Article

Successful Capital Controls under the IMF programme in Iceland

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[Abstract]

This paper discusses the causes and background of Iceland's much faster recovery and normalisation after the global financial crisis (2018) than other GIIPS (Greece, Ireland, Italy, Portugal and Spain). Despite being under an IMF programme at the time of the crisis, Iceland introduced its own capital and financial regulations, in particular restrictions on capital outflows. The paper analyses the effectiveness of the impact of Iceland's capital controls on GDP growth, industrial production, exchange rates and interest rates based on a Bayesian VAR (autoregressive) model for the period 1999-2022, including capital liberalisation and regulations. The results show that in the post-crisis period of capital controls from Q4 2008 to 2017, compared to the earlier period of capital and financial liberalisation, the impact on the real economy (GDP/output) was lower, forward-cyclicality (pro-cyclicality) movements were suppressed and the exchange rate and financial markets (interest rates) fluctuations) have also stabilised. Also, in the case of Iceland, unlike the usual IMF programmes, conditionality was limited to relatively necessary measures and austerity measures were refrained from being introduced.

The Icelandic experience shows that strong capital controls, including capital outflow controls, are necessary in countries facing capital account crises and can help the country's economy and financial markets recover. Furthermore, the IMF had called for capital deregulation and liberalisation after the end of the programme (August 2011), which Iceland did not adopt and continued for a relatively long period of time until its financial markets stabilised. This Icelandic experience demonstrates the effectiveness of the long-term introduction of capital controls (including outflow controls) by a country facing a capital account crisis.

Key Words; Capital Controls, IMF Programmes, Conditionality
JEL: F32, 33, F34, F38

Introduction

This paper analyses the background to Iceland's rapid recovery from the crisis in the aftermath of the Global Financial Crisis (2008), compared to other Euro Crisis countries. The objective of the paper is to assess the effect of the capital controls introduced in Iceland after the Crisis on the impact of net capital inflows on the real economy (GDP growth and industrial production), exchange rate and interest rates, based on econometric analysis (BVAR models). It will also show that the avoidance of short-term austerity measures and the flexible management of IMF programmes have contributed to Iceland's rapid economic recovery.

Iceland is almost the only country to have successfully introduced capital outflow controls on its own initiative under an IMF programme, and to have implemented them for more than eight years during the period 2008Q1-2017Q1, stabilising the country's economic and financial markets, and returning almost all macroeconomic and social indicators to their pre-crisis levels.

Iceland's capital flow management and controls differed significantly from those of a normal IMF programme in that it introduced capital outflow controls, the strongest and most unusual instrument of direct regulation, allowing no conversion into foreign currency and restricting the free flow of funds. These direct controls on capital outflows, as well as those on capital inflows from abroad, were far more effective than the indirect controls.[1)]

Prior to the outbreak of the Global Financial Crisis, Iceland had been pursuing a policy of capital and financial liberalisation with the aim of becoming the financial centre of Northern Europe, and higher interest rates than in the EU had led to a massive inflow of deposits and other capital from European countries. As a result, the country's main banking assets grew rapidly. The Global Financial Crisis and the subsequent Euro Crisis ended Iceland's prosperity and accelerated capital outflows in 2008.

Iceland's IMF programme differed significantly from the previous one in two main respects. First, it did not adopt strict austerity measures as is usual in IMF programs, but rather very moderate conditionality and constructive structural reforms aimed at restructuring actual financial institutions. Second, the IMF programme in Iceland gave the country a great deal of autonomy, it did not introduce harsh austerity measures, and the IMF programme implemented exceptional restrictions on capital transactions, particularly on outflows. This was not introduced as a conditionality in the Letter of Intent for the IMF programme, but rather as a recognition by the Icelandic government that without it the country would face imminent collapse. However, the IMF's reviews of the Stand-By Arrangement consistently urged the deregulation and liberalisation of capital controls from the outset, with a commitment to remove capital controls if conditions were met.

Iceland achieved a much more rapid recovery and normalisation than the other GIIPS (Greece, Ireland, Italy, Portugal, and Spain) countries affected by the Euro crisis, and the duration of support under the IMF programme was minimal (November 2008 – August 2011). The IMF initially attributed this "success" to the country's rapid recovery and success, citing reasons completely unrelated to the crisis, such as the safety hedge provided by the Nordic-rooted social welfare policies in the country, which had a capital account crisis character. Moreover, in its post-program monitoring report, the IMF persistently pressed

for the liberalisation of capital transactions. However, the government was extremely cautious about easing restrictions on capital transactions and continued to impose capital controls long after the end of the IMF programme, until March 2017[2]. IMF now put as 'Capital controls with no predefined time frame were a critical part of the toolkit to restore monetary stability[3]' The Icelandic experience shows that one of the factors that led to the success of capital controls was that they were introduced as a long-term measure, not merely a short-term one, to be taken by countries in crisis[4].

There is a variety of literature on capital controls or capital flow management and controls during the crisis in general, e.g., Ostry et al. (2011), Erten et al. (2019). However, there have been very few evaluations of Iceland's approach to capital regulation. Particularly, very few studies have discussed the Icelandic crisis and recovery in terms of IMF programmes and capital controls and have used econometric methods to show their effectiveness. Several research on this issue have been focused the historical and descriptive studies and most of them are descriptive in nature.

Bennediktsdotior et al. (2017) provide detailed data on the changes in the asset composition and investment content of the banking sector before and after the crisis in Iceland, but not an assessment of capital regulation per se. Tan (2018) positively assesses Iceland as having achieved economic recovery and has also improved in terms of income distribution. However, there are few examples of such a positive assessment in academic papers. There is also an article that compares the Islandic situation with Greece during the Euro crisis, but it is descriptive (Katsimi and Zoega, 2015)[5].

Forbes (2019) mainly discusses the analysis of Iceland's macroprudential policies, but there is little literature on quantitative assessments of capital flow management and controls in Iceland using econometrics. Baldursson et al. (2019) claimed that capital control measures helped in resolving the banks and reducing the net fiscal cost of the crisis, while a later attempt at resolving the carry-trade stock failed.

In this context, this paper analyses the background and consequences of Iceland's policies before and after the global financial crisis, the IMF program, and its own capital control measures. It also examines the impact of each financial balance item on the real economy (GDP, industrial production), the exchange rate and financial markets (interest rates), based on Bayesian VAR models, and show the effectiveness of capital and financial controls, in particular the capital outflow controls, during the crisis in Iceland.

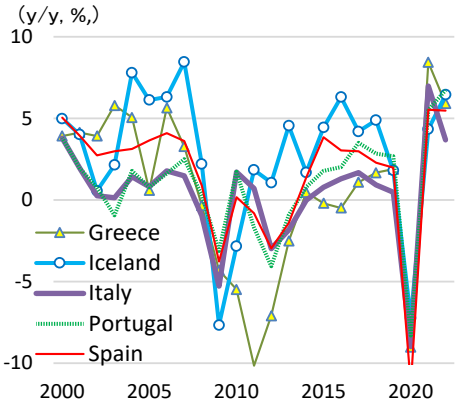
1. The Icelandic economy before and after the global financial crisis

1.1 The Icelandic economy and policies in the 2000s

In the 2000s, Iceland pursued financial and capital account liberalisation, along with the strengthening of its financial system and financial sector, to become a Nordic financial centre. In 2001, the country adopted an inflation target for its monetary policy and a floating exchange rate without intervention. As part of the financial liberalisation policy, three major commercial banks (Lands banki, Kaupþing banki and Glitnir banki) were privatised in 2002 and 2003. In the period 2003-2007, prior to the Global Financial Crisis, all three banks dramatically expanded their investment banking activities, both domestically and internationally, and together with the acquisition of deposits, significantly increased their bond

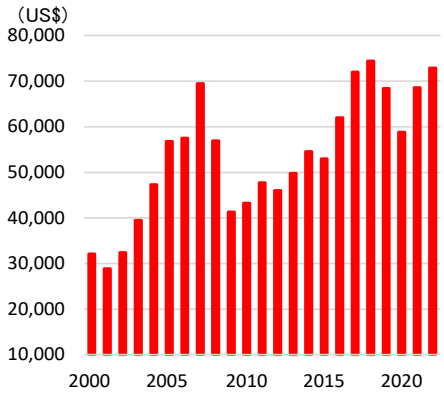
trading to foreign investors. As a result, the external debt of Iceland's four largest banks reached €140 billion in 2008. In the same period, Iceland's banking assets amounted to almost ten times the country's GDP.

Just prior to the Crisis, Iceland, a small country, experienced very large capital inflows for a country of its size. This led to a remarkably high GDP growth rate of 7.2% on average in the period 2004-2007, just before the Global Financial Crisis (Fig.1). Also, by the mid-2000s, GDP per capita had risen substantially from $32,018 in 2000 to $69,496 in 2007 (Fig.2). After the crisis, Iceland recovered very quickly compared to the euro crisis countries, reaching the level at $72,903 in 2022 (World Bank database).



