables and figures.

Table 2-1 shows the average and the standard deviation of the values of the annual valuation effects and current account relative to GDP. Two measures of averages are constructed. For "Average1," the averages of the annual data in each country are calculated first, the absolute values are taken for the average, and then cross-country averages are derived. The result shows the size of the valuation effect and the current account converted to annual values during the periods under consideration. As we consider a period of 10 years or more, it indicates the average size in a long-term period. For "Average2," the absolute values of the annual data from each year of each country are taken first, and then the averages of those values are calculated. The result shows the annual size of the valuation effects and current account in absolute terms. Note that the figures for "Average1" are smaller than those of "Average2" because the absolute value is taken for each year's value in "Average2," whereas it is taken for the whole period's average value in "Average1." The size of the valuation effects for the long-term period is small but substantial. For the whole sample

period of all countries, the annualized size of valuation changes (Average1) is 3.4% of the GDP, which is smaller than that of the current account of 6.7%. For the period of 2001–2011, the annualized size of valuation changes amounts to 5.7% of the GDP. For all countries during the whole sample period, the size of the annual valuation effects (Average 2) is 8.4% of the GDP, which is equal to the annual size of the current account. The size of valuation effects increases over time and in 2001–2011, it amounts to 11.2%, which is even greater than the current account size of 9.2%. The number is larger in emerging and developing countries than in advanced economies.

In addition, we report the cross-country standard deviation of the annual averages for each period in each country under "SD." The standard deviation shows how different the long run values are across countries. The values are reported for the whole sample period of 1971 –2011 and four sub-periods (1971–1980, 1981–1990, 1991–2000, and 2001–2011) and for all 188 countries and 2 country groups (advanced and emerging and developing countries). The long-term valuation effects vary across countries. For the whole sample period, the standard deviation for the valuation effects is 5.7% of the GDP, which is huge. For the most recent period, it is 13.3%, which is even larger than that of the current account (11.3%).

Figures 2-1A and 2-1B graphically show the annualized size of the valuation changes and current account in addition to their directions for some selected countries during the period of 2001–2011. The size of the valuation effects is huge and often comparable to that of the current account, as reported in Table 2-1. In some countries, such as Ireland, France, Canada, Finland, Hong Kong, Argentina, Brazil, and

Israel, the average valuation changes are greater than those of the current account in their absolute values and carry the same signs. By contrast, the current account and valuation effects move in opposite directions in some countries. For example, Sweden and Germany ran current account surpluses of 7.3% and 4.5% of their GDP, respectively. However, valuation losses for these two economies reached 6.0% and 1.7%, respectively, thus causing the net foreign asset position to decline. The US shows a current account deficit of 4.4% of its GDP on average, whereas the valuation gains recorded make up 2.2% of its GDP. These opposite directions of the two indicators of a country's international account induce adjustments in NFA position. In other words, the NFAs of a country do not necessarily decrease by the exact amount of its current account deficit when positive valuation gains occur (e.g., US). Meanwhile, China's current account surplus and valuation loss correspond to 4.8% and 0.6% of the GDP, respectively. This information implies that China's NFA position increases less than its current account surplus because of the valuation loss on its cross-border assets. As shown in the figures, the valuation effects vary across countries in terms of signs and sizes.

Valuation effects tend to explain changes in NFA position more than the current account does in recent times. Figures 2-2A and 2-2B compare the 10-year rolling correlations between the changes in NFA position and two variables, namely, the current account and valuation changes, using annual data for each country group (all, advanced, and emerging and developing countries). The correlations between NFA movements and the current account tend to decline over time, whereas the correlations of the valuation changes and NFA movements increase steadily for all groups of countries. These tendencies reflect the growing importance of valuation effects in NFA

position and the declining weights of the current account worldwide. This development explains an economy's external account variations.

In the context of the increasing magnitude of international financial integration and the sequential growing significance of valuation effects worldwide, understanding how they are determined, along with the current account, is an important issue. However, only a few studies have addressed the issue. The current work analyzes the determinants of valuation effects, especially in the long term. We are particularly interested in long-term effects for various reasons. First, long-term valuation effects should be crucial to a country because they are directly related to long-term wealth. For example, when a country has a huge negative valuation effect for a long-term period, the country loses considerable wealth. Second, no previous study has focused on the determinants of long-term valuation effects despite the importance of the issue.

A strand of literature discusses the increasing role of valuation effects in international financial globalization and external adjustment process and their determinants in the long- and short-term perspectives.

An incremental size of valuation effects is mostly overviewed in long terms. The IMF (2005) points out that economies are prone to exchange rate volatilities with increasing worldwide gross external positions and exposure to the global financial market. It explains valuation effects as a wealth transfer mechanism from countries whose currencies are appreciating to countries with depreciating currencies. Lane and Milesi–Feretti (2006) argue that valuation changes tend to stabilize the external position in advanced economies due to imbalances in currency composition in foreign assets and liabilities.

Research focused on the effects of valuation changes is also introduced here. Nguyen (2011) suggests two different shocks that affect valuation effects over the long period of 1960–2000. A transitory (trend) shock shifts valuation effects to the opposite (the same) direction with the current account and alleviates (amplifies) the impact of the current account on NFA position.

In short-term perspectives, Lane and Milesi–Feretti (2004) suggest that movements in asset prices and exchange rates cause the revaluation of NFAs depending on various factors, such as currency composition and the levels of portfolio equity and foreign direct investment (FDI) holdings, instead of doing so exogenously. Lane and Shambaugh (2010b) point out that during 1994–2004, the aggregate foreign currency exposure played a deterministic role in the valuation changes. They also find that rich and open economies tend to have long foreign currency positions, which generate valuation gains when their currencies depreciate and cause valuation losses when they appreciate. Benetrix et al. (2015) analyze international currency positions and valuation changes in 2002–2012 and the global financial crisis. They find that an unanticipated currency depreciation leads industrial (emerging) economies to face valuation gains (losses) because advanced countries are easily able to issue debts in domestic currencies. Benetrix (2009) conducts an event study of countries with large valuation episodes between 1994 and 2004 using the data of Lane and Milesi–Feretti (2001b, 2007a). They find that developing countries tend to experience negative valuation changes due to large real exchange rate depreciations and that advanced countries' valuation shocks are affected by the gross stocks of foreign assets and liabilities rather than net positions.

A simple empirical model of valuation changes and its determinants is introduced in Section 2. The main results from the long-term analysis of the cross-sectional data are discussed in Section 3. The panel estimation of data for four time periods are presented in Section 4. The annual data analysis is described in Section 5. Conclusions are drawn in Section 6.

2. Empirical Method and Data

To gain an overview of valuation changes and their determinants in the long-term horizon, this study covers data of 188 countries from 1971–2011. Most data series are obtained from Lane and Milesi–Feretti (2001b and 2007a, "EWN," External Wealth of Nations), who establish a broad set of detailed information on foreign assets and foreign liabilities of a large number of economies around the world. Lane and Milesi–Feretti (2001b) initially constructed a dataset of 67 countries for the period of 1970–1998. Their work is extended to 145 countries for the period of 1970–2004 in Lane and Milesi–Feretti (2007a) and then further to 188 countries for 1970–2011.

Following Lane and Shambaugh (2010a) and using Lane and Milesi–Feretti's EWN dataset described above, the valuation effect is calculated as follows:

$$NFA_t - NFA_{t-1} = CUR_t + VAL_t \qquad (2.1)$$

where NFA_t is the NFA position, CUR_t is the current account, VAL_t is the valuation effect, and the subscript t stands for year (or

time). Equation (2.1) implies that variations in NFA position do not exactly coincide with the current account balance and that valuation changes explain a gap between them. This valuation term represents the net capital gains on the current holdings of nation's foreign assets and liabilities. In the regression analysis, valuation effects are considered as a ratio to GDP.

A set of explanatory variables discussed in the literature are considered as determinants of valuation changes. The variables under consideration are exchange rate variations (EXCH), real GDP growth (GDPG), net foreign assets (NFA), total foreign assets and liabilities (GROSS), current account (CUR), ratio of direct investment and portfolio equity assets to debt assets and foreign reserves (RISKA), ratio of direct investment and portfolio equity liabilities to debt liabilities (RISKL), ratio of foreign exchange reserves to other asset components (FX), total foreign assets (FA), total foreign liabilities (FL), and real GDP per capita (GDPPC). A few additional variables are also considered in the extended analysis: real effective exchange rates (REER), financial effective exchange rates (FEXA, FEXL, and FEXN)[12], financial development (FD), age dependency ratio (DEP), real interest rates (R), and trade openness (OPEN). In addition, the dependent variable VAL is divided by factors inducing such changes, namely, currency movements (VALEX) and asset price movements (VALP).

12 FEXA, FEXL, and FEXN refer to financially weighted exchange rate indices in foreign assets, foreign liabilities, and net foreign assets, respectively.

2.1. Expected results

The expected relationships of explanatory variables and valuation effects are presented through some hypotheses. First, the size of foreign assets is related to valuation gains, whereas foreign liabilities are related to valuation losses. Foreign assets (FA), foreign liabilities (FL), net foreign asset (NFA) position, and total foreign assets and liabilities (GROSS) are considered. Capital gains from financial assets tend to be positive in the long run. Therefore, the size of foreign assets is likely to be positively associated with the valuation effects of the home country, whereas the size of foreign liabilities is closely related to valuation losses. In addition, NFA position has a propensity for positive valuation changes because other things being equal, capital gains obtained from total domestic foreign assets may be larger than foreign countries' gains from the total foreign liabilities of the home country when the net position is positive.

A large magnitude of external gross position (sum of foreign assets and liabilities) is subject to more capital gains and losses in total. Many recent studies have suggested that the size of valuation changes increases as international financial markets become strongly integrated. For example, Devereux and Sutherland (2011) suggest that considerable gross positions are related to substantial valuation effects that are as large as changes in current account. Gross position by itself may not be sufficient to decide the direction of valuation effects, but we expect a positive relation because countries holding a large amount of gross position can be characterized as "active participants" in the international financial market and they tend to obtain capital gains from their foreign portfolio. In a similar vein, Mendoza et al. (2009) mention that countries with deep financial markets borrow heavily from abroad

and invest in high-return foreign risky assets.

Foreign assets, foreign liabilities, NFA position, and total foreign assets and liabilities are normalized by dividing them by the GDP. In addition, these four variables are combinations of one another, and thus, only two variables at maximum are included in each regression.

Second, when a financially developed country has a large stock of foreign assets, more valuation gains occur. In line with the first hypothesis, the financial development of a country may play a role in the relationships with valuation changes, and the effects would be asymmetric depending on the relative importance in the size of the country's foreign assets and liabilities. Financial development (FD) is represented by private credit to the GDP and is included in extended models interacting with FA and FL. The assumption is that a country obtains valuation gains from its large amount of foreign assets when it is financially developed. By contrast, valuation loss occurs from foreign liabilities when a country has a great amount of foreign liabilities.

Third, the composition of foreign assets and liabilities determine the direction of valuation effects. Lane and Milesi–Feretti (2004) highlight that factors such as currency composition and the levels of portfolio equity and FDI holdings in the international balance sheet affect the NFA dynamics due to exchange rate movements. A ratio of direct investment and portfolio equity assets (liabilities) relative to debt assets (liabilities) (RISKA, RISKL) is considered. FDI and portfolio equities can be considered "risky assets," which offer relatively high returns in the long run. Therefore, large valuation gains may be obtained when foreign assets are weighted toward these categories. Conversely, a ratio of direct investment and portfolio equity liabilities

to debt liabilities is expected to have negative effects on valuation changes. Some studies have suggested the importance of the portfolio composition of the international balance sheet in valuation effects. For example, according to Cline (2005), the US maintains a greater proportion of direct investment and portfolio equity in their assets than in their liabilities, and this condition becomes a structural advantage for the nation by generating considerable favorable valuation gains. Habib (2010) shows that different weights of various asset classes between gross foreign assets and liabilities may generate asymmetric average returns.

Fourth, changes in exchange rates (EXCH) would lead to valuation gains and losses depending on the structure of currency exposure in the international investment position. Domestic currency depreciation can lead to capital gains when a large portion of foreign assets is denominated in foreign currencies and a considerable portion of foreign liabilities is denominated in domestic currencies. However, when a country has huge debt liabilities in foreign currencies, it may experience capital losses when the domestic currency depreciates. In this regard, Bleaney and Tian (2014) explain that countries of positive foreign currency exposure, especially rich countries, show reductions in NFA positions when their exchange rates fall.

With other things being equal, when NFA position is large, exchange rate depreciation will likely lead to valuation gains. In other words, when a foreign currency part is greater in foreign assets than in foreign liabilities, the possibility of an exchange rate depreciation encouraging positive valuation changes increases because valuation gains from foreign assets are likely to be greater than negative valuation effects from foreign liabilities. To investigate these relationships, we

include the interacting variables of exchange rate movements with foreign assets, foreign liabilities, and NFA position for additional analysis.

Fifth, exchange rate effects are observed when financial effective exchange rate indices are used. As financial exchange rates are constructed using currency composition and the relative importance of each category of foreign assets and foreign liabilities, a highly accurate analysis would be possible when exchange rates are proxied by the indices rather than by trade-weighted effective exchange rates.

Sixth, the determinants of valuation effects vary according to the major sources of such valuation changes. On the one hand, when valuation effects are divided into two parts according to their major sources, exchange rates are expected to play an important role in valuation changes due to currency movements. On the other hand, the compositions of foreign assets and liabilities are relatively important in valuation changes due to asset price variations. A detailed discussion of hypotheses 5 and 6 is presented in Section 2.2 of the extended analysis.

Seventh, the economic growth and income level of a country may exert positive and negative impacts on valuation changes. A country with a high GDP growth rate may have a great asset return, which implies a high return on the foreign liabilities of the country. Therefore, GDP growth rate could be negatively associated with valuation effects. In addition, a country with a high growth rate may induce more capital inflows, which correspond to large foreign liabilities and negative valuation effects. In parallel, a country investing heavily in other countries may lead to large foreign assets and positive valuation effects. In relation to these arguments, some recent studies have

discussed the capital flows of fast growing emerging economies by focusing on their dual role as capital exporters and importers. For example, Tahuchi et al. (2015) find an increase in capital flows to emerging and developing countries supported by their good economic fundamentals, high growth prospects, and perceived undervalued domestic currencies against the US dollar since 2000. Adopting a view that is different from the neoclassical growth perspective, Gourinchas and Jeanne (2013) discover that fast growing economies are featured as net exporters of capital and call this condition the "allocation puzzle."

We also consider real GDP per capita (GDPPC) to check whether the development stage of each country affects the valuation effects. In general, as shown in the case of the US, advanced economies are able to issue domestic currency-denominated debt and invest in high-return foreign assets. This pattern generates positive valuation effects when the domestic currency depreciates. If such is the case, the GDP per capita would have a positive influence. However, a high income country attracts more foreign investments, leading to an increase in foreign liabilities and negative valuation changes as in GDPG. Lane and Miles–Feretti (2002) document a negative relationship between output per capita and NFA position. They find that the negative relation is strong in developing countries as their net external liabilities become large with their increasing incomes. This description is related to the notion that a country is recognized as an attractive investment market as it becomes rich and able to build solid financial conditions.

Lastly, current account is likely to be negatively associated with valuation changes. Current account deficits lead to a decrease in NFA position, which can be offset by positive valuation effects in the

international adjustment process. Song and Feng (2014) discuss the role of current account and valuation changes in the context of external account adjustments. Pan (2013) and Lane and Milesi–Feretti (2001b) suggest that net debtor countries should run trade surplus to maintain external balance in the long run. As net debtor countries are prone to valuation losses, a negative relationship with trade balance is expected. By contrast, Chinn and Prasad (2003) suggest that a country with a large current account deficit tends to have good access to international capital markets, be favored by foreign investors, and generates high returns to capital, which lead to negative valuation effects. This finding may suggest a positive relationship between current account and valuation effects. However, some deficit countries (e.g., the US) tend to invest on high return assets, such as FDI and equities, and obtain positive valuation changes from this kind of investment, thus presenting a negative relation with the current account.

We also consider the interaction effects of current account and per capita GDP. As discussed above, the effects of current account and per capita GDP on valuation effects are complicated, and the effect of one variable may depend on the effects of the other. For example, the impacts of current account on valuation changes may depend on the economic development level of each country. Similarly, the effects of per capita GDP on valuation effects may depend on whether countries are in current account surplus or deficits.

2.2. Extended analysis

Apart from the variables described above, some additional variables are considered for the extended models, especially for long-term periods. First, we assume that financial exchange rates

provide a relationship between exchange rates and valuation changes more clearly than bilateral US dollar rates or trade-weighted effective exchange rates do. To compare the effects of the different measures of exchange rates on valuation changes, we apply real effective exchange rates (REER) and financial effective exchange rates (FEX) to the models[13]. Although the baseline models contain bilateral exchange rates with the US dollar for 188 countries for the period of 1971–2011, the coverage of the extended analysis is restricted to 167 countries for REER and 117 for FEX during 1992–2005 due to data availability. REER data are from Zsolt (2012), which covers the largest number of countries among several institutions that publish data on effective exchange rates. The data are based on CPI, and an increase in the index indicates the appreciation of the home currency against the basket of currencies of trading partners. Thus, REER is expected to have a negative sign for the valuation effects because domestic currency appreciation leads to a decline in the value of foreign assets relative to foreign liabilities. Financial effective exchange rates are expected to affect valuation changes to a greater extent than other exchange rate measures do, and the effect could be particularly clear when the dependent variable is currency-induced valuation changes (VALEX). Lane and Shambaugh (2010a) construct a dataset of effective financial exchange rates and derive each valuation change due to currency movements and asset prices. According to the authors, the formulas of financial exchange rates and valuation changes due to currency movements are as follows:

13 The correlations among exchange rate measures are 0.989 for FEXA and FEXL, 0.455 for FEXA and REER, 0.447 for FEXL and REER, and −0.523 for FEXN and REER.

$$I^A_{i,t+1} = I^A_{i,t}(1+\sum \omega^A_{i,j,t} \times \%\triangle E_{i,j,t+1});$$
$$I^L_{i,t+1} = I^L_{i,t}(1+\sum \omega^L_{i,j,t} \times \%\triangle E_{i,j,t+1}) \quad (2.2)$$

$$\omega^A_{i,j,t} = \sum_{k=1}^{k=N} \lambda^{Ak}_{i,t} \omega^{Ak}_{i,j,t};$$
$$\omega^L_{i,j,t} = \sum_{k=1}^{k=N} \lambda^{Lk}_{i,t} \omega^{Lk}_{i,j,t} \quad (2.3)$$

$$I^N_{i,t+1} = I^N_{i,t}(1+\%\triangle I^A_{i,t+1} s^A_{i,t} - \%\triangle I^L_{i,t+1} s^L_{i,t}) \quad (2.4)$$

$$w^N_{ijt} = w^A_{ijt} s^A - w^L_{ijt} s^L \quad (2.5)$$

In Equation (2.2), $I^A_{i,t}$ and $I^L_{i,t}$ are financial effective exchange rate indices for country *i* at time *t* and are weighted by asset and liability components, respectively. In Equation (2.3), w^A_{ijt} and w^L_{ijt} refer to the weights for currency *j* in the assets and liabilities exchange rate indices and are computed from the relative share of each category ($\gamma^{Ak}_{i,t}$, $\gamma^{Lk}_{i,t}$) and the currencies comprising them (w^{Ak}_{ijt}, w^{Lk}_{ijt}). Equations (2.4) and (2.5) show the net financial index and net weights of currency *j* of country *i*'s foreign assets and liabilities presented by the difference between them. Then, in Equation (2.6), the valuation effects due to exchange rate variations (VALEX) are calculated using changes in the net financial exchange rate index, where GROSS is the total foreign asset and liability position. In Equation (2.7), the valuation effects caused by asset price changes (VALP) are regarded as the residual after subtracting VALEX from the total valuation effects VAL.

$$VALEX_{i,t+1} = \%\triangle I^{N}_{i,t+1} \times GROSS_{i,t} \quad (2.6)$$

$$VALP_{i,t} = VAL_{i,t} - VALEX_{i,t} \quad (2.7)$$

The expectation is that the effects of exchange rates may be greater in VALEX than in VALP or VAL, whereas the effects of the composition of assets and liabilities are best reflected in VALP.

Second, age dependency ratio (DEP) is considered as a combination of old and youth dependency ratio to the working age population. DEP is expected to be related to valuation gains and losses depending on is relative importance in the country's saving and investment decisions. Lane and Milesi–Feretti (2001a) suggest that an aging society may react to the rising ratio of old-age population to workers by accumulating foreign assets to supplement domestic incomes and that domestic investment in these countries declines. By contrast, a high youth dependency ratio may reduce savings because of the need to invest in education, housing, and so on. In the model of valuation changes, the overall effects of dependency ratio can be ambiguous.

Third, real interest rates (R) and their interactions with RISKA and RISKL are also included in the models. The expectation is that a high interest rate is related to valuation losses and that the effects are strong when a large portion of foreign liabilities are risky components because the interest rates of a country are closely related to capital flows and investment returns. When interest rate increases, domestic asset market returns also increase and lead to valuation loss. In addition, the interactions of real interest rates with compositions of foreign assets and liabilities (RISKA, RISKL) indicate that the effects would be strong when foreign liabilities are inclined toward risky

components.

Fourth, trade openness (OPEN) as a ratio of total trade to GDP is expected to have positive effects on valuation changes following Lane and Shambaugh (2010b); hence, open economies tend to have long foreign currency positions and obtain valuation gains when domestic currency depreciates because they provide a hedge against domestic output fluctuations, especially in difficult times.

Along with the additional variables described above, baseline regressions are replicated without extreme values in VAL (dependent variable), NFA, and CUR. Some selected results are reported.

2.3. Model structures

Three baseline models are constructed by the different variables included. NFA position, foreign asset, foreign liabilities, and total foreign assets and liabilities are linearly interdependent. Thus, only two of those variables are included in each model. Model A includes foreign assets and liabilities, Model B includes total foreign assets and liabilities, and Model C contains NFAs as a ratio of GDP and total foreign assets and liabilities. Then, because current account has a high correlation with NFAs, it is not included in Model C. Models A and B include current account but exclude NFAs. Aside from these variables, each model includes % exchange rate changes, GDP growth rate, a ratio of direct investment and equity assets relative to debt assets, a ratio of direct investment and equity liabilities relative to debt liabilities, a ratio of foreign exchange reserves relative to other components of foreign assets, and real GDP per capita.

First, cross-sectional regressions for 188 countries in the period of 1971–2011 are conducted to infer the long-term determinants of valuation effects. Variables are constructed as annual averages for the period of 1971–2011 while considering different data availabilities for each country. Results are reported for three baseline models according to explanatory variables. For the extended analysis, additional variables are included, and some outliers are removed to check robustness.

Second, panel regressions with average values of non-overlapping four sub-periods (1971–1980, 1981–1990, 1991–2000, and 2001–2011) are carried out to examine frequent movements in the determinants of valuation effects. Doing so could provide refined results and ease some possible concerns about serial correlations relative to annual analysis. In a few countries, valuation effects have the same signs for the four sub-periods. For example, Singapore, the US, and the UK show persistent valuation gains, whereas Sweden and Korea show persistent valuation losses. However, for most countries, the signs of valuation effects tend to be reversed over time.

Finally, panel regressions with annual data for 1971–2011 are attempted to check if the effects are maintained overall in short-term changes in the variables.

Separate regressions for a group of emerging and developing countries and a group of advanced countries are also performed. The results of the baseline models are reported for each cross section, panel, and annual analysis, and some selected results for extended analysis are provided, with an emphasis on long-term estimations. Table 2-2 reports the correlations of all variables considered in the baseline models.

3. Long term (cross section) analysis

This study focuses on the long-term effects of variables given that valuation changes and resulting effects have prevailed for a long time on each country's wealth. Overall, the estimated coefficients on foreign assets (FA), foreign liabilities (FL), total foreign assets and liabilities (GROSS), and NFA position (NFA) show the expected signs "+", "–", "+", and "+", respectively. When foreign assets (liabilities) are large, the valuation effects are also large (small) because financial assets have positive returns in the long run. Similarly, NFA is positively associated with valuation changes. In addition, GROSS has positive effects on valuation changes. Therefore, international financial integration or international capital mobility is related to positive valuation effects. Countries with high international capital mobility may obtain capital gains by managing their foreign portfolio.

The extended analysis includes domestic credit to the private sector as the indicator of countries' financial development (FD) to investigate whether it plays a role in the relationship between the stock of foreign assets and liabilities and between valuation gains and losses. A large FA position is expected to be related to valuation gains in the long run. Thus, financially developed countries may be involved more than others. By contrast, when financially developed countries hold a great amount of FL, foreign investors can gain high returns and lead to valuation losses.

The coefficients of real GDP growth are not significantly estimated in most models. Changes in exchange rate (EXCH) also show insignificant or positive and negative signs on valuation effects. In addition, such changes can lead to valuation gains and losses depending

on the structure of currency exposure in international investment position. As explained in previous sections, domestic currency depreciation can lead to capital gains when a large portion of foreign assets are denominated in foreign currencies and a large portion of foreign liabilities are denominated in domestic currency. However, countries that issue huge debt liabilities in foreign currencies may experience capital losses with currency depreciation. Bilateral exchange rates with the US dollar are used as proxies for exchange rates in baseline models. Thus, they may not be enough to capture the effects of movements in currencies comprising countries' foreign assets and liabilities. This issue is addressed in part in the extended analysis using trade and financially weighted effective exchange rates with a short period (1992–2005) due to data availability. Similarly, the theory is ambiguous regarding the effects of real GDP growth as discussed in previous sections. GDP growth rate is still insignificantly estimated in most cases, but it is negative for advanced countries in Model C. Thus, foreign investors' gains are larger than those of their domestic counterparts.

The estimated coefficients on the ratio of FDI and equity asset to debt and foreign exchange reserves are positive and significant in all models. Risky assets such as FDI and equities relatively offer higher returns than debts and foreign exchange reserves in the long run. Hence, large valuation gains likely occur when the ratio is high. Conversely, the coefficients on the ratio of FDI and equity liability to debt liability have negative effects because the ratio is related to a high investment return for foreign investors.

Current account is significantly estimated as negative. This finding is also consistent with the discussions of past studies. For

example, as discussed in Section 2, certain studies suggest that a negative relation may be investigated in the process of external balance adjustments.

GDP per capita shows negative effects on valuation changes in all models. This negative relation can be explained as countries with high per capita income attracting foreign capital inflows, leading to large foreign liabilities and negative valuation effects.

In addition to the results of the full sample, Table 2-3 reports the results for a group of advanced countries and a group of emerging and developing countries. The positive relation of foreign assets and negative relation of foreign liabilities are slightly stronger in advanced countries than in emerging and developing countries. This result is evident in the size of the estimated coefficients, although both relations are significantly estimated in all cases. For NFA, the relation is insignificantly estimated. By contrast, the coefficients of GROSS are significantly estimated in all models but are larger in emerging and developing countries than in advanced countries.

The compositions of foreign assets and liabilities have different effects for advanced and emerging and developing countries. In all models, the positive relation of the ratio of FDI and equity assets to debt and foreign reserve assets with valuation effects is significantly estimated only in emerging and developing countries. On the contrary, the negative relation of the ratio of FDI and equity liabilities to debt liabilities with valuation effects is significantly estimated only for advanced countries. Such results imply that the composition of foreign assets play an important role in emerging and developing countries, whereas foreign liabilities are important for the valuation effects of advanced countries.

The negative relation of GDP per capita is more evident in emerging and developing countries than in their advanced counterparts. In Model A, this pattern is investigated only in emerging and developing countries. In Model C, the (absolute value of) estimated coefficient is larger in emerging and developing countries than in advanced ones.

Moreover, the negative effect of current account is significantly estimated in Models A and B for emerging and developing countries and in Model A for advanced countries.

Tables 2-4–2-6 report the results of Models A, B, and C with four interaction terms: exchange rate movements and foreign assets, exchange rate movements and foreign liabilities, exchange rate movements and NFA, and the current account and GDP per capita. The interaction term of exchange rate changes and foreign assets is positive and significantly estimated in the advanced economies of Model A, indicating that countries experience currency depreciation, which brings valuation gains if such countries have large foreign assets. The interaction term of exchange rate movements and foreign liabilities is negative for advanced countries in all models. In addition, the interaction term of exchange rate and NFA is positive for the advanced economies in Model A and for emerging and developing ones in Model B. The estimated signs of these interaction terms are consistent with the theoretical predictions discussed in previous sections.

The interaction term of the current account and per capita GDP is significantly estimated with a positive sign in many cases in Model B. Therefore, the negative effects of current account on valuation effects become small as per capita GDP increases, or the negative effects of per capita GDP on valuation effects become small as current

account rises. In Model C, the interaction term is negatively estimated for advanced economies. However, the current account is not included as an independent variable in the model.

In the extended analysis, net financial effective exchange rates (FEXN) are included instead of bilateral exchange rates with USD (EXCH). In Table 2-7, the absolute values of the coefficients on FEXN and its interaction terms with FA and FL are greater than those on EXCH. However, the interacting effects of FA and both measures of exchange rates themselves are insignificant. For example, in Model A, FEXN and an interaction variable of FEXN and FL show positive and negative coefficients, respectively. Therefore, a domestic net currency depreciation in external account brings valuation gains as FA value increases. However, the effect decreases when the size of foreign liabilities is large. Similarly, in Model C, a positive effect of net domestic currency depreciation (FEXN) is stimulated with high NFA position.

Along with the different measures of exchange rates and using data from Lane and Shambaugh (2010a), total valuation changes (VAL) are divided into two types according to the different sources of such effects—valuation changes due to exchange rate movements (VALEX) and asset price changes (VALP)[14]—for Models A, B, and C. Tables 2-8–2-10 provide the results. Overall, the signs of the REER and FEXN coefficients show that domestic currency depreciation is related to valuation gains[15]. In all models, the effects of net financial effective

14 The correlations between VAL and VALEX, VAL and VALP, and VALEX and VALP are 0.614, 0.602, and –0.260, respectively. The standard deviations of VAL, VALEX, and VALP are 0.069, 0.056, and 0.056, respectively.

15 An increase in REER indicates the appreciation of the home country against the basket of currencies of trading partners, whereas an increase in financial exchange rates means depreciation of the home currency against the currencies in foreign

exchange rates (FEXN) on currency-induced valuation changes (VALEX) are prominent as expected. By contrast, trade-weighted REER does not show significant relationships with VALEX (Models A and B) or is totally insignificant (Model C).

Regarding different types of valuation effects, Benetrix et al. (2015) investigate the determinants of currency valuation effects (VALEX) in financial crisis period (2008), which is relevant to considerable exchange rate volatilities. This study is different from the current one in terms of the period of interest and variables under consideration. The authors focused on the financial crisis and investigated the relationships among the currency valuation effects of 2008 and other macro-financial variables, such as NFA and the current account capturing pre-crisis external imbalances (2007–2008). On the contrary, the present study emphasizes the importance of the long-term connection between total valuation effects and a set of variables featuring each country's external account and macroeconomy. NFA and current account are considered important explanatory variables in both studies. Benetrix et al. (2015) also find that NFA stocks in 2007 showed a negative impact on the currency valuation effect of 2008 in advanced samples and thus suggest a stabilizing role for VALXR in external adjustments. For example, countries with a negative pre-crisis NFA obtain large currency valuation gains. In the current study, the long-term and current stock of NFA to GDP is positively related to valuation changes because capital gains from financial assets can be positive in the long run. However, as in Benetrix et al. (2015), the initial NFA stock in advanced economies in the panel data and the results of annual regressions have negative coefficients on valuation

assets and liabilities.

effects when NFA is instrumented by its lagged value and the lagged and contemporaneous values of other explanatory variables. The results from the four-period panel and annual analysis are introduced in the following sections.