Source: IMF database

Fig.1: GDP Growth (Iceland+GIPS)

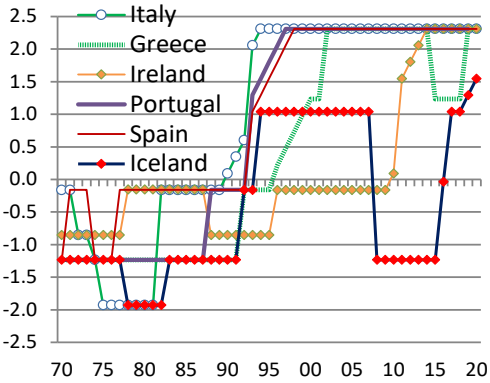


Source: World Bank database

Fig.2: Iceland: GDP per capita

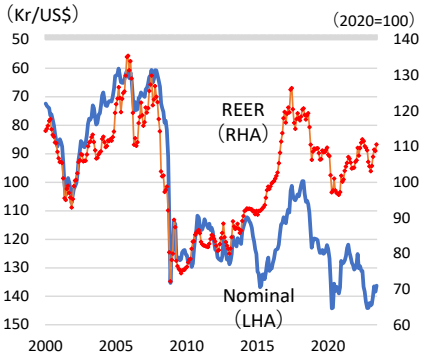
In the case of Iceland, there are fundamental differences with Greece, which was hit by the Euro Crisis. First, as a non-EU/Euro country, Iceland had more policy freedom and was able to impose capital controls, whereas Greece was unable to do so as a Euro member state (Fig.3). Second, since Iceland's private banks failed and were nationalised at the onset of the crisis, most of its external debt, in the form of deposits from foreign investors (i.e., liabilities), was erased from its balance sheet. Third, the country was able to adjust its exchange rate, unlike Greece was, because of its Euro currency, and a significant depreciation of the Krona exchange rate have improved its export competitiveness and allowed it to run trade and current account surpluses. This allowed the country to accumulate foreign exchange reserves and to repay its external debt.

With the onset of the Global Financial Crisis in 2008, the major commercial and savings banks failed and were nationalised. This was a capital account crisis with short-term capital outflows and a significant depreciation of the exchange rate, which led to a significant deterioration in the Icelandic economy. The outflow of capital led to a sharp depreciation of the exchange rate (Icelandic krona) (Fig. 4)[6].



Source: Chinn,Ito(2022) Trilemma Measures

Fig.3: KAOPEN（GIIPS+Iceland）



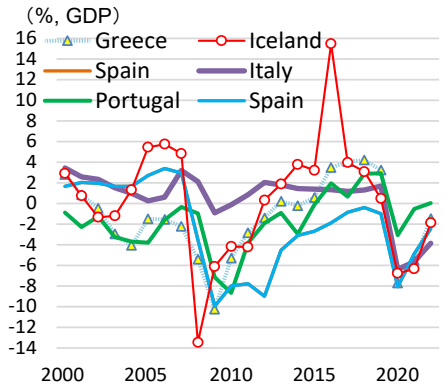
Sources:BIS, FRED

Fig.4: Iceland Exchange Rate (Nominal /REER)

1.2 The Icelandic economy and bank nationalisation in the immediate aftermath of the financial crisis

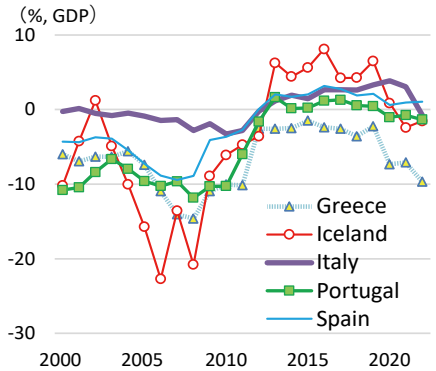
The general government budget deficit, which averaged a surplus of 5.4 % of GDP in 2005-7, reached 11.3 % in 2008 but recovered to -0.92% in 2019 (Fig.5). The current account deficit in Iceland was much larger than the 14.5% (per GDP) deficit of Greece in 2008, however, the current account became surplus of 6.4% of GDP in 2019 in Iceland (Fig.6). The current account balance has improved significantly due to the increase in exports and tourism revenues following the depreciation of the currency after the crisis, and there is less needed to maintain a capital and financial account surplus as was the case before the Crisis. However, the current account deficit widened from 2006 to 22.3% of GDP in 2008, partly reflecting the large surplus in the financial account (Fig. 7, 8).

There was a significant outflow of short-term capital in portfolio and other investments in 2008-11(Fig.7,8).



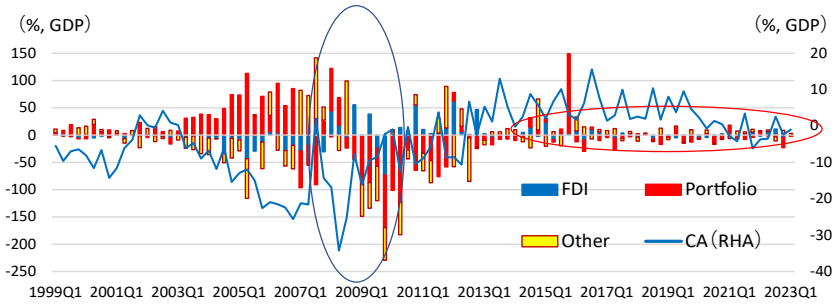
Source: WEO database (IMF)

Fig.5: Fiscal Balance (GIPS+Iceland)



Source: WEO database (IMF)

Fig.6: Current Account (Iceland/GIPS)



Source: IFS (IMF)

Fig.7：Iceland: Financial Flows & Current Account

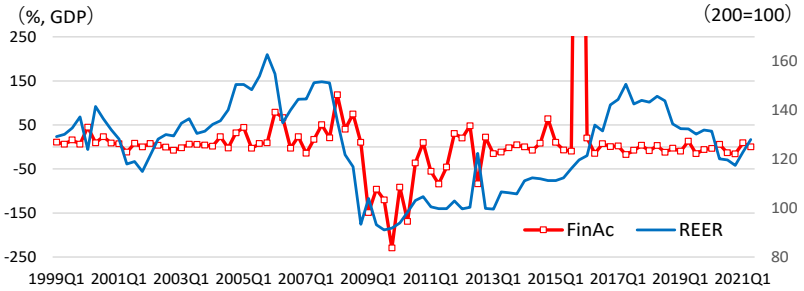


Fig.8：Iceland Financial Flows (net) & REER

Note: Financial Inflows are net capital inflows.　Sources: Central Bank of Iceland, IFS (IMF)

In the aftermath of the Global Financial Crisis, the rapid withdrawal of capital from Europe accelerated, leading to a significant increase in non-performing loans (NPLs) and a financial crisis in Iceland. After the outbreak of the crisis, the government and the authorities were quick to bail out (in October 2008); the three main banks that had gone bankrupt by nationalising them. The first one, Glitnir banki, was nationalised at the end of September 2008, with the government taking a 75% stake for €600 million. In addition, on 7 October 2008, the financial supervisory authority took control of Landsbanki and on 9 October 2008 of Kaupþing banki, the largest bank. Other savings banks and other institutions were also recapitalised and restructured.

The fact that most of the major commercial banks in Iceland were state-owned after the crisis made it difficult for them to operate in a high-risk environment, unlike the private banks which tended to invest speculatively, and thus avoided the risk of international capital flows. Since the introduction of capital/financial controls, capital flows have been relatively stable. However, from 2017 to 2019, the exchange rate (REER) appreciated, partly due to the liberalisation of direct capital controls since 2017.

Instead of an economy based on a fragile “financial centre”, which is highly vulnerable to global economic and market conditions, as was the case in the 2000s, Iceland is now aiming for sustainable growth through a tourism. The IMF has recently published a special report on Iceland on the development of the tourism sector; see IMF (2017b).

1.3 Introduction of capital controls

In Iceland, capital account liberalisation was promoted from the 1990s to the 2000s. This was partly due to the aim of structural change in the national economy by shifting the economic structure from one based on the primary industry, mainly fishing, to financial services. Until the Global Financial Crisis (2008), there was a steady flow of funds into the country's financial institutions from Europe, and the country's major banks saw their balance sheets expand substantially. This was accompanied by relatively high levels of interest rates compared to the eurozone and other regions, and a significant increase in deposit account balances.

However, with the onset of the Crisis, capital outflows accelerated, and to deal with the depreciation of the exchange rate, capital flow management and controls, especially outflow controls were introduced. Since the 2008 crisis, the Icelandic government has implemented a series of capital controls, restrictions on foreign currency transactions and transactions in the domestic currency. These prohibit foreign exchange transactions other than for current account purposes. As a result, the economy and markets had gradually calmed down. However, the exchange rate remained volatile in both nominal and real terms. In principle, the authorities focused on regulating transactions in short-term capital by residents and foreign investors. As a result, FDI, which is essentially long-term capital investment, and currency exchange used in actual trade were large immune to exchange rate depreciation.

The major capital control measures have been gradually relaxed since 2016 and deregulated in March 2017, while maintaining the supervision and regulation of the central bank (Table 1). Particularly noteworthy is the shift since 2016 from a focus on direct regulation to indirect regulation, mainly through the central bank's Special Reserve Requirement (SRR). To date, Iceland has implemented a number of amendments basically to regulate short-term speculative movements in foreign investment. Even under the IMF programme (2008-2011), capital controls were maintained until liberalisation in the first quarter of 2017, after which capital controls were partially relaxed.