Benetrix et al. (2015) propose a destabilizing pattern for VALXR in terms of its relationship with the current account that enhances external imbalances. In the present study, current account balances are found to have a negative association with the valuation effects overall. Nevertheless, such balances have positive effects when dependent variables are exchange rate-related valuation changes (VALEX) in the cross-section analysis (Table 2-9); these results are in line with the findings of Benetrix et al. (2015).

Benetrix et al. (2015) also suggest that the stabilizing and destabilizing patterns of currency-induced valuation effects can differ depending on the sample choice and that other macro-financial variables are insignificant. Thus, this type of valuation change can be "orthogonal" to other factors.

Table 2-11 shows that FD, age dependency ratio (DEP), real interest rates (R), and trade openness (OPEN) are also considered as extensions. When countries have a considerable stock of FA and are financially developed at the same time, they earn valuation gains from international investment. However, negative valuation effects can occur when these countries have large FL because returns to foreign investors can be large. DEP displays positive signs on valuation changes in all models. Such effects may differ according to relative impacts on savings and investments of countries. Similarly, Ma and Zhou (2009) find that old-age dependency ratio has positive effects on NFA. In addition, the positive coefficient of DEP suggests a decline in

investment and an increase in asset abroad. R is expected to bring negative valuation changes in FL. Moreover, (+) and (-) signs are present when interacting with RISKA and RISKL, respectively. A large FL position is prone to valuation losses when an increase in domestic interest rates bears high returns to foreign investors. Moreover, a positive effect of RISKA and R can reflect worldwide increases in interest rates and high returns on equity investments. OPEN is positive and significantly investigated in Model C.

Finally, “extreme” values in dependent variables (VAL) and NFA are eliminated to check the robustness of the regression results because the sample contains many countries. Although the overall results do not make much difference from the original sample, selected cases are reported in Table 2-12[16] [17]. After eliminating outliers, the composition effects on valuation changes (RISKA, RISKL) clearly appear in comparison with the results from the full samples. For example, the positive and negative coefficients of RISKA and RISKL in Models A and B, respectively, become significant when NFA outliers are eliminated.

4. Panel analysis

In addition to cross-sectional analysis, panel regressions are performed to capture the relationships of frequent variations in variables with valuation changes relative to long-term data. A panel data set is

16 VAL ranges from −0.109 to 0.418, with a mean value of 0.015. Values less than −0.05 and greater than 0.1 are eliminated.

17 NFA ranges from −4.390 to 6.257, with a mean value of −0.281. Values less than −3 and greater than 3 are eliminated first, and those less than −1.5 and greater than 1.5 are eliminated as a tighter criterion to detect outliers.

composed of four 10-year-averaged time periods: 1971–1980, 1981–1990, 1991–2000, and 2001–2011 (11-year range for the last period due to data availability). The results of each regression fall into Models A, B, and C depending on different determinants under consideration as in cross-section regressions.

Table 2-13 reports the results for the pooled OLS, panel fixed effects, and panel random effects models. According to the test statistics of the models, pooled OLS is not desirable, but the fixed and random effects are applicable (with more weight on fixed effects than on random effects). The Breusch–Pagan Lagrangian multiplier (LM) and Hausman test statistics are reported as appropriate estimation methods. The Breusch–Pagan LM test is aimed at identifying a heteroskedasticity of the regression errors, with the null hypothesis being a constant variance. As reported in Table 2-13, the null hypothesis is rejected, suggesting that the random effects method is a better choice than the pooled OLS when considering the individual characteristics of each panel. In addition, the Hausman test provides guidance on whether to handle the error terms as fixed or random. The null hypotheses of systematic differences in the estimated coefficients of both methods are rejected, as reported in Table 2-13. This result suggests that the fixed effects method is relevant because random effects fail to provide consistent estimators for the sample. The results of the pooled OLS, panel fixed effects, and panel random effects analysis for baseline Models A, B, and C are provided. Further detailed results, including the interacting variables, are presented for the fixed effects regressions.

The results of the three models are similar. In addition, they are not that qualitatively different from the results of the cross-sectional analysis. In all regressions, GROSS, FA, NFA, and RISKA have

significant positive relations with valuation effects. On the contrary, FL, CUR, and GDPPC have significant negative impacts.

Table 2-14 provides the results for the panel fixed models by country group. Many results are similar to those of the cross-country analysis. The cross-sectional analysis confirms the significant positive effects of the ratio of FDI and equity assets to debt and FX reserves and FA and the significant negative effects of FL and current account.

A few differences from the cross-sectional analysis are found in the results. In the panel estimation, the positive coefficient on EXCH is significant for the full sample and emerging and developing countries in Model C. In the cross-sectional analysis, the negative coefficient on EXCH is significant for advanced economies in all models. This result is expected because theoretical predictions on the effects of EXCH are ambiguous. In addition, the ratio of FDI and equity liabilities to debt and GROSS do not show significant relations to valuation changes in panel regressions.

In cross-sectional analysis, four interaction terms are considered —exchange rates with NFA, FA, and FL, and GDP per capita and current account. Tables 2-15–2-17 present the regression results of each model. The interaction term of EXCH and NFA shows significant positive estimates in many cases and is thus consistent with the theoretical predictions. The interaction term of current account and GDP per capita also displays significant positive estimates for the full sample in Model A but significant negative estimates for the advanced group in Models A and C; these results are similar to the cross-sectional analysis in principle.

Certain extensions in the cross-sectional analysis are also

applied to the panel regressions. Table 2-18 reports selected models, including FD and R. FD shows a negative sign in all models, and it may be related to the finding of Vermeulen and De Haan (2014), suggesting that financial development reduces countries' NFA in the long run. When FD is considered along with FA and FL, a large FA position provides valuation gains, whereas valuation losses occur with a sizeable amount of FL, as observed in the cross-sectional analysis. R and its interaction terms, including those of RISKA and RISKL, also show similar results to long-run regressions. By contrast, OPEN does not have a significant relationship with valuation effects in the panel analysis. Therefore, variables related to trade have relatively long-running impacts relative to financial variables.

Similarly, extreme values of VAL and CUR are eliminated[18] [19], and selected results are reported in Tables 2-19–2-20. Variables become insignificant, and R-squared values become small after removing VAL outliers. On the contrary, explanatory variables such as NFA, GDPPC, and EXCH become significant. Moreover, the R-squared value increases after eliminating the current account balance. The signs of coefficients remain unchanged in all models overall.

Moreover, the initial values of NFA and CUR are considered in the models to control the endogeneity problems among variables. The reason is that the determinants of valuation effects can also be related to NFA or CUR. In the panel models, the one-year lagged values of NFA and CUR are included as initial values for each 10-year-averaged data set. The results are similar to those of previous models (Table 2-21). The coefficients on FA, FL, GROSS, RISKA, and

18 Top and lowest 5% of the dependent variable (VAL) are considered as outliers.

19 CUR deficits larger than 10% of the GDP are eliminated first, and those larger than 5% are moved.

GDPPC show expected signs. L.CUR is investigated to have a negative relation to valuation effects as well as its contemporaneous values. By contrast, the sign of L.NFA is reversed. This result may be related to the findings of Benetrix et al. (2015) that suggest a stabilizing role of valuation effects in external adjustment when countries with a negative NFA obtain large currency valuation gains.

5. Annual analysis

Although this study concentrates on the determinants of valuation changes in a long-term perspective, annual panel data analysis is considered to provide relevant information. An annual dataset containing the dependent and explanatory variables for the 1971–2011 period is initially constructed. Chinn and Prasad (2003) perform an analysis on the determinants of current account and explain that the cross-section method is validated for their regressions, considering a substantial part of current account variations is cross sectional rather than a time-series type. Nevertheless, Chinn and Prasad (2003) emphasize that annual analysis is useful to examine sensitivity from frequent variations in the data despite the probable measurement errors and noises. The annual regressions of this study are also expected to provide a glimpse of valuation changes and overtime movements of related variables. On the contrary, cross-sectional and 10-year-averaged panel data focus on cross-country differences.

Table 2-22 provides the selected results of the annual panel regressions for the full sample and those of separate country groups. Although the overall direction of variables in valuation changes are virtually similar throughout different periods, the results show that

models are well-explained in long time spans in terms of the significance of coefficients and adjusted R-squared values.

In the annual analysis, the distinct characteristics of the advanced group of countries are noted. For example, GDPPC is negative for the advanced group in Model C as the variable can attract foreign capital, produce great returns, and be linked to negative valuation effects. EXCH coefficients are positive for this group of countries when the additional interaction effects of EXCH and other variables are considered. However, the results are not reported here. The role of EXCH in valuation changes is different depending on the economies' NFA and foreign currency position. A great net foreign exposure of FA can create valuation gains when domestic currency depreciates. The annual panel reveals that advanced countries are relevant to this case. The interaction terms of EXCH and other explanatory variables also show significant relationships for advanced countries. FA and FL effects appear to be intensified when interacting with EXCH. As previously mentioned, a positive sign of EXCH indicates that currency depreciation in advanced countries leads to positive valuation changes, and the size of this valuation gain increases when countries have large FA. Conversely, positive valuation effects due to domestic currency depreciation rarely occur with large FL. Similarly, the interaction terms of NFA and EXCH affect valuation gains, considering the positive signs of both variables. These results can be interpreted on the basis of the tendency that advanced countries have great propensity to hold foreign currency-denominated assets and domestic currency-denominated debts. Therefore, domestic depreciation combined with large FA can trigger a rise in the value of external account. GDPG shows negative signs on valuation changes, whereas it is mostly insignificant in cross-sectional and 10-year-averaged panel

regressions. GDPG is related to the feature of fast-growing economies generating high returns on their FL and valuation losses.

EXCH is an important source of valuation changes, and the influence is relatively more frequent than that of other explanatory variables. Additional analysis, including other measures of exchange rates, is performed in annual regressions. Asset and liability-weighted financial effective exchange rate indices (FEXA and FEXL) are applied and compared with bilateral EXCH and trade-weighted REER for the period of 1992–2005 in Table 2-23. In Model A, the effect of exchange rates is insignificant when the measure is EXCH and becomes significant when it is replaced with REER or FEXA and FEXL. Models B and C also show similar results when FEXN is included in the model. However, the results are not reported here.

To consider potential endogeneity problems in NFA and CUR, contemporaneous and one-year lagged values of both variables and other explanatory variables are used as instruments. In Table 2-24, FA, FL, RISKA, and CUR reveal expected relations with valuation effects. Although NFA is investigated to have positive effects in most cross sections and panel models, it becomes negative in IV estimation and in the model that includes the one-year lagged value of NFA in the panel analysis. Therefore, countries with a negative NFA can experience valuation gains. GROSS position is expected to have positive and negative effects, and it shows negative association with valuation effects. GDPPC and RISKL are insignificantly estimated in IV estimation[20].

20 Annual regressions, including year dummies and one-year lagged values of explanatory variables, are also tried, in addition to separate regressions of each 10-year data set. Among the recent periods, the dummies for years 2005, 2006, 2009, and 2010 are positive. FA and FL are positive and negative, respectively, in

6. Conclusions

Considering recent phenomena, the size of valuation changes has gained further weight in economies' external account. The size also exceeds the volume of the current account as a share of GDP in certain cases. This study contributes to the identification of cross-country relationships between valuation effects and a set of explanatory variables related to countries' macroeconomy and external account structure, with a focus on long-term effects. The reason is that consistent and continuous valuation changes can evidently affect countries' wealth. Thus, cross-sectional analysis is performed first with the fully averaged data of 1971–2011. Then, four periods of 10-year-averaged data are constructed for panel regressions in addition to annual panel regressions. Therefore, relationships among relatively short-term variations of selected variables and valuation changes are observed.

In terms of the size of the external account, gross international position is positively associated with valuation changes. In addition, FA and FL respectively facilitate valuation gains and losses because capital gains from financial assets can be positive in the long run. In the same vein, net position is positively related to valuation effects because gains from assets can be greater than the losses from liabilities as net position increases. This result may be related to countries' FD, indicating that financially developed countries can have positive valuation effects when they have large FA. By contrast, negative valuation effects may appear when this type of countries have large FL.

Exchange rate movements can lead to valuation changes

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all periods.

through asymmetric impacts depending on the size of FA and FL and on currency compositions. A relative importance of the foreign currencies of countries' FA is larger than that of FL in general. Therefore, the effect of EXCH is positive. Financially weighted effective exchange rates may clearly explain the effects on valuation changes. Such effects may be further elaborated when the dependent variables is valuation changes due to currency movements. In this context, valuation changes due to asset price movements are influenced by compositions of foreign assets and liabilities.

In terms of compositions, direct investment and portfolio equity in assets and liabilities are considered "high return" or "risky" components. If countries' investment emphasizes these categories, valuation gains may occur. Conversely, direct investment and portfolio equity liabilities induce valuation losses because such components provide high returns for foreign investors.

Real interest rate is considered with compositions and shows that an increase in interest rates brings negative valuation effects when a substantial proportion of countries' FL is in risky components. On the contrary, interest rate is related to valuation gains when FA is weighted toward risky components.

Moreover, macroeconomic variables (or performance) provide relatively weak evidence on valuation changes. Exchange rate effects should be important in the short run but may not be that important in the long run. GDP growth does not reveal a noticeable link to valuation changes in most models. GDP per capita is primarily expected to function in a long term. It also shows relevant effects at 1%–10% significance levels, but the coefficients are relatively small relative to other variables. In addition, DEP has a positive effect on valuation

changes. Among the models, including the various combinations of variables and periods considered in this study, these relationships are more explicit in the long term perspective than in the annual analysis, especially in Model A[21]. In addition, cross-sectional models, including VALEX and asset price valuation effects (VALP) as dependent variables and FEXN as a proxy for exchange rates, explain the different effects of exchange rate movements and compositions of external account on each type of valuation changes.

This research presents the existence and increasing prominence of valuation effects. In addition, their determinants are explored by constructing simple models of different time ranges and factors that appear to be related to valuation changes. These steps are meaningful in view of the findings such as the effects of international portfolio compositions in terms categories, gross, and net positions of FA and FL. Macroeconomic variables, such as the current account, EXCH, real GDP growth, and GDP per capita on valuation changes, are also included over a long time horizon for a large sample of countries. Moreover, the research deals with separate groups according to economies' development status.

However, this study also has limitations, and further adjustments can be made. First, as an initial attempt, the sample includes large number of economies for a long period to gain an overview of the mechanism of international foreign investments and forces that cause the values of external balance sheets to fluctuate. However, it is found that prevalent assumptions on different aspects of

21 In terms of adjusted R-squared values, Model A including FA, FL, and CUR explains the relationship between valuation effects and explanatory variables more than other models in cross sectional analysis. However, those values of all three models are similar in panel estimation.

valuation changes are not clear in certain models. Therefore, future research may focus on specific country groups or times of interests to further understand the determinants of valuation effects. Second, a detailed analysis is possible if valuation effects are divided by their two main sources, namely, fluctuations in exchange rates and asset prices. Third, various measures of exchange rates other than the current bilateral rates with US dollars can be applied since EXCH present modest relationships with valuation changes in the models although the effects are presumed to be salient[22].

22 Dealing with these limitations, some regressions are replicated using samples that exclude outliers in NFA, CUR, and VAL. Exchange rate measures are proxied by trade-weighted REER and financially weighted indices. Valuation effects are also divided into two driving forces, namely, exchange rates and asset prices. These variations in exchange rates and valuation effects in the extended analysis are limited to 1992–2005 due to data availability.

Appendix. Data Sources

Variable	Description	Sources and Notes
VAL	Valuation as a ratio to GDP	*EWNII*
FA, FL	Foreign assets, Foreign liabilities	*EWNII*
GROSS	Total foreign assets and liabilities	*EWNII*
NFA	Net foreign assets as a ratio to GDP	*EWNII*
EQU	Portfolio equity assets and liabilities	*EWNII* (based on IFS, BOP, and CPIS)
FDI	Foreign direct investment assets and liabilities	*EWNII* (based on IIP and UNCTAD)
DEBT	Debt assets and liabilities	*EWII* (based on IIP, Global Financial Development, WEO, QEDS, CPIS, BIS, IFS, etc.)
Foreign Exchange	Foreign exchange reserve (total reserves minus gold)	*IMF COFER*
EXCH	Exchange rates (period average)	*World Development Indicators*
GDPG	Real GDP growth	*World Development Indicators*
RISKA	Ratio of FDI and equity to debt and FX	*Calculated based on EWNII*
RISKL	Ratio of FDI and equity to debt	*Calculated based on EWNII*
FX	Ratio of FX to FDI, Equity, and Debt	*Calculated based on EWNII*
GDPPC	GDP per capita, constant	*World Development Indicators*
CUR	Current account	*World Development Indicators, EWN II*
REER	Real effective exchange rates	*Bruegel datasets*
FEXA, FEXL, FEXN	Financial exchange rates (Assets, Liabilities, Net index)	*Lane and Shambaugh (2010a)*
FD	Domestic credit to private sector (% of GDP)	*World Development Indicators*
DEP	Old and youth dependency ratio	*World Development Indicators*
R	Real interest rates	*World Development Indicators*
OPEN	Trade (% of GDP)	*World Development Indicators*

Figure 2-1A. Valuation changes and current account in advanced countries, for the period 2000-2011 (relative to GDP)

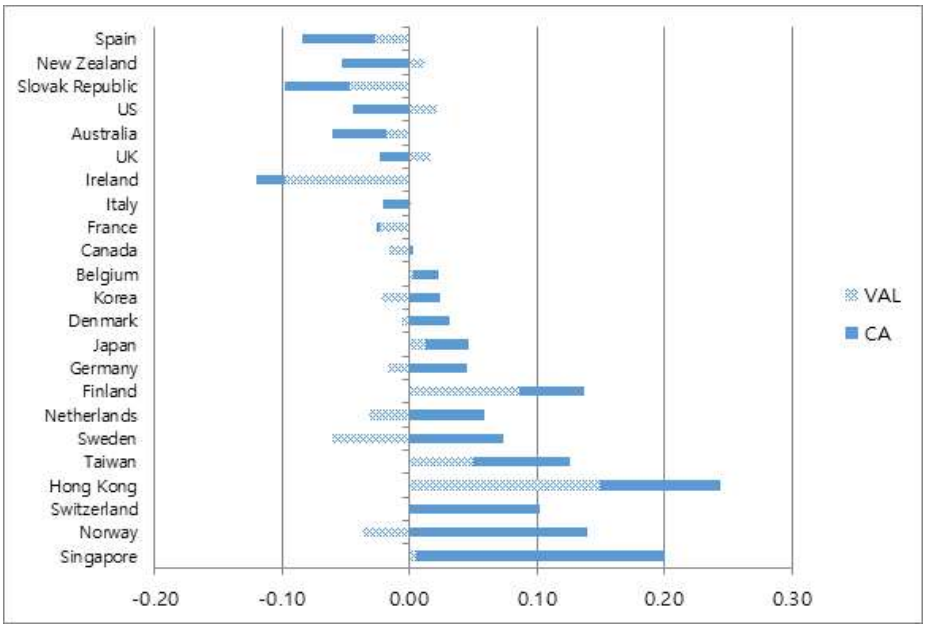

Figure 2-1B. Valuation changes and current account in emerging and developing countries, for the period 2000-2011 (relative to GDP)

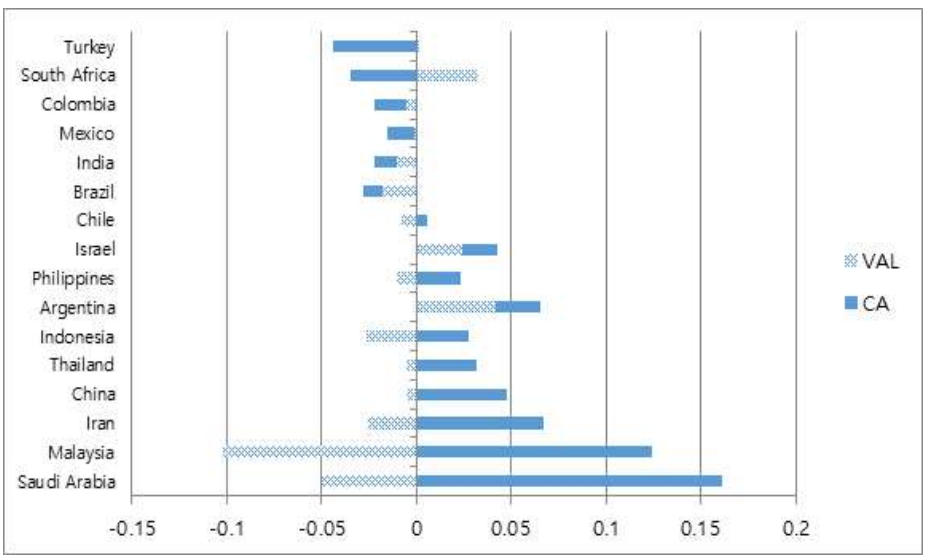

Figure 2-2A. Ten-year rolling correlations between changes in NFA and current accounts

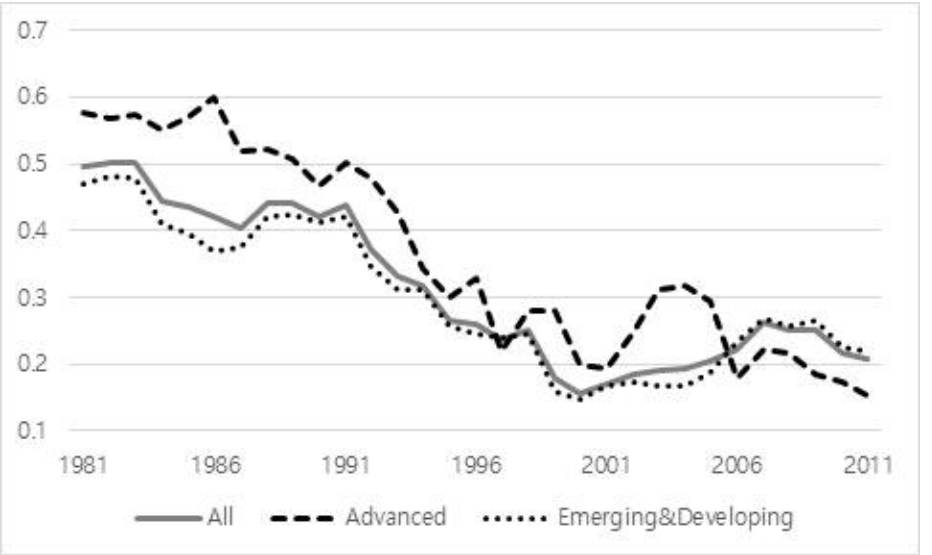

Figure 2-2B. Ten-year rolling correlations between changes in NFA and Valuation effects

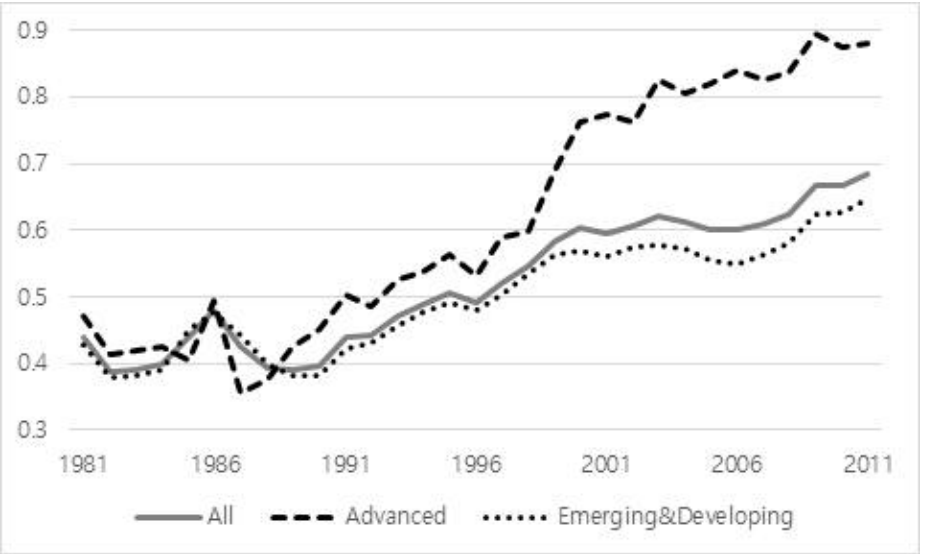

Table 2-1. Average values of valuation changes and current account relative to GDP

			Valuation changes			Current Account		
		Obs	SD (δVAL)	Avg.1	Avg.2	SD (δCUR)	Avg.1	Avg.2
All	1971-2011	188	0.057 (0.055)	0.034	0.084	0.095 (0.573)	0.067	0.084
	1971-1980	124	0.050	0.029	0.047	0.093	0.058	0.068
	1981-1990	141	0.058	0.031	0.064	0.109	0.062	0.074
	1991-2000	175	0.099	0.046	0.085	0.078	0.059	0.072
	2001-2011	188	0.133	0.057	0.112	0.113	0.083	0.092
ADV	1971-2011	31	0.035 (0.043)	0.021	0.064	0.070 (0.723)	0.042	0.050
	1971-1980	24	0.031	0.019	0.027	0.030	0.025	0.030
	1981-1990	24	0.012	0.010	0.032	0.036	0.029	0.032
	1991-2000	30	0.176	0.051	0.081	0.041	0.033	0.036
	2001-2011	31	0.060	0.038	0.097	0.085	0.062	0.064
EMG & DEV	1971-2011	157	0.060 (0.057)	0.037	0.089	0.098 (0.544)	0.072	0.091
	1971-1980	100	0.053	0.031	0.052	0.102	0.067	0.078
	1981-1990	117	0.064	0.035	0.071	0.119	0.069	0.083
	1991-2000	145	0.074	0.046	0.085	0.081	0.064	0.079
	2001-2011	157	0.142	0.031	0.115	0.116	0.034	0.098

Notes:

1) "Average1" shows the cross-country average of the absolute value of the annual average in each country whereas "Average2" reveals the average of the absolute value of the annual value in each country. "SD" indicates the standard deviations of cross-country annual averages.
2) Countries are classified into two types – advanced and emerging and developing – following Lane and Shambaugh (2010a) and IMF's World Economic Outlook, April 2016.
3) The numbers in brackets are averaged autocorrelation coefficients for annual valuation changes and current account, respectively.

Table 2-2. Correlation matrix

1) Cross section data

	NFA	GDPG	EXCH	RISKA	RISKL	FX	FA	FL	GROSS	CUR	GDPPC
NFA	1.000										
GDPG	-0.018	1.000									
EXCH	0.019	-0.087	1.000								
RISKA	0.264	-0.020	-0.125	1.000							
RISKL	0.258	-0.042	0.293	0.117	1.000						
FX	-0.012	-0.026	0.086	-0.047	-0.000	1.000					
FA	0.709	-0.034	-0.013	0.329	0.252	-0.093	1.000				
FL	-0.121	-0.028	-0.039	0.168	0.067	-0.118	0.615	1.000			
GROSS	0.402	-0.035	-0.026	0.290	0.194	-0.115	0.931	0.860	1.000		
CUR	0.698	-0.020	0.022	0.150	0.213	-0.049	0.447	-0.151	0.217	1.000	
GDPPC	0.425	-0.047	-0.120	0.391	0.029	-0.207	0.495	0.221	0.422	0.398	1.000

2) Panel data, 4 periods

	NFA	GDPG	EXCH	RISKA	RISKL	FX	FA	FL	GROSS	CUR	GDPPC
NFA	1.000										
GDPG	-0.020	1.000									
EXCH	-0.023	-0.091	1.000								
RISKA	0.369	-0.071	-0.005	1.000							
RISKL	0.190	0.140	-0.014	0.130	1.000						
FX	-0.010	0.135	-0.016	-0.090	0.040	1.000					
FA	0.639	-0.044	-0.011	0.469	0.182	-0.090	1.000				
FL	-0.078	-0.040	0.007	0.274	0.063	-0.108	0.717	1.000			
GROSS	0.352	-0.046	-0.004	0.414	0.141	-0.105	0.945	0.906	1.000		
CUR	0.523	-0.058	-0.040	0.095	0.135	-0.014	0.283	-0.107	0.122	1.000	
GDPPC	0.318	-0.094	-0.026	0.261	0.029	-0.161	0.412	0.246	0.366	0.343	1.000

3) Annual data

	NFA	GDPG	EXCH	RISKA	RISKL	FX	FA	FL	GROSS	CUR	GDPPC
NFA	1.000										
GDPG	0.017	1.000									
EXCH	-0.012	-0.052	1.000								
RISKA	0.351	-0.029	-0.002	1.000							
RISKL	0.223	0.069	-0.005	0.118	1.000						
FX	-0.002	0.054	-0.004	-0.059	0.028	1.000					
FA	0.577	-0.018	-0.002	0.298	0.177	-0.060	1.000				
FL	-0.066	-0.035	0.007	0.094	0.045	-0.071	0.777	1.000			
GROSS	0.305	-0.027	0.002	0.218	0.125	-0.069	0.954	0.930	1.000		
CUR	0.463	-0.049	-0.025	0.065	0.091	-0.022	0.213	-0.097	0.078	1.000	
GDPPC	0.262	-0.048	-0.009	0.210	0.035	-0.124	0.349	0.224	0.310	0.302	1.000

Table 2-3. Cross section regressions by country group

	A			B			C		
	All	Advanced	EMG·DEV	All	Advanced	EMG·DEV	All	Advanced	EMG·DEV
NFA							0.0147	0.0162	0.0169
							(0.00974)	(0.0108)	(0.0112)
EXCH	-0.00000043**	-0.213*	-0.00000035	-0.00000012	-0.445***	0.000000026	-0.00000036	-0.281**	-0.00000012
	(0.00000021)	(0.103)	(0.00000023)	(0.00000030)	(0.143)	(0.00000030)	(0.00000049)	(0.115)	(0.00000044)
GDPG	0.0481	-0.197	0.134	0.0529	-0.594	0.170	0.0455	-1.110***	0.267
	(0.140)	(0.199)	(0.169)	(0.183)	(0.413)	(0.188)	(0.295)	(0.192)	(0.255)
RISKA	0.0343*	0.0131	0.0372*	0.0421	0.0109	0.0483*	0.0414*	0.0157	0.0426*
	(0.0190)	(0.00929)	(0.0204)	(0.0265)	(0.0120)	(0.0286)	(0.0231)	(0.0115)	(0.0248)
RISKL	-0.00352	-0.0238**	-0.00393	0.000173	-0.0303*	-0.00186	-0.00659	-0.0246*	-0.00835
	(0.00417)	(0.00857)	(0.00410)	(0.00533)	(0.0154)	(0.00543)	(0.00671)	(0.0121)	(0.00586)
FX	0.00154	0.00558	0.00140	0.00292*	0.0143	0.00277*	0.00196	0.0245	0.00172
	(0.00119)	(0.0127)	(0.00118)	(0.00166)	(0.0224)	(0.00160)	(0.00172)	(0.0149)	(0.00173)
GROSS				0.0118***	0.00396*	0.0123***	0.00998***	0.00417***	0.0120***
				(0.00333)	(0.00214)	(0.00442)	(0.00294)	(0.00144)	(0.00412)
FA	0.0481***	0.0660***	0.0494***						
	(0.00917)	(0.0118)	(0.00969)						
FL	-0.0334***	-0.0650***	-0.0317**						
	(0.0121)	(0.0126)	(0.0129)						
CUR	-0.438***	-0.593***	-0.421***	-0.165***	-0.132	-0.173**			
	(0.119)	(0.107)	(0.123)	(0.0630)	(0.144)	(0.0694)			
GDPPC	-0.0000017***	-0.00000044	-0.0000023**	-0.0000014**	-0.0000009	-0.00000083	-0.000002***	-0.0000015***	-0.0000031**
	(0.00000051)	(0.00000043)	(0.00000099)	(0.00000065)	(0.0000006)	(0.0000011)	(0.00000058)	(0.00000045)	(0.0000013)
Constant	0.00402	0.0194	0.00114	-0.0158*	0.0357	-0.0215**	0.0135	0.0592***	0.00314
	(0.00822)	(0.0152)	(0.00874)	(0.00907)	(0.0222)	(0.00887)	(0.0142)	(0.0155)	(0.0171)
Adj. R^2	0.576	0.810	0.577	0.317	0.598	0.332	0.310	0.605	0.334
Obs.	178	29	149	178	29	149	178	29	149

Notes: 1) Robust Standard errors are reported in parentheses.
2) *, **, and *** describe significance levels at 10, 5, and 1 percent, respectively.