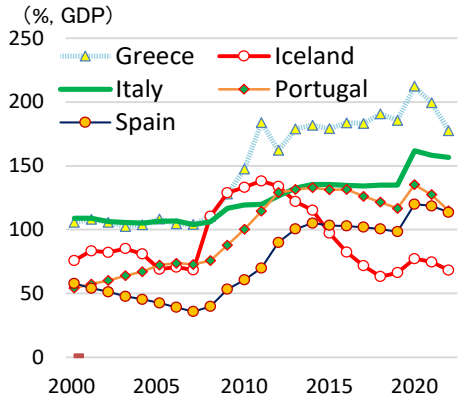
The introduction of capital controls discouraged the transfer of domestic funds abroad and gave the government and authorities time to nationalise the financial sector and develop regulations. This could be one of Iceland's most successful economic policies in the post-crisis period.

Table 1：Iceland: Capital Flow Management & Controls

Date	Contents
8-Oct-08	Central Bank restricts foreign currency trading; capital movements restricted (ISK10mn to 5mn)
8-Nov-08	Introduction of formal capital controls legislation; Short-term capital transfer prohibited
	Foreign currencies should be repatriated to Iceland
31-Mar-09	Amendment of the Foreign Exchange Law; exports limited to foreign currencies
10-Jul-09	Amendment of the Foreign Exchange Law; tightening of restrictions on illegal foreign exchange transactions
31-Oct-09	Amendment to Foreign Exchange Law; ban on trading in home currency offshore
	Exchange of foreign currency for FDI purposes permitted.
29-Apr-10	Amendment to Foreign Exchange Law; Limitation on amount of foreign currency acquired for travel purposes
	Decision on illegal offshore transactions
14-Jun-10	Amendment of Foreign Exchange Law and Customs Law; tighter control of foreign currency transactions
	Strengthen supervision and inspection of central banks
4-Apr-13	Amendment of the Foreign Exchange and Foreign Trade Law;
	Restriction on financial institutions' withdrawal of bonds from overseas
	Cautious capital liberalisation agreement by IMF/government authorities
	Conditional on (sounder banks + increased foreign exchange reserves)
4-Apr-13	Central Bank to intervene in foreign investors' rules on forex trading
	Allowing inflation-linked restructuring for more than 5 years
18-Jun-14	Restrictions on cross-border transactions in home currency
6-Mar-15	Restrictions on foreign exchange transactions by non-residents
Jun-15	Foreign Excgange for payment banned except trade of goods (removed in Mar 2017)
14-Jun-16	Restrictions on transactions in krona-denominated assets
17-Jun-16	Mandatory central bank depositary system (URR)
19-Dec-16	Relaxation of income shifting rules on international capital movements (goods and services)
12-Mar-17	Deregulation of the Central Bank's compulsory deposit system (URR) in foreign currencies
	Central Bank restricts foreign currency trading; capital movements deregulated
27-Jun-17	Restrictions on overseas financial transactions (Central Bank reporting requirements)
2-Nov-18	Regulations on the Deposit of New Foreign Currency at the Central Bank
5-Mar-19	Amendments to the Restrictions on Transactions in Krona Denominated Assets Regulations
5-Mar-19	Reduced on the Central Bank's Special Reserve Requirement (SRR) on selected debt debt inflows (20% to 0%)
17-Mar-20	Regulations on countercyclical capital buffers of banks

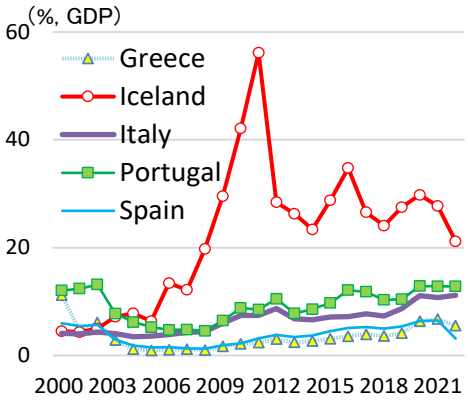
Sources: Central Bank of Iceland, IMF(2020b)

Behind the partial relaxation and liberalisation of capital controls, the decline in foreign exchange reserves had been halted and improved public debt position compared to countries that experienced the Euro Crisis (Fig. 9, 10).



Source: World Bank database

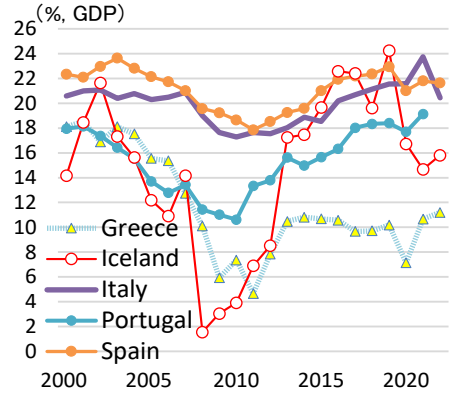
Fig.9: Public Debt (GIPS+Iceland)



Source: World Bank database

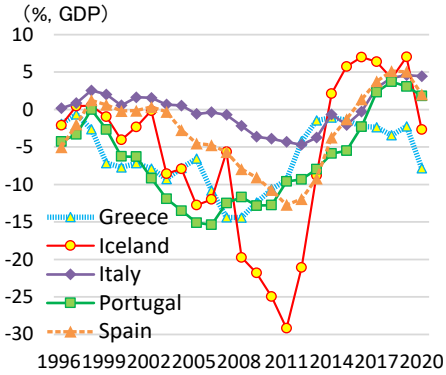
Fig.10: Foreign Reserves (GIPS+Iceland)

The domestic savings rate in Iceland, which fell to single digits after the Crisis, has recovered to the 20% of GDP level for both the domestic savings and investment rates since 2015, and the savings-investment balance has rapidly normalised, most recently turning positive. This is an early recovery compared to other GIIPS countries (Fig. 11 and 12). However, as Iceland has not yet adopted full domestic and foreign financial liberalisation like the Euro countries, it has only returned to pre-2008 levels and some restrictions remain (e.g., non-resident central bank depositary system, restrictions on outward FDI investment and free outward investment by the household sector)[7].



Source: World Bank database

Fig. 11: Domestic Savings (GIPS/Iceland)



Source: World Bank database

Fig. 12: IS Balance (GIPS+Iceland)

2. Iceland's IMF Program

2.1 Characteristics of Iceland's IMF Programme

In October 2008, in the aftermath of the Global Financial Crisis, Iceland asked the IMF for assistance in view of the rapidly deteriorating economic and market situation. A loan under the Stand-By Arrangement, amounting to approximately $2.1 billion, was disbursed in November 2008. This was shortly after the collapse of the country's three main banks. The main points of the IMF programme for Iceland were as follows.

First, very modest conditionality was imposed, with maximum respect for the government's wishes, rather than the harsh austerity measures normally imposed by the IMF. The performance criteria, which are normally strict, usually include the government's budget balance, but in Iceland the conditions were much simpler and less stringent, as they were not attached at the outset. For example, in Net financial balance, the target for 2018/19 was more modest than reality. Moreover, the net domestic asset, which is a symbol of the austerity policies characteristic of IMF programmes, was finally set in 2010, but the actual figure was lower than the target (i.e., the target itself was modest) (Table 2). This has saved the country from severe austerity measures.

Second, the IMF did not force the kind of severe structural reforms normally seen in the Asian Crisis (1997/8) and allowed the nationalization and capital injection of three banks whose profits had deteriorated sharply (Table 3) . In terms of structural conditionality, the

main items include capital injections into banks that were necessary, and unnecessary items found in IMF programmes in other countries are not found in the Icelandic programme. On the other hand, during the Asian crisis, banks in Indonesia were restructured and liquidated during the crisis, but this did not happen at all in Iceland, where the IMF encouraged the restructuring of the banking sector by making bank capital injections a structural conditionality, particularly in the major banks that had been temporarily nationalized.

Thirdly, the IMF allowed the introduction of capital controls in its first Letter of Intent (November 2008) because the Icelandic crisis had resulted in rapid capital outflows and a significant depreciation of the krona. Iceland's implementation of capital controls and exchange controls while under an IMF programme was a landmark, a capital account crisis marked by capital outflows. In fact, Iceland is the only country which has introduced capital controls under the IMF programme.

The capital outflow control measures introduced under the IMF programme in Iceland can be attributed to the active involvement of the Icelandic government and authorities. In this respect, it can be said to be an epoch-making example of true ownership of economic policy, unlike most cases in developing countries. The introduction of capital controls under the IMF programme assumed that they would be some temporary measures and liberalised once the immediate crisis was over, under the term "provisional". The initial Letter of Intent (LOI) for the IMF programme in November 2008 did not explicitly stipulate conditionality, but subsequent reports have repeatedly referred to the deregulation and liberalisation of capital controls, since the above-mentioned restrictions stated in LOI (2008) were treated as temporary. However, the Icelandic Government continued to maintain the capital controls for a long period of time after their introduction, until 2017. This was because it was recognised from the outset that certain conditions were necessary on the part of the IMF. Moreover, from the outset, the IMF programme cited a condition for the deregulation or removal of these capital control under the conditions that the financial system has stabilised, foreign exchange reserves have been restored to an appropriate level, and currency stability has been confirmed.