Table 2-4. Cross section regressions including interactions (Dependent variable: valuation to GDP ratio): Model A

	All			Advanced			Emerging and Developing		
EXCH	0.000142	-0.00008	-0.00000047*	0.181	0.0632	-0.216*	-0.000128	-0.000086	-0.00000042
	(0.00183)	(0.000088)	(0.00000024)	(0.174)	(0.134)	(0.104)	(0.00191)	(0.000100)	(0.00000026)
GDPG	0.0510	0.0517	0.0467	-0.0285	-0.149	-0.217	0.139	0.139	0.189
	(0.145)	(0.143)	(0.148)	(0.220)	(0.173)	(0.206)	(0.176)	(0.173)	(0.160)
RISKA	0.0344*	0.0344*	0.0361*	0.0108	0.0103	0.0163	0.0373*	0.0373*	0.0414**
	(0.0191)	(0.0190)	(0.0197)	(0.00801)	(0.00848)	(0.00962)	(0.0205)	(0.0204)	(0.0209)
RISKL	-0.00346	-0.00351	-0.00386	-0.0228***	-0.0187**	-0.0282**	-0.00392	-0.00391	-0.00523
	(0.00440)	(0.00418)	(0.00398)	(0.00772)	(0.00755)	(0.0110)	(0.00434)	(0.00411)	(0.00367)
FX	0.00156	0.00154	0.00157	0.0186*	0.0200*	0.00690	0.00140	0.00140	0.00142
	(0.00121)	(0.00119)	(0.00122)	(0.00964)	(0.0102)	(0.0130)	(0.00121)	(0.00119)	(0.00117)
FA	0.0482***	0.0483***	0.0464***	0.0621***	0.0714***	0.0626***	0.0495***	0.0495***	0.0461***
	(0.00930)	(0.00926)	(0.0106)	(0.0177)	(0.0108)	(0.0139)	(0.00985)	(0.00980)	(0.0112)
FL	-0.0336***	-0.0336***	-0.0318**	-0.0605***	-0.0706***	-0.0612***	-0.0320**	-0.0320**	-0.0277**
	(0.0124)	(0.0123)	(0.0133)	(0.0190)	(0.0116)	(0.0147)	(0.0132)	(0.0132)	(0.0139)
CUR	-0.438***	-0.438***	-0.451***	-0.648***	-0.658***	-0.701***	-0.421***	-0.421***	-0.446***
	(0.120)	(0.119)	(0.143)	(0.0953)	(0.0915)	(0.204)	(0.124)	(0.123)	(0.144)
GDPPC	-0.0000017***	-0.0000017***	-0.0000018***	0.00000031	0.00000032	-0.00000050	-0.0000023**	-0.0000023**	-0.0000032***
	(0.00000051)	(0.00000051)	(0.00000047)	(0.00000028)	(0.00000028)	(0.00000041)	(0.00000099)	(0.00000099)	(0.00000094)
I.EXCH_FA	-0.00141			0.328*			0.000076		
	(0.0102)			(0.170)			(0.0106)		
I.EXCH_FL	0.000161			-0.513***			0.000159		
	(0.000161)			(0.136)			(0.000186)		
I.EXCH_NFA		-0.000149			0.459***			-0.000161	
		(0.000165)			(0.110)			(0.000188)	
I.CUR_GDPPC			0.0000022			0.0000048			0.0000070
			(0.0000052)			(0.0000072)			(0.0000057)
Constant	0.00391	0.00388	0.00338	-0.00873	-0.00550	0.0198	0.000990	0.000995	-0.000987
	(0.00817)	(0.00816)	(0.00923)	(0.0133)	(0.0118)	(0.0148)	(0.00870)	(0.00867)	(0.00978)
Adjusted R-squared	0.572	0.574	0.576	0.859	0.860	0.803	0.571	0.574	0.587
Observations	178	178	178	29	29	29	149	149	149

Notes: 1) Robust standard errors are reported in parentheses.
2) *, **, and *** describe significance levels at 10, 5, and 1 percent, respectively.
3) "I" at the name of variables refers interaction terms.

Table 2-5. Cross section regressions including interactions (Dependent variable: valuation to GDP ratio): Model B

	All			Advanced			Emerging and Developing		
EXCH	0.000981	0.000135**	-0.00000038	0.356	-0.281	-0.406***	0.000441	0.000128*	-0.00000022
	(0.00221)	(0.000065)	(0.00000032)	(0.236)	(0.165)	(0.125)	(0.00232)	(0.000073)	(0.00000031)
GDPG	0.0438	0.0467	0.0449	0.114	-0.585	-0.589	0.161	0.162	0.292
	(0.187)	(0.185)	(0.205)	(0.364)	(0.425)	(0.380)	(0.195)	(0.191)	(0.178)
RISKA	0.0420	0.0420	0.0493*	0.0116	0.00894	0.0243**	0.0482*	0.0481*	0.0559**
	(0.0268)	(0.0266)	(0.0256)	(0.00880)	(0.0116)	(0.0113)	(0.0288)	(0.0287)	(0.0263)
RISKL	0.000288	0.000121	-0.00226	-0.0387**	-0.0273*	-0.0465**	-0.00183	-0.00190	-0.00536*
	(0.00560)	(0.00538)	(0.00430)	(0.0138)	(0.0147)	(0.0168)	(0.00579)	(0.00549)	(0.00323)
FX	0.00297*	0.00291*	0.00280*	0.0164	0.0240	0.0177	0.00278*	0.00276*	0.00253*
	(0.00167)	(0.00166)	(0.00149)	(0.0143)	(0.0217)	(0.0205)	(0.00161)	(0.00160)	(0.00140)
GROSS	0.0119***	0.0119***	0.0106***	0.00365**	0.00408*	0.00424**	0.0123***	0.0123***	0.0124***
	(0.00337)	(0.00337)	(0.00285)	(0.00152)	(0.00225)	(0.00180)	(0.00449)	(0.00448)	(0.00361)
CUR	-0.167**	-0.167**	-0.283**	-0.377***	-0.149	-0.676**	-0.175**	-0.175**	-0.284**
	(0.0640)	(0.0641)	(0.122)	(0.126)	(0.149)	(0.295)	(0.0711)	(0.0709)	(0.116)
GDPPC	-0.0000014**	-0.0000014**	-0.0000019***	-0.000000082	-0.00000047	-0.0000010**	-0.00000083	-0.00000083	-0.0000033***
	(0.00000065)	(0.00000065)	(0.00000058)	(0.00000042)	(0.00000048)	(0.00000047)	(0.0000011)	(0.0000011)	(0.00000096)
I.EXCH_FA	-0.00457			-0.128			-0.00154		
	(0.0126)			(0.175)			(0.0132)		
I.EXCH_FL	-0.000208			-0.591***			-0.000223		
	(0.000161)			(0.198)			(0.000177)		
I.EXCJ_NFA		0.000253**			0.293			0.000240*	
		(0.000122)			(0.231)			(0.000137)	
I.CUR_GDPPC			0.000011**			0.000020**			0.000016***
			(0.0000046)			(0.0000090)			(0.0000043)
Constant	-0.0154*	-0.0155*	-0.0150	-0.00570	0.0207	0.0335*	-0.0211**	-0.0212**	-0.0217**
	(0.00925)	(0.00916)	(0.00950)	(0.0202)	(0.0211)	(0.0185)	(0.00911)	(0.00896)	(0.00853)
Adjusted R-squared	0.310	0.314	0.376	0.752	0.601	0.642	0.323	0.328	0.411
Observations	178	178	178	29	29	29	149	149	149

Notes: 1) Robust standard errors are reported in parentheses.
2) *, **, and *** describe significance levels at 10, 5, and 1 percent, respectively.
3) "I" at the name of variables refers interaction terms.

Table 2-6. Cross section regressions including interactions (Dependent variable: valuation to GDP ratio): Model C

	All			Advanced			Emerging and Developing		
NFA	0.0148	0.0148	0.0207	0.00127	0.0162	0.0607***	0.0172	0.0171	0.0175
	(0.00992)	(0.00989)	(0.0140)	(0.0194)	(0.0122)	(0.0171)	(0.0115)	(0.0114)	(0.0153)
EXCH	0.000093	-0.000068	-0.00000027	0.0694	-0.136	-0.226*	-0.000578	-0.000099	-0.00000012
	(0.00202)	(0.000087)	(0.00000044)	(0.222)	(0.178)	(0.130)	(0.00202)	(0.000098)	(0.00000044)
GDPG	0.0480	0.0486	0.0493	-0.906**	-1.138***	-0.447	0.275	0.273	0.260
	(0.299)	(0.298)	(0.264)	(0.315)	(0.218)	(0.288)	(0.259)	(0.258)	(0.261)
RISKA	0.0415*	0.0415*	0.0365	0.0151	0.0143	0.00279	0.0426*	0.0427*	0.0421
	(0.0232)	(0.0231)	(0.0239)	(0.0106)	(0.0113)	(0.0120)	(0.0248)	(0.0248)	(0.0263)
RISKL	-0.00654	-0.00657	-0.00551	-0.0288**	-0.0219*	-0.00878	-0.00843	-0.00833	-0.00816
	(0.00699)	(0.00674)	(0.00649)	(0.0123)	(0.0125)	(0.0127)	(0.00611)	(0.00589)	(0.00592)
FX	0.00198	0.00196	0.00185	0.0306	0.0334*	0.00757	0.00168	0.00172	0.00171
	(0.00173)	(0.00172)	(0.00175)	(0.0178)	(0.0164)	(0.0158)	(0.00174)	(0.00174)	(0.00175)
GROSS	0.00994***	0.00994***	0.00998***	0.00490***	0.00433***	0.000859	0.0119***	0.0119***	0.0119***
	(0.00297)	(0.00296)	(0.00322)	(0.00170)	(0.00139)	(0.00149)	(0.00416)	(0.00414)	(0.00413)
GDPPC	-0.0000024***	-0.0000024***	-0.0000021***	-0.0000011**	-0.0000012**	-0.00000062	-0.0000031**	-0.0000031**	-0.000003***
	(0.00000066)	(0.00000066)	(0.00000058)	(0.00000048)	(0.00000047)	(0.00000061)	(0.0000013)	(0.0000013)	(0.0000011)
I.EXCH_FA	-0.00105			0.0312			0.00254		
	(0.0115)			(0.338)			(0.0115)		
I.EXCH_FL	0.000135			-0.346*			0.000160		
	(0.000198)			(0.193)			(0.000219)		
I.EXCH_NFA		-0.000127			0.249			-0.000185	
		(0.000162)			(0.204)			(0.000183)	
I.CUR_GDPPC			-0.0000054			-0.000017***			-0.00000084
			(0.0000064)			(0.000006)			(0.0000075)
Constant	0.0106	0.0105	0.0117	0.0411**	0.0480***	0.0323	0.00291	0.00297	0.00338
	(0.0179)	(0.0178)	(0.0167)	(0.0160)	(0.0167)	(0.0205)	(0.0172)	(0.0171)	(0.0180)
Adjusted R-squared	0.302	0.306	0.321	0.598	0.602	0.719	0.325	0.330	0.329
Observations	178	178	178	29	29	29	149	149	149

Notes: 1) Standard errors are reported in parentheses.
2) *, **, and *** describe significance levels at 10, 5, and 1 percent, respectively.
3) "I" at the name of variables refers interaction terms.

Table 2-7. Cross section regressions with financial exchange rates (1992-2005)

	Model A		Model C	
VARIABLES	EXCH	FEXN	EXCH	FEXN
FA	0.0410***	0.0453***		
	(0.00681)	(0.0110)		
FL	-0.0277***	-0.0340**		
	(0.00581)	(0.0145)		
NFA			0.0179***	0.0150
			(0.00578)	(0.0151)
GROSS			0.00646**	0.00378
			(0.00300)	(0.00337)
CUR	-0.551***	-0.474***		
	(0.0547)	(0.0894)		
RISKA	0.0620*	0.0139***	0.0607*	0.0134***
	(0.0343)	(0.00454)	(0.0356)	(0.00447)
RISKL	-0.0125*	-0.0263***	-0.0138**	-0.0262***
	(0.00638)	(0.00743)	(0.00566)	(0.00776)
FX	0.000869	-0.000014	0.0000191	-0.00247
	(0.00195)	(0.00183)	(0.00288)	(0.00354)
GDPG	0.0437	0.269*	0.350	0.692***
	(0.0912)	(0.141)	(0.238)	(0.127)
GDPPC	-0.0000021***	-0.00000089***	-0.0000027***	-0.00000095***
	(0.00000080)	(0.00000031)	(0.00000087)	(0.00000030)
EXCH	-0.0174*		-0.00148	
	(0.00991)		(0.00243)	
I.EXCH_FA	0.0326			
	(0.0201)			
I.EXCH_FL	0.00527**			
	(0.00267)			
I.EXCH_NFA			-0.000894	
			(0.00117)	
FEXN		0.198*		0.0501
		(0.101)		(0.0847)
I.FEXN_FA		-0.201		
		(0.487)		
I.FEXN_FL		-0.365***		
		(0.0999)		
I.FEXN_NFA				0.375***
				(0.118)
Constant	0.00800	0.00562	0.0141	-0.00536
	(0.00780)	(0.00698)	(0.0128)	(0.00980)
Observations	175	117	175	117
Adj. R-squared	0.533	0.492	0.289	0.284

Notes: 1) Robust standard errors in parentheses
2) *, **, *** describe significance levels at 10, 5, and 1 percent, respectively.
3) "I" at the name of variables refers interaction terms.

Table 2-8. Determinants of different valuation effects: Model A

	REER			FEXN		
	VAL	VALEX	VALP	VAL	VALEX	VALP
FA	0.0884***	0.0595***	0.0277**	0.0686***	0.0434***	0.0243**
	(0.0206)	(0.0162)	(0.0120)	(0.0169)	(0.0111)	(0.0119)
FL	-0.0916***	-0.0790***	-0.0111	-0.0630***	-0.0587***	-0.00294
	(0.0246)	(0.0186)	(0.0139)	(0.0214)	(0.0151)	(0.0157)
CUR	-0.658***	0.118	-0.782***	-0.659***	0.0493	-0.712***
	(0.179)	(0.0933)	(0.167)	(0.135)	(0.0617)	(0.147)
RISKA	0.00672	0.00302	0.00344	0.0151**	0.00312	0.0118*
	(0.00918)	(0.00848)	(0.00746)	(0.00700)	(0.00503)	(0.00609)
RISKL	-0.0141	0.0231**	-0.0370***	-0.0353***	0.00954	-0.0446***
	(0.0114)	(0.00973)	(0.00911)	(0.0119)	(0.00727)	(0.0101)
FX	0.00954***	0.00115	0.00814**	0.00551	-0.000781	0.00605
	(0.00353)	(0.00206)	(0.00328)	(0.00413)	(0.00213)	(0.00374)
GDPG	-0.0679	-0.00798	-0.0631	0.119	0.0435	0.0737
	(0.235)	(0.167)	(0.206)	(0.188)	(0.118)	(0.184)
GDPPC	0.0000001	0.00000021	-0.00000011	-0.00000065*	-0.000000067	-0.00000059
	(0.00000031)	(0.00000034)	(0.00000039)	(0.00000038)	(0.00000026)	(0.0000004)
REER	0.370**	0.0547	0.323***			
	(0.167)	(0.0990)	(0.115)			
FEXN				0.739***	0.553***	0.179***
				(0.199)	(0.176)	(0.0675)
Constant	-0.00212	0.00461	-0.00704	0.0117	0.0147	-0.00341
	(0.0137)	(0.0103)	(0.00832)	(0.0138)	(0.0108)	(0.00903)
Obs.s	111	111	111	117	117	117
Adj. R^2	0.278	0.502	0.461	0.513	0.695	0.429

Notes: 1) Robust standard errors in parentheses

2) *, **, *** describe significance levels at 10, 5, and 1 percent, respectively.

3) Signs of REER coefficients are inversed for convenience since the index implies opposite impacts on exchange rates compared to financial effective exchange rates.

Table 2-9. Determinants of different valuation effects: Model B

	REER			FEXN		
	VAL	VALEX	VALP	VAL	VALEX	VALP
GROSS	-0.00341	-0.0111**	0.00791**	0.00638	-0.00490	0.0114***
	(0.00586)	(0.00474)	(0.00388)	(0.00498)	(0.00311)	(0.00356)
CUR	-0.162	0.499***	-0.675***	-0.372**	0.272***	-0.653***
	(0.204)	(0.143)	(0.176)	(0.143)	(0.102)	(0.159)
RISKA	0.00450	0.00132	0.00296	0.0142**	0.00248	0.0116*
	(0.0123)	(0.00744)	(0.00859)	(0.00674)	(0.00419)	(0.00618)
RISKL	-0.0175	0.0204	-0.0378***	-0.0362***	0.00885	-0.0448***
	(0.0124)	(0.0133)	(0.00800)	(0.0109)	(0.00904)	(0.00944)
FX	0.0168***	0.00673**	0.00971***	0.0101**	0.00277	0.00699*
	(0.00482)	(0.00264)	(0.00333)	(0.00479)	(0.00240)	(0.00367)
GDPG	0.230	0.221	0.00130	0.232	0.131	0.0970
	(0.306)	(0.227)	(0.220)	(0.241)	(0.161)	(0.195)
GDPPC	0.0000012**	0.0000011**	0.00000013	-0.0000002	0.00000028	-0.0000005
	(0.00000055)	(0.00000046)	(0.00000039)	(0.00000048)	(0.00000031)	(0.00000041)
REER	0.224	-0.0575	0.292**			
	(0.195)	(0.148)	(0.115)			
FEXN				0.901***	0.679***	0.212***
				(0.246)	(0.210)	(0.0720)
Constant	-0.0525***	-0.0342***	-0.0179***	-0.0228*	-0.0121	-0.0106
	(0.0111)	(0.00788)	(0.00682)	(0.0131)	(0.0105)	(0.00742)
Obs.	111	111	111	117	117	117
Adj. R^2	0.025	0.285	0.448	0.371	0.565	0.425

Notes: 1) Robust standard errors in parentheses
2) *, **, *** describe significance levels at 10, 5, and 1 percent, respectively.
3) Signs of REER coefficients are inversed for convenience since the index implies opposite impacts on exchange rates compared to financial effective exchange rates.

Table 2-10. Determinants of different valuation effects: Model C

	REER			FEXN		
	VAL	VALEX	VALP	VAL	VALEX	VALP
NFA	0.0517**	0.0761***	-0.0260	0.0327	0.0535***	-0.0221
	(0.0239)	(0.0158)	(0.0197)	(0.0214)	(0.0127)	(0.0201)
GROSS	-0.00596	-0.00894**	0.00313	0.000293	-0.00750***	0.00796*
	(0.00433)	(0.00405)	(0.00283)	(0.00448)	(0.00273)	(0.00448)
RISKA	0.00605	0.00314	0.00265	0.0145**	0.00316	0.0111*
	(0.00995)	(0.00887)	(0.0112)	(0.00701)	(0.00501)	(0.00640)
RISKL	-0.0192*	0.0240**	-0.0432***	-0.0346***	0.00950	-0.0439***
	(0.0114)	(0.0100)	(0.0100)	(0.0110)	(0.00735)	(0.0105)
FX	0.00864	0.00131	0.00707	0.00413	-0.000678	0.00456
	(0.00599)	(0.00211)	(0.00641)	(0.00647)	(0.00208)	(0.00638)
GDPG	0.551***	-0.118	0.672***	0.692***	0.000770	0.692***
	(0.201)	(0.173)	(0.150)	(0.181)	(0.125)	(0.157)
GDPPC	0.00000017	0.0000002	-0.000000037	-0.00000075*	-0.000000059	-0.00000069*
	(0.00000035)	(0.00000033)	(0.00000036)	(0.00000044)	(0.00000026)	(0.00000041)
REER	0.201	0.0848	0.122			
	(0.154)	(0.0949)	(0.113)			
FEXN				0.689***	0.557***	0.125
				(0.203)	(0.176)	(0.0820)
Constant	-0.0173	0.00733	-0.0251**	-0.00430	0.0159	-0.0207
	(0.0151)	(0.0101)	(0.0124)	(0.0157)	(0.0110)	(0.0126)
Obs.	111	111	111	117	117	117
Adj. R^2	0.138	0.501	0.159	0.348	0.697	0.136

Notes: 1) Robust standard errors in parentheses
2) *, **, *** describe significance levels at 10, 5, and 1 percent, respectively.
3) Signs of REER coefficients are inversed for convenience since the index implies opposite impacts on exchange rates compared to financial effective exchange rates.

Table 2-11. Cross section regressions with additional variable

	Financial Development	Age dependency ratio,		Trade openness	Real interest rates 1992-2011
	Model B	Model A	Model B	Model C	Model A
FA		0.0504***		0.0176*	0.0162
		(0.00854)		(0.00950)	(0.0154)
FL		-0.0356***			-0.00119
		(0.0114)			(0.0178)
NFA					
GROSS	0.0153***		0.0120***	0.00582**	
	(0.00451)		(0.00326)	(0.00255)	
CUR	-0.325**	-0.458***	-0.169***		-0.448***
	(0.135)	(0.108)	(0.0573)		(0.0867)
RISKA	0.0397**	0.0372*	0.0444	0.0457*	-0.0142
	(0.0187)	(0.0193)	(0.0271)	(0.0249)	(0.0257)
RISKL	-0.00589	-0.00280	0.000823	-0.00442	0.0179*
	(0.00404)	(0.00395)	(0.00504)	(0.00758)	(0.0106)
FX	0.00257*	0.00149	0.00297*	0.00235	0.00232
	(0.00135)	(0.00129)	(0.00177)	(0.00180)	(0.00323)
EXCH	-0.000000084	-0.000001***	-0.00000049	-9.57e-07*	0.00000079
	(0.00000022)	(0.00000021)	(0.00000031)	(4.93e-07)	(0.0000023)
GDPG	0.143	0.107	0.0952	-0.0202	0.418
	(0.155)	(0.119)	(0.168)	(0.289)	(0.257)
GDPPC	-0.0000011**	-0.00000094*	-0.00000085	-0.0156***	-0.0000017*
	(0.00000055)	(0.00000048)	(0.00000069)	(0.00525)	(0.00000091)
FD	0.0212				
	(0.0163)				
I.FD_FA	0.0556***				
	(0.0201)				
I.FD_FL	-0.0842***				
	(0.0276)				
DEP		0.0869***	0.0606***	0.0324	
		(0.0162)	(0.0199)	(0.0277)	
OPEN				0.0176*	
				(0.00992)	
R					-0.0642
					(0.0885)
I.RISKA_R					0.821***
					(0.284)
I.RISKL_R					-0.258*
					(0.134)
Constant	-0.0197**	-0.0664***	-0.0660***	0.0854	-0.0201
	(0.00927)	(0.0146)	(0.0184)	(0.0599)	(0.0266)
Observations	174	175	175	170	150
Adj. R-squared	0.497	0.627	0.340	0.354	0.681

Notes: 1) Robust standard errors in parentheses.
2) *, **, *** describe significance levels at 10, 5, and 1 percent, respectively.
3) "I" at the name of variables refers interaction terms.

Table 2-12. Cross section regressions without outliers

	Model A				Model B				
	Full, 1971-2011	-0.05<VAL<0.1	-3<NFA<3	-1.5<NFA<1.5	Full, 1971-2011	-0.05<VAL<0.1	-3<NFA<3	Full, 1992-2005	-3<NFA<3
FA	0.0481***	0.0176*	0.0560***	0.0615***					
	(0.00917)	(0.00944)	(0.00903)	(0.00733)					
FL	-0.0334***	-0.00694	-0.0454***	-0.0574***					
	(0.0121)	(0.0109)	(0.00991)	(0.00777)					
GROSS					0.0118***	0.00545***	0.00886***	0.00301	0.00518*
					(0.00333)	(0.00153)	(0.00182)	(0.00314)	(0.00275)
CUR	-0.438***	-0.159*	-0.483***	-0.572***	-0.165***	-0.0815*	-0.221**	-0.353***	-0.465***
	(0.119)	(0.0858)	(0.120)	(0.0656)	(0.0630)	(0.0427)	(0.0879)	(0.111)	(0.0854)
RISKA	0.0343*	-0.00393	0.0386**	0.00357	0.0421	-0.00497	0.0520**	0.0218	0.0184
	(0.0190)	(0.00359)	(0.0179)	(0.00338)	(0.0265)	(0.00345)	(0.0253)	(0.0461)	(0.0444)
RISKL	-0.00352	0.00130	-0.00590	-0.00597**	0.000173	0.00374	-0.00957	0.00594	-0.0431*
	(0.00417)	(0.00410)	(0.00450)	(0.00245)	(0.00533)	(0.00287)	(0.00581)	(0.00801)	(0.0226)
FX	0.00154	0.000404	0.00119	0.000361	0.00292*	0.000604	0.00322**	0.00244	0.00243
	(0.00119)	(0.000519)	(0.00116)	(0.000581)	(0.00166)	(0.000525)	(0.00162)	(0.00229)	(0.00226)
EXCH	-0.00000043**	-0.00000056***	-0.00000093***	-0.00000074***	-0.00000012	-0.00000046**	-0.000000013		
	(0.00000021)	(0.00000019)	(0.00000021)	(0.0000002)	(0.0000003)	(0.00000019)	(0.00000024)		
REER								-0.00616	-0.0504
								(0.0759)	(0.0639)
GDPG	0.0481	-0.230**	0.174*	0.103	0.0529	-0.231**	0.286*	0.376**	0.195
	(0.140)	(0.107)	(0.103)	(0.0998)	(0.183)	(0.112)	(0.168)	(0.181)	(0.187)
GDPPC	-0.0000017***	-0.00000072***	-0.00000095**	-0.000000079	-0.0000014**	-0.00000053**	-0.0000015**	-0.00000063	-0.0000013**
	(0.00000051)	(0.00000023)	(0.00000046)	(0.00000023)	(0.00000065)	(0.00000023)	(0.0000006)	(0.00000077)	(0.00000063)
DEP			0.0837***	0.0670***					
			(0.0164)	(0.0118)					
R								-0.0765	-0.244*
								(0.0942)	(0.129)
I.RISKA_R								0.550	0.630
								(0.424)	(0.407)
I.RISKL_R								-0.244*	0.143
								(0.130)	(0.253)
Constant	0.00402	0.0142*	-0.0605***	-0.0426***	-0.0158*	0.00896	-0.0200**	-0.0146	0.0125
	(0.00822)	(0.00777)	(0.0143)	(0.0107)	(0.00907)	(0.00625)	(0.00894)	(0.0116)	(0.0187)
Observations	178	159	171	158	178	159	174	134	130
Adj. R^2	0.576	0.193	0.618	0.654	0.317	0.152	0.423	0.396	0.585

Notes: 1) Robust standard errors in parentheses

2) *, **, *** describe significance levels at 10, 5, and 1 percent, respectively.

3) "I" at the name of variables refers interaction terms.

Table 2-13. Panel regressions: Pooled OLS, Fixed effects, and Random effects (Dependent variable: Valuation to GDP ratio)

	Pooled OLS			Fixed effects			Random effects		
	A	B	C	A	B	C	A	B	C
NFA			0.0213**			0.0231			0.0211**
			(0.00896)			(0.0212)			(0.0104)
EXCH	-0.00000014	-0.00000012	0.00000016	0.000000062	-0.00000012	0.00000044***	-0.00000011	-0.000000095	0.00000025***
	(0.00000009)	(0.00000011)	(0.00000010)	(0.0000002)	(0.00000018)	(0.00000016)	(0.000000077)	(0.00000011)	(0.000000089)
GDPG	0.0645	0.0952	0.135	0.187	0.163	0.204	0.0819	0.129	0.157
	(0.0821)	(0.101)	(0.121)	(0.123)	(0.144)	(0.148)	(0.0802)	(0.107)	(0.133)
RISKA	0.0525***	0.0677***	0.0600***	0.0696***	0.0877***	0.0733***	0.0543***	0.0736***	0.0643***
	(0.0134)	(0.0189)	(0.0160)	(0.0132)	(0.0139)	(0.0162)	(0.0142)	(0.0183)	(0.0163)
RISKL	-0.00220	0.000543	-0.00481	0.000186	0.00173	0.00262	-0.00189	0.00110	-0.00316
	(0.00445)	(0.00318)	(0.00578)	(0.00860)	(0.00937)	(0.00659)	(0.00494)	(0.00347)	(0.00566)
FX	0.000364	0.00100	0.000165	-0.000553	-0.000353	-0.000841	0.000284	0.000648	-0.0000096
	(0.000751)	(0.000686)	(0.000632)	(0.000984)	(0.000744)	(0.00164)	(0.000401)	(0.000408)	(0.000554)
GROSS		0.00954***	0.00817***		0.00442	0.00535		0.00813**	0.00736**
		(0.00267)	(0.00269)		(0.00424)	(0.00540)		(0.00327)	(0.00337)
FA	0.0473***			0.0367**			0.0463***		
	(0.00783)			(0.0162)			(0.00814)		
FL	-0.0345***			-0.0288			-0.0337***		
	(0.0107)			(0.0197)			(0.0109)		
CUR	-0.458***	-0.233***		-0.402***	-0.336***		-0.448***	-0.245***	
	(0.0732)	(0.0770)		(0.123)	(0.127)		(0.0764)	(0.0900)	
GDPPC	-0.0000019***	-0.0000018***	-0.0000027***	-0.0000024	-0.0000034**	0.0000042**	-0.0000019***	-0.0000018***	-0.0000029***
	(0.00000039)	(0.0000005)	(0.00000042)	(0.0000015)	(0.0000016)	(0.0000017)	(0.00000044)	(0.00000057)	(0.00000048)
Constant	0.00168	-0.0166**	0.0124	0.000908	-0.00432	0.0206	0.00121	-0.0161*	0.0123
	(0.00929)	(0.00766)	(0.0102)	(0.0143)	(0.0133)	(0.0136)	(0.0101)	(0.00908)	(0.0129)
Adj. R^2	0.589	0.447	0.450	0.584	0.549	0.521	0.581	0.534	0.517
Observations	573	573	573	573	573	573	573	573	573
countries				178	178	178	178	178	178
Breusch-Pagan							0.222	0.000	0.002
LM test (RE)									
Hausman test				0.0054	0.0003	0.0015			

Notes: 1) Robust standard errors are reported in parentheses.