It is clear that the IMF did not actively support the introduction of capital controls by the countries concerned in the face of the crisis in order to avert a crisis. In the case of Iceland, not only during the implementation of the programme, but also in its third Monitoring Report (IMF 2013) after the programme had ended, the IMF stated that under capital controls The elimination of the Icelandic asset structure is a top priority, as it is too domestic and a more efficient asset allocation can be achieved.

The Fourth Monitoring Report (IMF 2014) also discussed measures for liberalisation, such as stabilising the balance of payments and the asset structure of state-owned financial institutions.

In this regard, The IMF has finally published a note acknowledging that Iceland's success was due to (i) the introduction of capital controls; (ii) the restructuring of the banking sector; (iii) the gradual improvement of the fiscal balance; and (iv) the social security system (see 2019a).

Table 2： Iceland Quantitative Performance Criterion/ Targets

	2018		2019					2010	
	December		Mar		June	Dec		May 10	
	PC	Actual	[PCs]	Actual	PC	Prog	Actual	Prog.	Actual
1 ⊿Net financial balance (krona, bn)	-12	-117	-55	2	-55	-200	-167	-65	-48
2 ⊿ Net domestic Asset (krona, bn)								65	16
3 ⊿Central Bank Lending.(ceiling) (krona, bn)	25	2.1	50	28.9	50	42.6	30.3		
4 ⊿Lending to Govt. by Central Bank.(ceiling) (krona, bn)	25	7.8	25	-31.0	25	70.0	13.6	80	19.5
5 ⊿International reserves (Ceiling) (US$ mn)		-543	-600	-70		-475	-319	-325	-122
6 Contracting/ guaranteeing for new external debt (US$ mn)	4,000	0	4,075	55	4,150	3,500	487	2,500	0
7 short-term external debt (Ceiling) (US$ mn)	650	137	650	189	550	1,400	0	750	0
8 ⊿Net Domestic Asset of Central Bank (US$ mn)	0	0	0	0	0	0	0	0	0

	2010					2011			
	Sep	Oct		Dec.10		Mar.		June	
	Prog.	Prog.	Actual	Prog.	Actual	Prog	Actual	Prog.	Actual
1 ⊿Net financial balance (krona, bn)	-120	-175	-140	-158	-121	-40	-11.9	-80	-55.4
2 ⊿ Net domestic Asset (krona, bn)	65	20	34	40	-15	35	-29.0	14	-40.0
3 ⊿Central Bank Lending.(ceiling) (krona, bn)									
4 ⊿Lending to Govt. by Central Bank.(ceiling) (krona, bn)	80	70	8.6	80.0	41.6	70	-14.0	70	-7.0
5 ⊿International reserves (Ceiling) (US$ mn)	-350	-425	-278	-580	812	-692	369.0	-480	904
6 Contracting/ guaranteeing for new external debt (US$ mn)	2,500	3,500	55	2,500	1,486	2,000	0.0	2,500	1,000
7 short-term external debt (Ceiling) (US$ mn)	750	1,400	0	750	22	700	0.0	700	0
8 ⊿Net Domestic Asset of Central Bank (US$ mn)	0	0	0	0	0	0	0.0	0	0

Sources: IMF Letter of Intent (Nov. 2008); 1st (Oct.2009), 2nd (Apr.2010); 6th (Aug.2011) reviews on Iceland.

Table 3： IMF Structural Conditionality (Iceland)

November 2008	
Prior Actions	Completed by
1 Policy rate raised to 18%.	
2 Establishment of a bank restructuring committee of interested parties	
Structural Performance Criteria	
3 Capital injection into 3 banks + capital adequacy ratio of 10%	February 2009
4 Strengthening of banking supervision	March 2009
Structual Benchmarks	
5 Preparation of strategy for asset recovery	November 2008
6 3 banks supervised, audited and business plans prepared	15 January 2009
7 Evaluation of the three banks by an international auditing firm	January 2009
8 Preparation of medium-term financial improvement plan	June 2009
October 2009	
Prior Actions	Completed by
1 Monetary policy towards currency stability	
2 Strategy for the abolition of capital controls	
3 Medium-term financial recovery plan	
4 Capital injection into Kaupthing/ Islandsbank + 12% capital adequacy ratio	February 2009
Structual Benchmarks	
5 Capital injection into New Landsbankinn + capital adequacy ratio of 12%	November 2009
6 Completion of capital injection in saving bank	November 2010
7 Legislation on banking supervision, auditing and business of 3 banks	December 2009
8 Medium-term public debt management plan approved	December 2009
April 2010	
Prior Actions	Completed by
1 Capital injection into New Landsbankinn + 12% capital adequacy ratio	
2 Medium-term public debt management bill introduced	
Structual Benchmarks	
3 Local government financial framework set	December 2010
4 Capital injection into Byr/ Keflavik (savings bank) + 16% capital adequacy ratio	May 2010
5 Rehabilitation and capital injection into Non Bank	August 2010
6 Measures to strengthen compliance with Basel standards	March 2011
7 Legislation to strengthen restructuring of household debt	June 2010

Sources: Iceland Letter of Intent (Oct.2008); 1st (Oct.2009), 2nd (Apr.2010); 6th (Aug.2011) reviews

2.2 Progress and Evaluation of the IMF Program

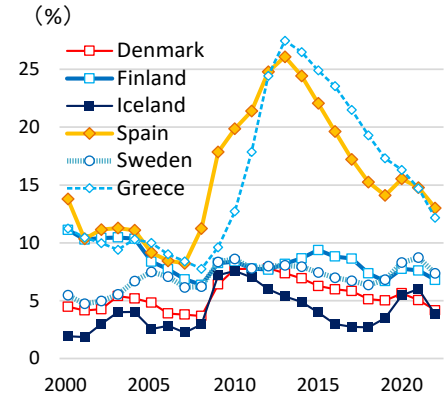
The IMF report under Article IV (IMF 2021) described that a bill including some provision allowing the Central Bank of Iceland (CBI) to introduce temporary capital flow management and controls (CFMs) on outflows are now being introduced, which could be an effective tool to support macroeconomic adjustments in imminent crisis circumstances.
The bill also gives powers to the CBI to determine the degree of restrictiveness of controls on derivative transactions, providing scope for their eventual easing and deepening of Iceland's foreign exchange market[8].

IMF programmes typically take more than three years to complete in most countries, but in Iceland it took less than three years (November 2008 - August 2011), although there was a temporary interruption due to the general election (April 2009). This shows that Iceland's economic and market stabilisation has proceeded at a relatively fast pace. The country's example contrasts sharply with that of Greece, which was placed under an IMF programme during the Euro Crisis, where severe austerity and structural adjustment policies led to an extremely poor economic and social recovery, with slow and very long-lasting unemployment and other social consequences. Iceland's success can be attributed not only to the stabilising effects of the capital controls mentioned above, but also to the fact that fiscal austerity measures were not imposed.

Since the end of the Icelandic programme, the IMF has continued to raise the issue of capital deregulation and liberalisation in its Post Program Reviews and in its Annual Survey Reports under Article IV (e.g., IMF2013, 2014, 2015), encouraging the Icelandic authorities to move towards liberalisation. The IMF's main objective has been to restart capital liberalisation as soon as possible. However, it was only in the period between October 2016 and March 2017 that Iceland relaxed its capital controls and turned towards liberalisation. For example, restrictions on offshore krona currency settlement were lifted. However, the IMF has not changed its view that the capital deregulation implemented in 2016/17 was also insufficient The IMF has made no official statement at all that Iceland's introduction of capital controls has led to a rapid economic recovery and stabilisation.

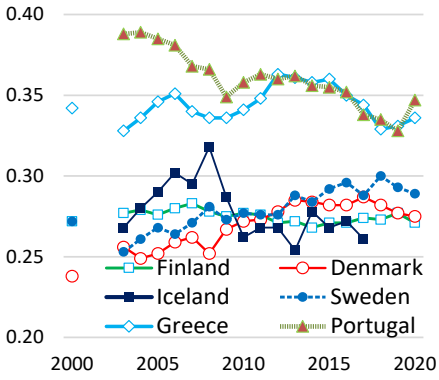
2.3 Icelandic economy/society in the post-IMF programme

In the case of Iceland, the fundamental difference from Greece, which was hit by the euro crisis, is that Iceland is a common Nordic society based on social security and welfare policies. This is why Iceland's unemployment rate has traditionally been lower than that of the GIIPS countries, but after the Global Financial Crisis the economic situation deteriorated significantly and the unemployment rate rose sharply to 8% . However, with the safety net of the welfare society, the unemployment rate has fallen significantly and normalised to around 4% in 2019 (Fig.13). On the other hand, the Gini coefficient, which measures the degree of inequality in the distribution of income, originally showed a good distribution of income in Iceland before the Crisis but deteriorated after the crisis. Today, however, the Gini coefficient in Iceland has generally improved and compares favourably with the levels in Nordic countries, including Sweden (Fig.14).



Source: World Bank database

Fig.13: Unemployment



Source: World Bank database

Fig.14: Gini (North/South Europe)

3. Analysis and evaluation of Iceland's capital and financial controls

This section compares the period of capital controls in Iceland with the period before and after the capital controls and examines the extent to which capital movements have affected the real economy and financial market in Iceland. The period covered is from 1999 to 2022. The analyses based on the Bayesian Vector Autoregression (BVAR) model are presented in this section, using impulse response functions and variance decomposition.

3.1 Variables and model

The analysis covers the period before the introduction of capital controls (1999Q1-2008Q4), the period of full-scale capital controls implementation (2008Q4-2017Q1), including the period under the IMF programme (2008-2011), and the period until recently after the end of the IMF programme (201142-2022Q4).

(1) Variables

- Real GDP growth [GDP] (%, y/y)
- Nominal Exchange Rate (Exrate) (ISK[Krona]/US$)
- Financial Account, Balance of Payments [FINAC] (net inflows, % of GDP)
- Foreign Direct Investment [FDI]; Portfolio investment [Portfolio]; Other investment [Other] (net inflows, % of GDP)
- Manufacturing production [Prod] (y/y growth rate)
- Money Market Rate [Moneymkt] (%), Treasury Bill yield [TB] (%), Bank lending interest rate [Lend] (%)
- KAOPEN[9] (an indicator of the degree of financial openness by Chinn-Ito)

Variables (Iceland)

Variables	Abbreviation	Sources
Real GDP growth	GDPgrowth	International Financial Statistics (IFS) database (IMF)
Nominal Exchange Rate (Krona/$)	Exrate	IFS database (IMF)
Financial Account, net inflows, % of GDP	FINAC	International Financial Statistics (IFS) database (IMF)
Foreign Direct Investment, % of GDP	FDI	IFS database (IMF), FRED (FRB)
Portfolio investment, % of GDP	Portfolio	IFS database (IMF), FRED (FRB)
Other investment, % of GDP	Other	IFS database (IMF), FRED (FRB)
Manufacturing Production (Except construction) (y/y, %)	Prod	FRED (FRB)
Money market rate (%)	Moneynkt	IFS database (IMF)
Tresury Bill yield (%)	TB	IFS database (IMF)
Bank lending interest rate (%)	Lend	IFS database (IMF)
KAOPEN index (Chinn-Ito Index)	KAOPEN	The Chinn-Ito Index

Note: All variables (except annual Chinn-Ito Index) are quarterly.

(2) Models

- Model 1: Impact of net capital /financial inflows (FDI/ Portfolio/ Other investment) on real GDP growth[10)]
- Model 2: Impact of net capital /financial inflows on manufacturing industry[11)]
- Model 3: Impact of net capital /financial inflows on Nominal Exchange Rate (local currency [Krona] denominated in US$) [Exrate]
- Model 4: Impact of capital /financial inflows (net) on interest rates: long-term (10 years) government bond yield, call money rate, long-term bank lending (loan) rate
- Model 5: Impact of KAOPEN (index) on net capital /financial inflows (FDI/ Portfolio/ Other investment)[12)]

The lag order of the BVAR analysis is four periods[13)], and each variable is measured in levels to maintain stationarity. This BVAR analysis uses Giannone, Lenza & Primiceri rather than the typical Prior Type of Litterman/Minnesota or Normal-Wishart. The selection of prior distributions is surrounded by uncertainty so that the hyperparameters characterizing the informativeness of the prior distributions as random variables, as in Giannone, Lenza, and Primiceri (2015).

In the above analyses, all variables, including Financial account (FINAC), GDP growth, Industrial production (Prod) satisfy stationarity, which ensures robustness in the BVAR analysis.

3.2 Bayesian Vector Autoregression (BVAR) Analysis

3.2.1 Impulse response function (1) Impact of capital inflows on GDP Growth

The impact of net financial inflows of capital (FDI, portfolio and other investments) on real GDP growth was measured using impulse response functions(Fig.1). The analysis is based on quarterly data for the period 1999Q1-2022Q4 and examines the impact of capital inflows on real GDP growth over the periods that includes the pre-crisis period of financial liberalisation (1999Q1-2008Q3), the period covering IMF Programme (1999Q1-2011Q3), and the post-crisis period under capital controls (2011Q4-2017Q1), as well as those period covering deregulation of capital controls (2011Q4-2022Q4)[14)].

In the impulse response functions of real GDP growth, short-term investment, especially portfolio investment, had a significantly large impact on real GDP growth in the pre-crisis period (1999Q1-2008Q3) as well as the crisis period covering IMF Programme (1999Q1-2011Q3).

During these period, short-term capital inflows increased and GDP growth rates were highly influenced by capital flows, which were cyclical and unstable, while active overseas business development through FDI did not have a positive impact on domestic GDP.

On the other hand, the impulse response function of real GDP growth to short-term capital (portfolio/other investment) in 2011Q4-2017Q1 shows a smaller impact of capital inflows on real GDP growth than that the former periods until 2008Q3.

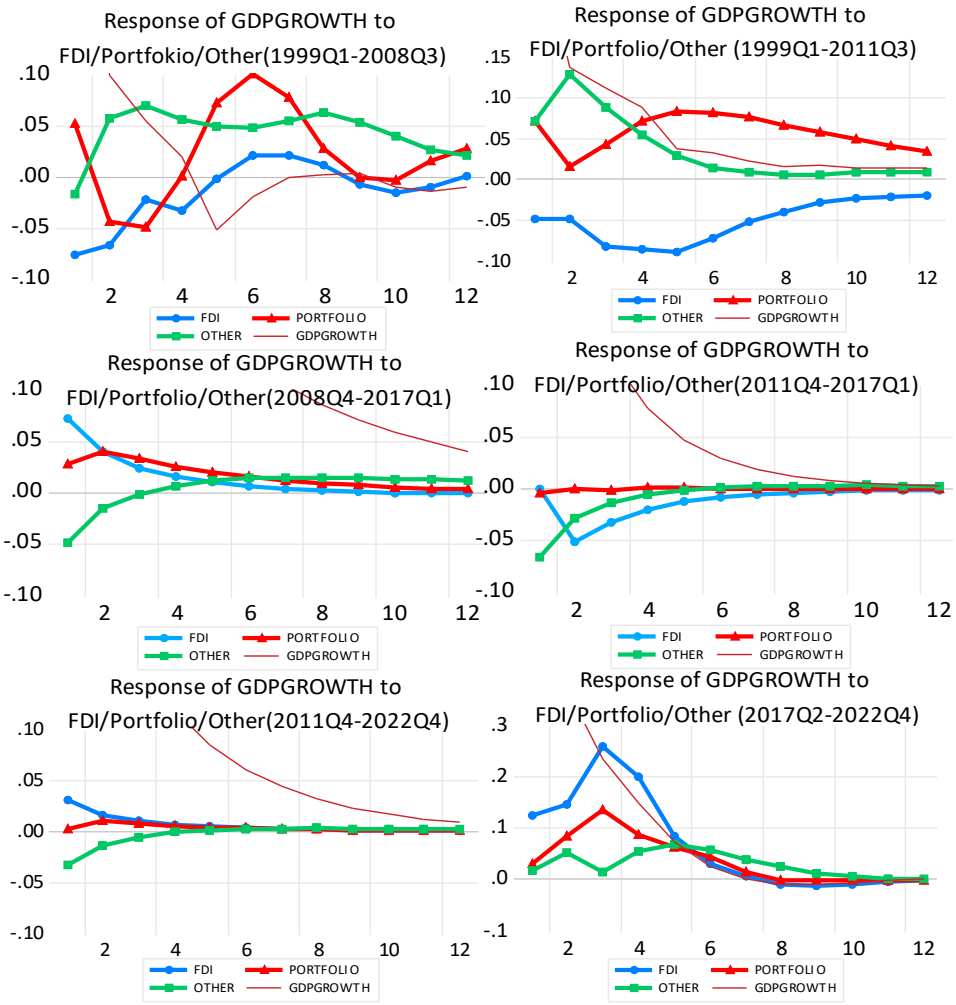


Fig. 15: Impulse response function of real GDP to Capital Inflows

In the later period (2011Q4-2022Q4), the impact of capital inflows on real GDP growth was limited, despite the relaxation of capital controls and the shift from direct to indirect regulation. Moreover, in more recent period (the 2017Q4-2022Q4), the impact of FDI on GDP growth has been positive and short-term capital inflows, especially other investment, have been limited.

These results show that the impact of capital inflows on real GDP growth was not significant in 2017Q4-2022Q1 periods, and that the impact of capital inflows on real GDP growth was limited by capital controls and various prudential regulatory measures. Therefore, it can be said that capital inflows have not had a pro-cyclical impact on the economy and the economy has been stable during this period.

3.2.2 Impulse response function (2) Impact of capital inflows on Manufacturing Production[15)]

Prior to the introduction of capital controls (2000Q1-2008Q3), the impact of short-term capital flows, particularly other investment, on manufacturing output was relatively large. (Fig.2). A similar trend can be seen in the period during the period 1999Q1-2011Q3, which includes the crisis period, the real economy (production) was strongly affected by capital flows under capital account liberalisation.

On the other hand, in the period when capital controls were introduced (2008Q4-2017Q1 and 2011Q4-2017Q1), the impact of capital inflows, especially short-term other investment, on industrial (manufacturing) production was relatively limited.