2) *, **, and *** describe significance levels at 10, 5, and 1 percent, respectively.

Table 2-14. Panel regressions by country groups, fixed effects (Dependent variable: valuation to GDP ratio)

	A			B			C		
	All	Advanced	Emerging · Developing	All	Advanced	Emerging · Developing	All	Advanced	Emerging · Developing
NFA							0.0231	0.0882***	0.0149
							(0.0212)	(0.0230)	(0.0228)
EXCH	0.000000062	-0.0754	-0.000000049	-0.00000012	-0.0285	-0.00000019	0.00000044***	-0.112	0.00000038**
	(0.0000002)	(0.0822)	(0.00000021)	(0.00000018)	(0.0995)	(0.0000002)	(0.00000016)	(0.0923)	(0.00000017)
GDPG	0.187	0.173	0.168	0.163	-0.354	0.150	0.204	-0.0899	0.214
	(0.123)	(0.196)	(0.130)	(0.144)	(0.429)	(0.150)	(0.148)	(0.242)	(0.155)
RISKA	0.0696***	0.00756	0.0780***	0.0877***	0.00454	0.0924***	0.0733***	0.00356	0.0818***
	(0.0132)	(0.00681)	(0.0154)	(0.0139)	(0.00736)	(0.0140)	(0.0162)	(0.00654)	(0.0203)
RISKL	0.000186	-0.0101	-0.000917	0.00173	-0.0149	0.0000032	0.00262	-0.0146	0.00249
	(0.00860)	(0.00963)	(0.00881)	(0.00937)	(0.0142)	(0.00942)	(0.00659)	(0.00958)	(0.00692)
FX	-0.000553	-0.0138	-0.000133	-0.000353	0.00827	0.000031	-0.000841	-0.0205*	-0.000624
	(0.000984)	(0.00926)	(0.000907)	(0.000744)	(0.0256)	(0.000754)	(0.00164)	(0.0101)	(0.00152)
GROSS				0.00442	-0.00140	0.00474	0.00535	-0.000709	0.00558
				(0.00424)	(0.00164)	(0.00606)	(0.00540)	(0.00164)	(0.00778)
FA	0.0367**	0.108***	0.0284						
	(0.0162)	(0.0205)	(0.0174)						
FL	-0.0288	-0.110***	-0.0192						
	(0.0197)	(0.0217)	(0.0206)						
CUR	-0.402***	-0.425**	-0.432***	-0.336***	0.272	-0.391***			
	(0.123)	(0.195)	(0.131)	(0.127)	(0.317)	(0.133)			
GDPPC	-0.0000024	-0.000000033	0.0000000007	-0.0000034**	-0.0000018	-0.00000043	-0.0000042**	-0.0000012	-0.0000038
	(0.0000015)	(0.00000084)	(0.0000018)	(0.0000016)	(0.0000015)	(0.0000018)	(0.0000017)	(0.0000009)	(0.0000026)
Constant	0.000908	0.00837	-0.0168	-0.00432	0.0626	-0.0241**	0.0206	0.0544**	0.00631
	(0.0143)	(0.0207)	(0.0164)	(0.0133)	(0.0546)	(0.0117)	(0.0136)	(0.0212)	(0.0185)
Adjusted R-squared	0.584	0.516	0.617	0.549	0.104	0.600	0.521	0.472	0.548
Observations	573	102	471	573	102	471	573	102	471
No. of Countries	178	29	149	178	29	149	178	29	149

Notes: 1) Robust standard errors are reported in parentheses.
2) *, **, and *** describe significance levels at 10, 5, and 1 percent, respectively.

Table 2-15. Panel regressions including interactions, fixed effects (Dependent variable: valuation to GDP ratio): Model A

	All			Advanced			Emerging and Developing		
EXCH	0.00516*	0.000292***	-0.00000021	0.0534	-0.0880	-0.0953	0.00408*	0.000331***	-0.00000023
	(0.00278)	(0.000061)	(0.0000002)	(0.100)	(0.113)	(0.0784)	(0.00242)	(0.000062)	(0.0000002)
GDPG	0.170	0.153	0.0511	0.334	0.192	0.114	0.137	0.124	0.0660
	(0.116)	(0.113)	(0.122)	(0.201)	(0.219)	(0.205)	(0.122)	(0.118)	(0.130)
RISKA	0.0718***	0.0717***	0.0634***	0.00656	0.00724	0.00514	0.0803***	0.0803***	0.0704***
	(0.0137)	(0.0137)	(0.0130)	(0.00530)	(0.00697)	(0.00776)	(0.0163)	(0.0163)	(0.0172)
RISKL	0.000255	0.000344	0.00398	-0.00995	-0.00999	-0.00520	-0.000919	-0.000852	0.00342
	(0.00894)	(0.00893)	(0.00834)	(0.00916)	(0.00958)	(0.0106)	(0.00922)	(0.00921)	(0.00890)
FX	-0.000454	-0.000468	-0.000590	-0.0137	-0.0137	-0.0262**	0.00001	-0.0000024	-0.000391
	(0.000894)	(0.000908)	(0.000850)	(0.00942)	(0.00954)	(0.0108)	(0.000822)	(0.000830)	(0.000865)
FA	0.0323*	0.0320*	0.0462***	0.0795***	0.109***	0.129***	0.0231	0.0226	0.0394**
	(0.0168)	(0.0167)	(0.0164)	(0.0215)	(0.0213)	(0.0265)	(0.0179)	(0.0178)	(0.0196)
FL	-0.0234	-0.0228	-0.0352*	-0.0912***	-0.112***	-0.133***	-0.0118	-0.0114	-0.0280
	(0.0203)	(0.0201)	(0.0188)	(0.0207)	(0.0227)	(0.0273)	(0.0208)	(0.0207)	(0.0210)
CUR	-0.414***	-0.414***	-0.603***	-0.369*	-0.435**	0.0339	-0.450***	-0.450***	-0.577***
	(0.125)	(0.125)	(0.110)	(0.186)	(0.204)	(0.296)	(0.134)	(0.134)	(0.108)
GDPPC	-0.0000027*	-0.0000027*	-0.0000041**	0.00000058	0.000000017	0.00000031	-0.00000003	-0.000000022	-0.0000033
	(0.0000016)	(0.0000016)	(0.0000017)	(0.00000082)	(0.00000088)	(0.00000081)	(0.0000019)	(0.0000019)	(0.0000033)
I.EXCH_FA	-0.0132*			-0.0918			-0.0100		
	(0.00782)			(0.220)			(0.00679)		
I.EXCH_FL	-0.000849***			-0.0959			-0.000774***		
	(0.000278)			(0.211)			(0.000243)		
I.EXCH_NFA		0.000328***			-0.0592			0.000372***	
		(0.000069)			(0.258)			(0.00007)	
I.CUR_GDPPC			0.000014**			-0.000014*			0.000013
			(0.0000061)			(0.0000078)			(0.0000096)
Constant	0.000163	0.000749	0.00952	-0.00582	0.00653	0.0124	-0.0199	-0.0194	-0.00662
	(0.0143)	(0.0144)	(0.0125)	(0.0207)	(0.0224)	(0.0210)	(0.0161)	(0.0161)	(0.0175)
Adjusted R-squared	0.602	0.601	0.607	0.534	0.511	0.546	0.640	0.640	0.627
Observations	573	573	573	102	102	102	471	471	471
No. of countries	178	178	178	29	29	29	149	149	149

Notes: 1) Robust standard errors are reported in parentheses.

2) *, **, and *** describe significance levels at 10, 5, and 1 percent, respectively.

3) “I” at the name of variables refers interaction terms.

Table 2-16. Panel regressions including interactions, fixed effects (Dependent variable: valuation to GDP ratio): Model B

	All			Advanced			Emerging and Developing		
EXCH	0.00339	0.000366***	-0.00000031*	0.309***	0.0219	-0.0185	0.00284	0.000378***	-0.00000026
	(0.00270)	(0.000023)	(0.00000016)	(0.0913)	(0.196)	(0.102)	(0.00233)	(0.000027)	(0.00000018)
GDPG	0.135	0.124	0.0784	0.284	-0.402	-0.192	0.114	0.106	0.119
	(0.138)	(0.133)	(0.127)	(0.270)	(0.472)	(0.353)	(0.143)	(0.138)	(0.129)
RISKA	0.0868***	0.0865***	0.0866***	0.00503	0.00601	0.00746	0.0905***	0.0903***	0.0919***
	(0.0140)	(0.0140)	(0.0134)	(0.00599)	(0.00661)	(0.00765)	(0.0145)	(0.0144)	(0.0141)
RISKL	0.00157	0.00161	0.00421	-0.0120	-0.0149	-0.0186	-0.000257	-0.000223	0.00135
	(0.00966)	(0.00964)	(0.00962)	(0.0111)	(0.0142)	(0.0111)	(0.00972)	(0.00970)	(0.0103)
FX	-0.000277	-0.000287	-0.000346	-0.00494	0.00665	0.0159	0.000137	0.000126	-0.000023
	(0.000718)	(0.000724)	(0.000703)	(0.0162)	(0.0248)	(0.0234)	(0.000733)	(0.000737)	(0.000784)
GROSS	0.00504	0.00510	0.00541	-0.0127***	-0.00117	-0.000458	0.00585	0.00587	0.00506
	(0.00440)	(0.00439)	(0.00457)	(0.00364)	(0.00183)	(0.00197)	(0.00647)	(0.00646)	(0.00629)
CUR	-0.364***	-0.365***	-0.445***	0.0394	0.277	-0.309	-0.425***	-0.425***	-0.427***
	(0.129)	(0.129)	(0.125)	(0.172)	(0.300)	(0.343)	(0.136)	(0.136)	(0.130)
GDPPC	-0.0000034**	-0.0000034**	-0.0000045**	0.00000058	-0.0000019	-0.0000018	-0.00000033	-0.00000032	-0.0000014
	(0.0000016)	(0.0000016)	(0.0000019)	(0.00000096)	(0.0000016)	(0.00000134)	(0.0000019)	(0.0000019)	(0.0000038)
I.EXCH_FA	-0.00796			-0.00563			-0.00640		
	(0.00751)			(0.287)			(0.00649)		
I.EXCJ_FL	-0.000736**			-0.457			-0.000689***		
	(0.000284)			(0.316)			(0.000248)		
I.EXCH_NFA		0.000412***			0.248			0.000425***	
		(0.000026)			(0.609)			(0.000031)	
I.CUR_GDPPC			0.0000086			0.000014			0.0000036
			(0.0000092)			(0.000012)			(0.000012)
Constant	-0.00385	-0.00344	0.000057	0.00263	0.0674	0.0481	-0.0252**	-0.0248**	-0.0221*
	(0.0135)	(0.0136)	(0.0123)	(0.0301)	(0.0578)	(0.0443)	(0.0121)	(0.0120)	(0.0130)
Adjusted R-squared	0.578	0.578	0.557	0.402	0.113	0.143	0.631	0.632	0.600
Observations	573	573	573	102	102	102	471	471	471
No. of Countries	178	178	178	29	29	29	149	149	149

Notes: 1) Robust standard errors are reported in parentheses.
2) *, **, and *** describe significance levels at 10, 5, and 1 percent, respectively.
3) "I" at the name of variables refers interaction terms.

Table 2-17. Panel regressions including interactions, fixed effects (Dependent variable: valuation to GDP ratio): Model C

	All			Advanced			Emerging and Developing		
NFA	0.0185	0.0180	0.0226	0.0612**	0.0880***	0.131***	0.00916	0.00868	0.0107
	(0.0224)	(0.0222)	(0.0207)	(0.0230)	(0.0230)	(0.0256)	(0.0241)	(0.0239)	(0.0215)
EXCH	0.00520	0.000261***	0.00000045***	0.0681	-0.110	-0.0932	0.00432	0.000289***	0.0000004**
	(0.00326)	(0.000068)	(0.00000016)	(0.119)	(0.139)	(0.0705)	(0.00308)	(0.000073)	(0.00000017)
GDPG	0.190	0.173	0.227*	0.136	-0.0924	0.124	0.192	0.178	0.267*
	(0.144)	(0.143)	(0.136)	(0.222)	(0.244)	(0.235)	(0.151)	(0.149)	(0.140)
RISKA	0.0753***	0.0752***	0.0741***	0.00349	0.00365	0.00538	0.0839***	0.0840***	0.0857***
	(0.0169)	(0.0169)	(0.0160)	(0.00555)	(0.00693)	(0.00738)	(0.0215)	(0.0215)	(0.0190)
RISKL	0.00274	0.00283	0.00171	-0.0137	-0.0146	-0.00529	0.00260	0.00267	-0.000845
	(0.00675)	(0.00675)	(0.00692)	(0.00901)	(0.00971)	(0.0104)	(0.00711)	(0.00710)	(0.00775)
FX	-0.000758	-0.000772	-0.000808	-0.0193*	-0.0205*	-0.0254***	-0.000515	-0.000529	-0.000367
	(0.00155)	(0.00157)	(0.00162)	(0.00994)	(0.0101)	(0.00628)	(0.00143)	(0.00144)	(0.00151)
GROSS	0.00583	0.00595	0.00493	-0.00654*	-0.000701	-0.00201	0.00648	0.00651	0.00473
	(0.00560)	(0.00558)	(0.00546)	(0.00329)	(0.00176)	(0.00157)	(0.00821)	(0.00819)	(0.00726)
GDPPC	-0.0000045**	-0.0000045**	-0.0000038*	-0.00000028	-0.0000012	0.00000033	-0.000004	-0.000004	-0.000001
	(0.0000017)	(0.0000017)	(0.0000021)	(0.00000083)	(0.00000093)	(0.00000082)	(0.0000026)	(0.0000026)	(0.0000039)
I.EXCH_FA	-0.0134			-0.0413			-0.0109		
	(0.00917)			(0.244)			(0.00866)		
I.EXCJ_FL	-0.000822**			-0.189			-0.000756**		
	(0.000326)			(0.230)			(0.000307)		
I.EXCH_NFA		0.000292***			0.0121			0.000324***	
		(0.000076)			(0.301)			(0.000082)	
I.CUR_GDPPC			-0.0000026			-0.000014***			-0.0000077
			(0.0000061)			(0.0000042)			(0.0000091)
Constant	0.0204	0.0210	0.0173	0.0304	0.0545**	0.0108	0.00428	0.00483	-0.00456
	(0.0138)	(0.0138)	(0.0147)	(0.0182)	(0.0213)	(0.0209)	(0.0188)	(0.0189)	(0.0199)
Adjusted R-squared	0.535	0.535	0.522	0.504	0.466	0.550	0.565	0.565	0.554
Observations	573	573	573	102	102	102	471	471	471
	178	178	178	(29)	29	29	149	149	149

Notes: 1) Robust standard errors are reported in parentheses.

2) *, **, and *** describe significance levels at 10, 5, and 1 percent, respectively.

3) "I" at the name of variables refers interaction terms.