This can be explained by the fact that production activities became less dependent on capital inflows during this period. Particularly between Q4 2011 and Q4 2017, FDI had a positive impact on production, while the negative impact of short-term (portfolio and other) investment on industrial production became smaller and limited.

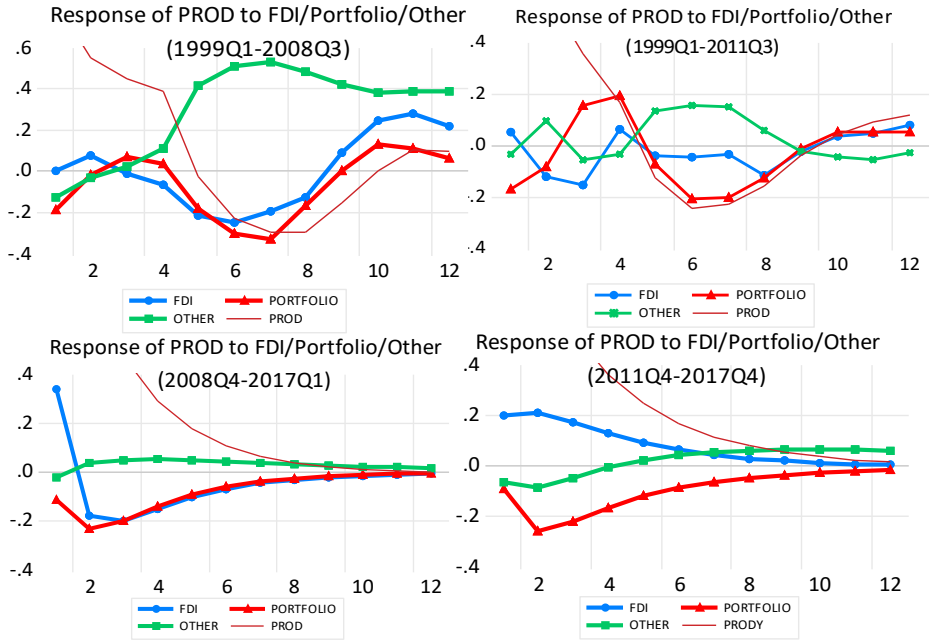


Fig. 16: Impulse response function of Manufacturing Production to Capital Inflows

3.2.3 Impulse response function (3) Impact of capital Inflows on Exchange rate

The impact of short-term investment, especially portfolio investment, on the exchange rate had been in the direction of depreciation during the capital liberalisation period (1999Q1-2008Q3) and the period including the crisis period (1999Q1-2011Q3) (Fig.17). This can be attributed to the fact that Icelandic banks were active in short-term investment activities during the period.

However, since Q4 2008 (2008Q4-2017Q1 and 2011Q4-2022Q4), the impact of capital inflows on the exchange rate has been small despite the deregulation and management of capital flows the impact on the exchange rate remains limited. In the most recent period (2017Q1-2022Q4), the overall impact of capital inflows on the exchange rate has been extremely limited. In these periods the impact of FDI on the exchange rate has been very small as was the impact of short-term capital (portfolio and other investments). This implies

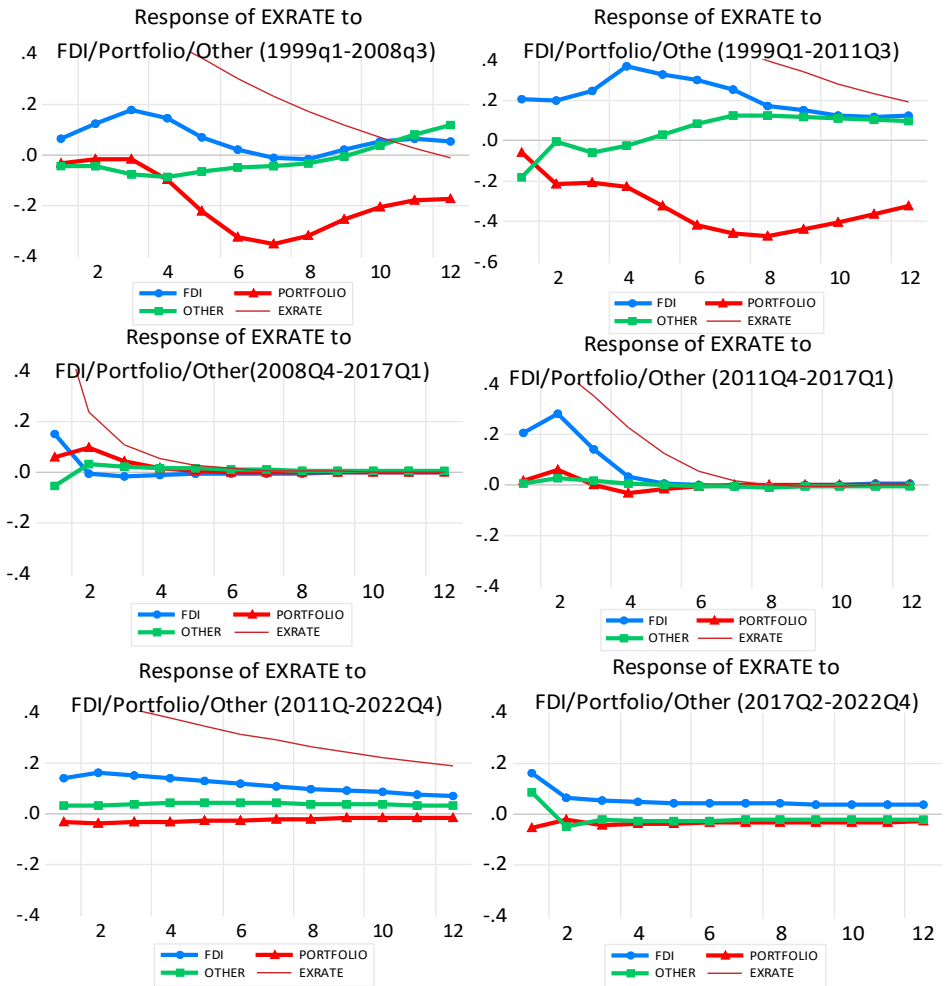


Fig. 17: Impulse response function of Exchange Rate to Capital Inflows

that more stable capital influences the exchange rate and the exchange rate influence from portfolio investment has become limited. in the most recent period (2017Q2-2022Q4).

3.2.4 Impulse response function (4) Effect of capital Inflows on interest rates

Before the capital controls (1999Q1-2008Q3), financial capital inflows (FINAC) [net] had a certain effect in raising interest (Fig. 18). This suggests that capital inflows may have been accompanied by investment in government bonds, leading to higher prices, lower yields and higher call money and bank lending rates. However, the impact of (net) capital inflows on interest rates (money market rates, bank lending rates) decreased significantly

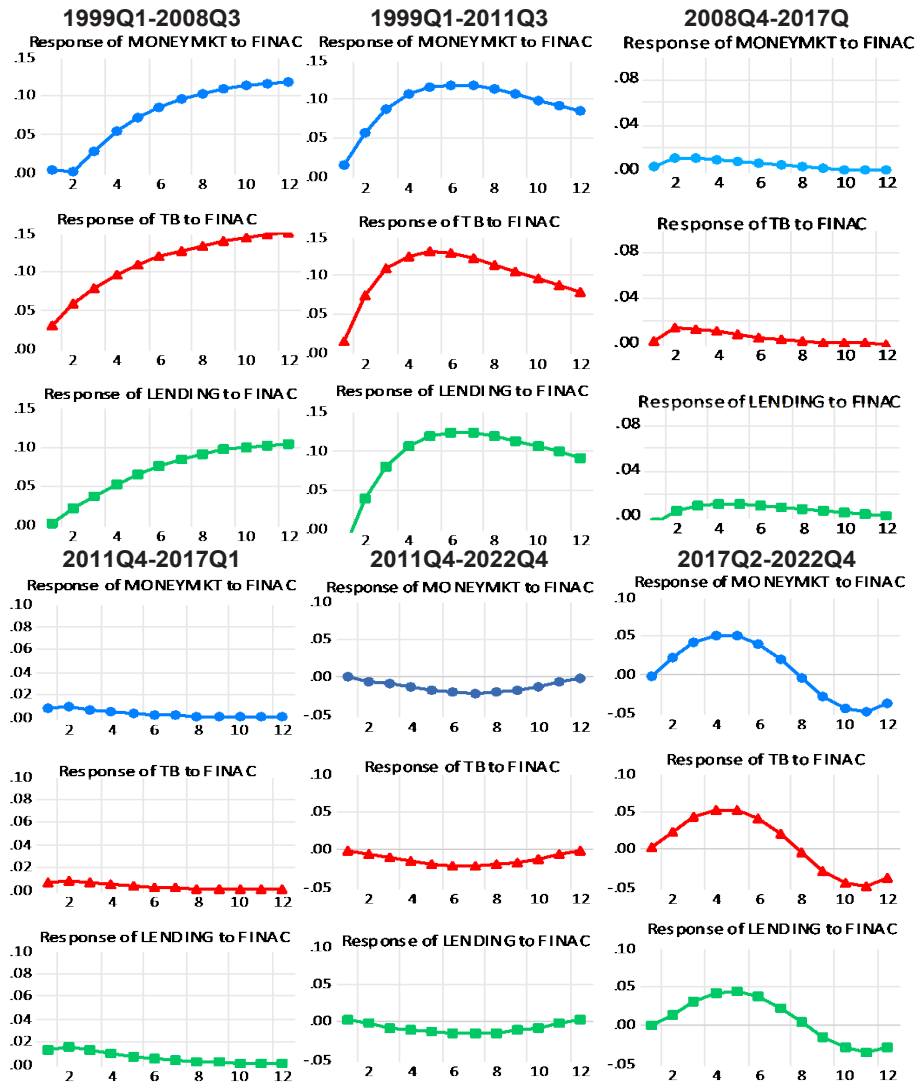


Fig. 18: Impulse response of Money market rate/TB yield/Bank lending to Capital inflows

in the period of capital controls (2008Q4-2017Q1, 2011Q4-2017Q1). Even in the period including the start of deregulation of capital controls (2011Q4-2022Q4), money market rate, TB yields and lending rates were not significantly affected, partly because capital inflows themselves were reduced. However, all interests (money market rate, TB yields and bank lending rates) have slightly affected by the capital inflows during the period 2017Q2-2022Q4. This is an indication that financial markets have been functioning normally.

3.2.5 Impulse response function (5) Effect of KAOPEN (capital account openness) on the composition of capital inflows

As the KAOPEN indicator did not change at all until Q3 2008, the period covered by this analysis is from Q4 2008 (post-crisis) to the most recent period (2022Q4).

In the overall period under analysis (2008-2022), there is a significantly negative impact on short-term capital (investment in securities and other investment), but a positive impact on FDI, which is long-term investment. This indicates the capital controls were effectively restricted short-term capital flows overall. Particularly, the impulse response function results for the period 2011Q4-2017Q1under capital controls show that the capital controls worked most effectively in the period covered. In the period Q4 2011-Q4 2022, the effect of capital controls on short-term capital (portfolio and other investments) was limited but effective in reducing short-term capital inflow.

It should be noted that KAOPEN had almost no effect on capital inflows in the period from 2017Q2 to 2022Q4, when the capital controls were largely relaxed.
These results show that the capital control measures taken by the government authorities contributed to the stabilisation of Iceland's economy and financial markets during and after the crisis.

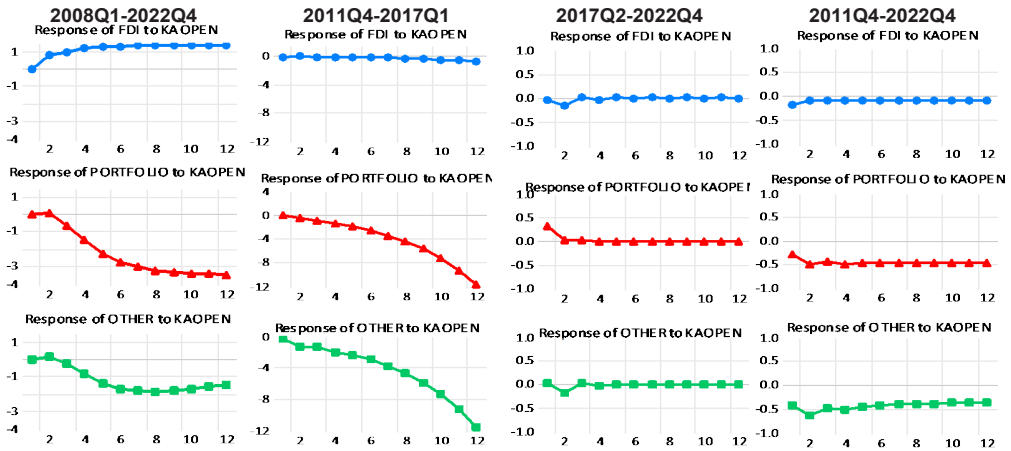


Fig.19: Impulse response functions: Capital inflows to KAOPEN

3.3 Variance Decomposition of BVAR model

3.3.1 Variance Decomposition of real GDP Growth

The impact of net capital inflows on real GDP growth is analysed by variance decomposition for each period, based on the same BVAR model (Table 4).

In the pre-crisis period (1999Q1-2008Q3), the share of the variance decomposition of the BVAR model to real GDP growth by financial account in the 10th period was 7.9% for FDI, 12.7% for portfolio investment and 12.2% for other investment. The shares of FDI, portfolio and other investment were further increased to 18.1%, 16.7% and 15.0% during the period including the crisis (1999-2011Q3). This indicates that capital flows, especially short-term (portfolio and other) investment, had a significant impact on GDP growth during the periods before and during the Crisis (1991Q1-2008Q and 1999Q1-2011Q3).

On the other hand, in the period when capital controls were introduced and tightened (2011Q4-2017Q1), the shares of FDI, portfolio investment and other investment in the variance decomposition of GDP growth in the 10th period declined significantly to 2.7%, 0.03% and 5.6%, respectively. The recent period (2011Q1-2022Q4) shows a composition of FDI inflows, including relatively long-term capital, contributing more to GDP growth as the impact of the financial crisis subsides and capital controls are relaxed. The share of short-term capital (portfolio investment and other investment) in the variance decomposition period 10 was only 4.1% and 0.9% respectively. More recently (2017Q1-2022Q4), the share of FDI in GDP growth in the 10th period of the variance decomposition has expanded somewhat to 16.8%, while the share of other investment, short-term capital, remains low at 0.99%.

These results show that the impact of short-term capital inflows on the real GDP growth is significantly lower under capital controls than during the capital account liberalisation period. In other words, GDP growth was more stable during the capital controls period, unaffected by pro-cyclical short-term capital flows.

Table 4: Variance Decomposition of real GDP Growth (Iceland)

	[1999Q1-2008Q3]				[1999Q1-2011Q3]				[2008Q4-2017Q1]			
	FDI	Port	Other	GDP	FDI	Port	Other	GDP	FDI	Port	Other	GDP
1	5.97	1.70	0.24	92.09	4.52	4.31	7.76	83.41	4.50	0.95	3.38	91.17
10	**7.88**	**12.73**	**12.15**	**67.25**	**18.05**	**16.68**	**15.03**	**50.24**	**2.25**	**2.21**	**1.76**	**93.78**
	[2011Q4-2017Q1]				**[2011Q1-2022Q4]**				**[2017Q1-2022Q4]**			
	FDI	Port	Other	GDP	FDI	Port	Other	GDP	FDI	Port	Other	GDP
1	0.34	0.04	6.24	93.39	0.96	0.37	1.15	97.53	9.62	2.91	0.76	86.71
10	**2.74**	**0.03**	**5.60**	**91.64**	**1.58**	**4.12**	**0.92**	**93.37**	**16.75**	**13.78**	**0.99**	**68.48**

Notes: Prior Type: Giannone, Lenza & Primiceri Standard Deviation is not shown in the table.
Source: Author's Calculation based on the IFS database (IMF)

3.3.2 Variance Decomposition of Manufacturing Production

As shown in Table 5, the impact of net capital inflows on manufacturing output is significant in the pre-crisis period (1999Q1-2008Q3), with the share of FDI at 7.1 %, the share of portfolio at 13.6 % and the share of other investments at 33.7 % in the tenth period of the variance decomposition of manufacturing production. In the period including the Crisis (1999Q1-2011Q3), the shares of short-term investment (portfolio and other) in the tenth

period of the decomposition of variance were also relatively high. This shows production activities were dependent on unstable short-term capital flows during both of the period.

In the period of capital controls (2008Q4-2017Q1), however, the impact of net capital inflows of short-term investment on production became generally smaller: the shares of portfolio investment were 7.3% and other investments at only 0.2% in the 10th period of variance decomposition of manufacturing production. In the capital control period since the end of IMF support (2011Q4-2017Q1), the share of the portfolio was also relatively lower at 8.8%, and that of other investments is 1.2% in the tenth period of the variance analysis.

The above results indicate that during the period of capital controls, manufacturing production was stable and unaffected by short-term capital inflows.

Table 5: Variance Decomposition of Production (Iceland)

	[1999Q1-2008Q3]					[1999Q1-2011Q3]				
	S.E.	FDI	Port	Other	Prod	S.E.	FDI	Port	Other	Prod
1	6.04	1.31	2.65	6.07	89.98	7.59	0.50	4.13	1.75	93.62
2	7.22	2.38	1.86	5.13	90.64	9.40	3.47	3.90	1.15	91.49
9	12.71	5.63	14.08	32.24	48.05	12.10	4.95	13.66	7.23	74.16
10	13.05	**7.11**	**13.56**	**33.73**	**45.59**	12.13	**5.02**	**13.77**	**7.30**	**73.90**
	[2008Q4-2017Q1]					[2011Q4-2017Q1]				
	S.E.	FDI	Port	Other	Prod	S.E.	FDI	Port	Other	Prod
1	9.05	9.26	1.12	0.02	89.59	6.80	6.58	1.63	0.86	90.94
2	10.99	6.96	3.47	0.03	89.55	8.51	8.23	5.47	0.96	85.34
9	12.24	8.84	7.25	0.22	83.69	9.66	8.76	8.80	1.13	81.32
10	12.24	**8.84**	**7.25**	**0.23**	**83.68**	9.67	**8.75**	**8.79**	**1.20**	**81.26**

Note: Prior Type: Giannone, Lenza & Primiceri
Source: Author's Calculation based on the IFS database (IMF), FRED (FRB)

3.3.3 Variance Decomposition of Exchange Rate

The impact of each type of capital inflow on the (nominal) exchange rate (REER) was relatively large in the pre-capital controls period (1999Q1-2008Q3), with FDI accounting for 5.3%, portfolio investment for 26.8% and other investment for 3.5% in the tenth period of variance decomposition (Table 6). The shares of FDI and portfolio investment were still large during the period 1999Q4-2011Q3, with the shares of 10.8% and 35.5%, respectively.