Table 2-18. Panel regressions with additional variables

	Financial development	Real interest rates	
	A	A	B
FA	0.000964	0.0173	
	(0.0226)	(0.0268)	
FL	0.0116	-0.00153	
	(0.0214)	(0.0305)	
GROSS			0.00764*
			(0.00404)
CUR	-0.506***	-0.351*	-0.311*
	(0.118)	(0.187)	(0.168)
RISKA	0.0603***	0.00381	0.00366
	(0.0108)	(0.00830)	(0.00878)
RISKL	0.00980**	-0.000166	-0.000899
	(0.00465)	(0.00938)	(0.0102)
FX	-0.000830	0.000770	0.000716
	(0.000740)	(0.00148)	(0.00154)
GDPG	0.0591	0.101	0.120
	(0.123)	(0.151)	(0.122)
EXCH	-0.000000041	0.00000035	0.00000028
	(0.00000016)	(0.0000012)	(0.0000012)
GDPPC	0.00000018	-0.0000043**	-0.0000044**
	(0.0000013)	(0.0000019)	(0.0000019)
FD	-0.00536		
	(0.0280)		
I.FA_FD	0.0783***		
	(0.0285)		
I.FL_FD	-0.0908***		
	(0.0272)		
R		-0.151***	-0.160***
		(0.0545)	(0.0443)
I.RISKA_R		0.719***	0.778***
		(0.189)	(0.119)
I.RISKL_R		0.130	0.141
		(0.102)	(0.106)
Constant	-0.0271	0.0113	0.00917
	(0.0166)	(0.0168)	(0.0143)
Observations	506	371	371
Number of countries	174	150	150
Adjusted R-squared	0.692	0.702	0.701

Notes: 1) Robust standard errors are reported in parentheses.
2) *, **, and *** describe significance levels at 10, 5, and 1 percent, respectively.
3) "I" at the name of variables refers interaction terms.

Table 2-19. Panel regressions without outliers: Model B

	Full	Excluding CUR<-0.1	Excluding CUR<-0.05
GROSS	0.00442	0.00821***	0.00718**
	(0.00424)	(0.00284)	(0.00288)
CUR	-0.336***	-0.0854	-0.193**
	(0.127)	(0.123)	(0.0910)
RISKA	0.0877***	0.0844***	0.0890***
	(0.0139)	(0.0117)	(0.0111)
RISKL	0.00173	-0.00566	-0.00710
	(0.00937)	(0.00591)	(0.00686)
FX	-0.000353	0.000330	0.00285**
	(0.000744)	(0.00110)	(0.00121)
GDPG	0.163	0.0230	0.0204
	(0.144)	(0.117)	(0.129)
GDPPC	-0.0000034*	-0.0000041***	-0.0000032***
	(0.0000016	(0.0000012)	(0.0000012)
EXCH	-0.00000012	-0.000261	-0.000315
	(0.00000018)	(0.000262)	(0.000268)
Constant	-0.00432	0.00936	-0.00166
	(0.0133)	(0.0104)	(0.0116)
Observations	573	492	375
Number of countries	178	171	151
Adjusted R-squared	0.549	0.706	0.790

Notes: 1) Robust standard errors are reported in parentheses.
2) *, **, and *** describe significance levels at 10, 5, and 1 percent, respectively.

Table 2-20. Panel regressions without outliers: Model A, C

	Model A			Model C		
	Full	Excluding CUR<-0.1	Excluding CUR<-0.05	Full	Excluding CUR<-0.1	Excluding CUR<-0.05
FA	0.0367**	0.0491***	0.0579***			
	(0.0162)	(0.0104)	(0.0125)			
FL	-0.0288	-0.0361***	-0.0489***			
	(0.0197)	(0.0107)	(0.0131)			
NFA				0.0231	0.0383***	0.0492***
				(0.0212)	(0.00964)	(0.0117)
GROSS				0.00535	0.00708***	0.00527**
				(0.00540)	(0.00250)	(0.00227)
CUR	-0.402***	-0.158	-0.259*			
	(0.123)	(0.141)	(0.136)			
RISKA	0.0696***	0.0623***	0.0614***	0.0733***	0.0640***	0.0627***
	(0.0132)	(0.0105)	(0.0111)	(0.0162)	(0.0105)	(0.0111)
RISKL	0.000186	-0.00673	-0.00846*	0.00262	-0.00538	-0.00569
	(0.00860)	(0.00514)	(0.00507)	(0.00659)	(0.00439)	(0.00440)
FX	-0.000553	0.000158	0.00247	-0.000841	0.000160	0.00224
	(0.000984)	(0.00164)	(0.00207)	(0.00164)	(0.00188)	(0.00242)
GDPG	0.187	0.00805	0.0220	0.204	-0.000360	-0.0150
	(0.123)	(0.115)	(0.128)	(0.148)	(0.120)	(0.134)
GDPPC	-0.0000024	-0.0000031***	-0.0000021*	-0.0000042**	-0.0000038***	-0.0000032***
	(0.0000015)	(0.0000011)	(0.0000011)	(0.0000017)	(0.00000099)	(0.00000094)
EXCH	0.000000062	0.000529	0.000672*	0.00000044***	0.000515	0.000654*
	(0.0000002)	(0.000332)	(0.000363)	(0.00000016)	(0.000340)	(0.000339)
Constant	0.000908	0.0175*	0.0166	0.0206	0.0224**	0.0129
	(0.0143)	(0.0101)	(0.0122)	(0.0136)	(0.00896)	(0.0102)
Obs.	573	492	375	573	492	375
No.of Countries	178	171	151	178	171	151
Adj. R^2	0.584	0.735	0.825	0.521	0.729	0.815

Notes: 1) Robust standard errors are reported in parentheses.

2) *, **, and *** describe significance levels at 10, 5, and 1 percent, respectively.

Table 2-21. Panel regressions with lagged values of NFA and CUR

	A	B	C
FA	0.0687***		
	(0.00942)		
FL	-0.0599***		
	(0.0118)		
GROSS		0.00745**	0.00940**
		(0.00362)	(0.00423)
L.NFA			-0.0215***
			(0.00509)
L.CUR	-0.293***	-0.249**	
	(0.0861)	(0.111)	
RISKA	0.0573***	0.0905***	0.0863***
	(0.00724)	(0.00989)	(0.0101)
RISKL	-0.00687*	-0.00253	-0.000650
	(0.00384)	(0.00833)	(0.00680)
FX	0.00256**	0.00307*	0.00352***
	(0.00110)	(0.00168)	(0.00130)
GDPG	0.163	-0.0153	-0.227
	(0.175)	(0.285)	(0.318)
GDPPC	-0.0000029*	-0.0000052**	-0.0000072***
	(0.0000017)	(0.0000025)	(0.0000026)
EXCH	0.00000069***	0.00000015	-0.00000017
	(0.00000018)	(0.00000022)	(0.00000025)
Constant	0.0267*	0.0159	0.0357
	(0.0142)	(0.0243)	(0.0255)
Observations	409	409	409
Number of countries	168	168	168
Adjusted R-squared	0.724	0.621	0.654

Notes: 1) Robust standard errors are reported in parentheses.
2) *, **, and *** describe significance levels at 10, 5, and 1 percent, respectively.

Table 2-22. Annual Panel regressions, fixed effects (Dependent variable: Valuation to GDP ratio)

	A			B			C		
	All	Advanced	Emerging · Developing	All	Advanced	Emerging · Developing	All	Advanced	Emerging · Developing
NFA							0.0613***	0.0777***	0.0622**
							(0.0192)	(0.00609)	(0.0253)
EXCH	0.000000018	-0.0397	0.000000024	-0.000000042*	-0.0362	-0.000000044**	0.00000013***	-0.0368	0.00000015***
	(0.000000036)	(0.0921)	(0.000000044)	(0.000000021)	(0.0943)	(0.000000021)	(0.000000039)	(0.0874)	(0.000000047)
GDPG	0.00906	-0.406**	0.0290	0.0443	-0.327**	0.0589	0.0418	-0.395**	0.0711
	(0.0522)	(0.177)	(0.0527)	(0.0402)	(0.152)	(0.0419)	(0.0610)	(0.177)	(0.0602)
RISKA	0.108***	0.0121*	0.114***	0.133***	0.0121**	0.140***	0.112***	0.0145*	0.118***
	(0.0101)	(0.00655)	(0.00562)	(0.0148)	(0.00458)	(0.00927)	(0.0103)	(0.00761)	(0.00588)
RISKL	-0.00434	-0.00746	-0.00486	0.00123	-0.00968	0.000440	-0.00230	-0.00269	-0.00203
	(0.00403)	(0.0166)	(0.00399)	(0.00530)	(0.0138)	(0.00533)	(0.00375)	(0.0172)	(0.00378)
FX	0.000247	-0.0179	0.000181	0.000425	-0.00695	0.000393	0.000459	-0.0105	0.000380
	(0.000696)	(0.0129)	(0.000703)	(0.000422)	(0.0175)	(0.000413)	(0.00101)	(0.0115)	(0.00100)
GROSS				-0.0117**	0.000674	-0.0143***	-0.0144	0.00293	-0.0180*
				(0.00451)	(0.00178)	(0.00405)	(0.00941)	(0.00261)	(0.00950)
FA	0.0568***	0.0722***	0.0546***						
	(0.0112)	(0.00846)	(0.0160)						
FL	-0.0896***	-0.0656***	-0.0949***						
	(0.0272)	(0.0121)	(0.0334)						
CUR	-0.455***	0.329	-0.491***	-0.322***	0.539	-0.365***			
	(0.0529)	(0.490)	(0.0461)	(0.0599)	(0.515)	(0.0530)			
GDPPC	0.0000018	-0.0000032	0.0000031**	-0.00000048	-0.0000031	0.0000018	-0.000000022	-0.0000026*	-0.0000007
	(0.0000025)	(0.0000022)	(0.0000015)	(0.0000015)	(0.0000022)	(0.0000012)	(0.0000024)	(0.0000014)	(0.0000018)
Constant	0.0143	0.101	0.0303	-0.00583	0.0936	-0.00683	0.0332***	0.0786**	0.0512**
	(0.0126)	(0.0648)	(0.0226)	(0.0133)	(0.0674)	(0.00862)	(0.0124)	(0.0353)	(0.0235)
Adj. R^2	0.275	0.060	0.309	0.234	0.027	0.267	0.252	0.054	0.281
Observations	5,324	976	4,348	5,324	976	4,348	5,324	976	4,348
No. of Countries	178	29	149	178	29	149	178	29	149

Notes: 1) Robust standard errors are reported in parentheses.
2) *, **, and *** describe significance levels at 10, 5, and 1 percent, respectively.

Table 2-23. Annual regressions with financial exchange rates

	Model A, 1992-2005			
	EXCH	REER	FEXA	FEXL
FA	0.133***	0.128***	0.129***	0.129***
	(0.0240)	(0.0213)	(0.0150)	(0.0148)
FL	-0.129***	-0.139***	-0.143***	-0.144***
	(0.0193)	(0.0205)	(0.0188)	(0.0187)
CUR	-0.532***	-0.512***	-0.532***	-0.531***
	(0.0579)	(0.0591)	(0.0552)	(0.0554)
RISKA	0.0719***	0.0743***	-0.00215	-0.00196
	(0.00812)	(0.00729)	(0.00845)	(0.00854)
RISKL	-0.00148	-0.00319	-0.0128*	-0.0127*
	(0.00226)	(0.00322)	(0.00740)	(0.00730)
FX	-0.00630**	-0.00630**	-0.00364**	-0.00348**
	(0.00280)	(0.00293)	(0.00168)	(0.00164)
GDPG	0.0169	0.0175	-0.0363	-0.0345
	(0.0488)	(0.0514)	(0.0404)	(0.0401)
GDPPC	-0.0000035	-0.00000057	0.0000013	0.0000013
	(0.0000029)	(0.000002)	(0.0000025)	(0.0000025)
EXCH	-0.000142			
	(0.000110)			
REER		0.000025***		
		(0.0000041)		
FEXA			0.0469**	
			(0.0207)	
FEXL				0.0644**
				(0.0259)
Constant	0.0644***	0.0662***	0.0469**	0.0635***
	(0.0225)	(0.0193)	(0.0207)	(0.0158)
Observations	2,198	2,117	1,482	1,482
Number of countries	175	166	117	117
Adjusted R-squared	0.277	0.289	0.138	0.139

Notes: 1) Robust standard errors are reported in parentheses.
2) *, **, and *** describe significance levels at 10, 5, and 1 percent, respectively.

Table 2-24. Annual IV regressions (1971-2011)

	A	B	C
CUR	-0.294***	-0.552***	
	(0.0924)	(0.155)	
FA	0.0569***		
	(0.0105)		
FL	-0.0890***		
	(0.0269)		
GROSS		-0.0122**	-0.00566
		(0.00500)	(0.00480)
NFA			-0.0786**
			(0.0344)
RISKA	0.109***	0.134***	0.161***
	(0.00948)	(0.0138)	(0.0257)
RISKL	-0.00399	0.000626	0.00691
	(0.00337)	(0.00621)	(0.00727)
FX	0.000768	0.000576	0.00102
	(0.000954)	(0.000470)	(0.000705)
GDPG	0.0151	0.0253	0.0939*
	(0.0557)	(0.0460)	(0.0483)
GDPPC	0.0000013	0.00000029	-0.00000362
	(0.0000025)	(0.000002)	(0.0000024)
EXCH	0.000000062	-0.00000011***	-0.000000055
	(0.000000053)	(0.00000004)	(0.000000053)
Constant	0.0217	-0.0185	-0.0195
	(0.0147)	(0.0172)	(0.0206)
Adjusted R-squared	0.277	0.230	0.098
Observations	5,127	5,127	5,127
Number of country	177	177	177

Notes: 1) Robust standard errors are reported in parentheses.
2) *, **, and *** describe significance levels at 10, 5, and 1 percent, respectively.

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국문초록

세계적으로 금융글로벌화가 진행되면서 각국의 대외자산과 대외부채의 규모가 급격히 증가하는 한편 국가 간 자본거래도 활발하게 이루어지고 있다. 본 연구는 이러한 과정에서 나타나는 대외자산 및 대외부채의 가치변화효과(valuation effect)의 크기가 경상수지와 비슷하거나 이를 상회하고 있으며, 특히 이것이 장기에 걸쳐서 일어났을 때 각국의 부(wealth)에 미치는 영향이 상당할 것으로 보고, 그 결정요인을 분석하는데 중점을 두었다. 분석 결과, 대외자산과 대외부채의 규모와 항목의 구성이 가치변화 효과의 방향과 크기를 결정하는 중요한 요인으로 나타났다. 즉, GDP 대비 대외자산의 규모가 크거나 고위험·고수익 자산 항목의 비중이 클수록 양(+)의 가치변화효과가 나타나는 한편, GDP 대비 대외부채의 규모가 크거나 해당 부문에서 고위험·고수익 항목의 비중이 클수록 음(-)의 가치변화효과가 나타나는 경향이 있었다.

또한 각국의 대외금융자산은 여러 통화로 구성되어 있으므로 환율의 역할이 중요할 것이며 환율의 영향을 보다 명확히 알기 위해서는 실효환율을 사용해야 하는데, 이 때 기존의 무역 비중에 근거한 실효환율지수가 아닌 대외자산 및 대외부채의 세부 항목별·통화별 비중에 근거한 금융실효환율지수를 사용해야 할 필요성이 제기되고 있다. 본 연구에서는 한국을 대상으로 월별 금융실효환율지수를 구축하고, 이를 통해 환율이 국제투자포지션과 자본의 유출입에 미치는 영향을 분석하였다. 분석 결과, 한국의 금융실효환율이 절하할 때 순 대외자산의 가치가 상승하며, 증권투자 부문에서 자본유출이 증가하는 경향이 있는 것으로 나타났다.

주요어: 금융실효환율, 자본유출입, 국제투자포지션, 가치변화효과

학번: 2011-30072

감사의 글

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이제 세상에 나와 1년을 보낸 아기,
그리고 가족 모두에게
사랑과 감사의 마음을 전합니다.