However, during the period of capital controls (2008Q4-2017Q4), the share of FDI, portfolio and other investments in the variance decomposition in period 10 fell significantly to 4.0%, 5.5% and 0.7% respectively. In 2011Q4-2017Q1, efter the IMF programme ended, the shares of portfolio and other inrestment in the 10th period of the variance decomposition fell signifiantly to 1.3% and 0.7% respectively, while the share of FDI rose to 28.2%. The large share of FDI in the variance decomposition in the period 2011-2017Q1 could be attributed to the fact that investment funds were used for foreign exchange transactions in the name of FDI due to the strict restrictions on short-term capital. This trend changed in 2017Q2-2022Q4, with the share of other investments in the variance decomposition period 10 falling to 0.55%, indicating an overall decline in the impact of short-term capital on the exchange rate.

These results show that the foreign exchange rate was relatively stable during the capital controls period, unaffected by short-term capital inflows.

Table 6：Variance Decomposition of Exchange Rate (Iceland)

	[1999Q1-2008Q3]				[1999Q1-2011Q3]				[2008Q4-2017Q1]			
	FDI	Port	Other	Exrate	FDI	Port	Other	Exrate	FDI	Port	Other	Exrate
1	3.62	0.89	2.88	92.61	10.78	0.87	12.24	76.11	4.48	2.17	0.73	92.61
10	**5.25**	**26.76**	**3.45**	**64.53**	**10.84**	**35.47**	**1.95**	**51.74**	**3.95**	**5.45**	**0.67**	**89.92**
	[2011Q4-2017Q1]				**[2011Q1-2022Q4]**				**[2017Q1-2022Q4]**			
	FDI	Port	Other	Exrate	FDI	Port	Other	Exrate	FDI	Port	Other	Exrate
1	29.78	0.53	0.28	69.41	10.76	0.42	1.19	94.16	5.97	0.95	2.64	90.45
10	**28.22**	**1.28**	**0.70**	**69.80**	**9.26**	**2.73**	**1.02**	**92.13**	**2.05**	**6.17**	**0.55**	**91.22**

Notes: Prior Type: Giannone, Lenza & Primiceri. Standard Deviation is not shown in the table.
Source: Author's Calculation based on the IFS database (IMF) and FRED (FRB)

3.3.4 Variance Decomposition of Interest rates (Government Bond Yield, Call money rate, Bank lending rate)

In the pre-crisis period (1999Q1- 2008Q3), the shares of net capital inflows (Finac) to market rate (Money), treasury bill yields (TB) and bank lending rate (Lending) were significantly high with 32.4%, 47.2 % and 44.7%, respectively in the tenth period of the variance decomposition (Table 7). During this period, all interest rates were strongly influenced by capital inflows, and this trend continued in the period 1999Q1-2011Q3.

However, in the period 2008Q4-2017Q1, following the introduction of capital controls, the impact of net capital inflows decreased significantly. The shares of money market rates, TB and bank lending rates were only 3.4%, 2.9% and 2.9% respectively in the 10th period of the variance decomposition. This trend continued in the post-IMF programme periods (2011Q4-2017Q1 and 2011Q4-2022Q4). In the more recent period (2017Q1-2022Q4), the impact of capital inflows increased by 8.2% for money market rates, 8.2% for TBs and 8.5% for bank lending rates in the tenth period of the variance decomposition. This can be attributed to the recent stabilisation of financial markets and smaller absolute net capital flows in Iceland.

Table 7：Variance Decomposition of Interest Rates (Iceland)

	[1999Q1-2008Q3]				1999Q1-2011Q3]				[2008Q4-2017Q1]			
Money	**Finac**	Money	TB	Lend	**Finac**	Money	TB	Lend	**Finac**	Money	TB	Lend
1	0.05	99.95	0.00	0.00	0.13	99.87	0.00	0.00	0.90	99.10	0.00	0.00
10	**32.41**	31.80	29.41	6.39	**37.62**	33.53	15.35	13.50	**3.37**	73.36	22.80	0.47
TB	**Finac**	Money	TB	Lend	Money	Lending	TB	Share	**Finac**	Money	TB	Lend
1	20.78	0.03	79.19	0.00	5.26	8.75	85.99	0.00	0.75	82.36	16.89	0.00
10	**47.19**	6.43	41.19	5.18	**48.36**	1.57	41.19	8.88	**2.93**	59.79	35.38	1.89
Lend	**Finac**	Money	TB	Lend	Money	Lending	TB	Share	**Finac**	Money	TB	Lend
1	0.26	7.58	5.01	87.15	8.92	6.13	4.82	80.13	0.00	1.78	7.52	90.70
10	**44.69**	**5.84**	**38.90**	**10.58**	**53.21**	**1.93**	**17.20**	**27.65**	**2.86**	47.46	26.53	23.14
	[2011Q4-2017Q1]				[2011Q4-2022Q4]				[2017Q1-2022Q4]			
Money	**Finac**	Money	TB	Lend	**Finac**	Money	TB	Lend	**Finac**	Money	TB	Lend
1	1.39	98.61	0.00	0.00	0.50	99.50	0.00	0.00	0.46	99.54	0.00	0.00
10	**2.17**	87.69	9.57	0.56	**6.47**	70.28	7.83	15.42	**8.18**	62.86	11.25	17.71
TB	**Finac**	Money	TB	Lend	**Finac**	Money	TB	Lend	**Finac**	Money	TB	Lend
1	0.21	67.91	31.89	0.00	1.01	87.01	11.97	0.00	0.04	94.08	5.88	0.00
10	**0.68**	43.77	55.27	0.28	**7.22**	63.71	14.41	14.65	**8.22**	58.06	17.76	15.95
Lend	**Finac**	Money	TB	Lend	**Finac**	Money	TB	Lend	**Finac**	Money	TB	Lend
1	3.50	44.10	3.30	49.11	0.04	57.58	0.55	41.84	0.07	74.32	8.15	17.46
10	**6.42**	41.72	6.94	44.91	**6.36**	69.70	11.02	12.92	**8.48**	66.84	13.61	11.07

Notes: 1.'Finac' show net financial inflows (%, GDP), 'Money', 'TB' and 'lend' show money market rate, Treasury bill yield, and Bank lending rate.
2. Prior Type: Giannone, Lenza & Primiceri
Sources: Author's Calculation based on the IFS database (IMF), FRED

3.4 Summary of the Analyses

The analyses of impulse response functions and variance decomposition based on BVAR model show that the capital controls introduced after the Crisis, the impact of capital flows on the economy (GDP growth rate, Manufacturing production) and financial markets (exchange rate, interest rates) proved to be much more limited than in the early years of capital and financial liberalisation.

Before the introduction of capital controls, there were large inflows of funds, including investment from foreign financial institutions, which were a major determinant of economic growth and production, but it was pro-cyclical and risky during the period 2000Q1-2008Q3. When the Crisis hit, it led to a deterioration of economic and financial markets due to significant exchange rate depreciation caused by capital outflows (capital account crisis) in Iceland. However, After the introduction of capital controls, the impact of short-term capital flows on the real economy has been minimised, indicating that capital controls have been effective in reducing short-term capital flows.

The results of the analysis in this paper confirm that the introduction of capital and financial management and controls has greatly reduced the volatility of capital flows into the domestic economy and financial markets, thereby contributing to the stabilization of the domestic economy and financial markets.

4. Iceland's success and lessons to be learnt

Iceland is almost the only country to have successfully introduced capital controls, particularly capital outflow controls under the IMF programme during the Global Financial Crisis. Furthermore, Iceland did not introduce drastic austerity measures during the IMF programme (2008-11) but kept them to a minimum level. As a result, the economy and markets have recovered rapidly, achieving much higher real GDP growth and social stability than Euro crisis hit countries (Greece, Ireland, Italy, Portugal, Spain [GIIPS])[16]. Today, almost all of Iceland's indicators, including GDP growth, income levels (GDP per capita), fiscal and current account balances, foreign exchange reserves and social indicators (unemployment, Gini coefficient, etc.) have recovered to pre-crisis levels, and the indicators in Iceland are generally better than those of other Euro countries.

The Icelandic experience shows that introducing controls on capital outflows can be a highly effective policy instrument for countries facing a capital account crisis. Despite repeated recommendations from the IMF to liberalise capital controls even after the end of the IMF programme (August 2011), the Icelandic government has maintained the independence of national governance and continued to impose capital controls until the economic recovery and market stabilisation in 2017Q1. Moreover, it is noteworthy that to date Iceland has implemented indirect capital controls, such as Special Reserve Requirement (SRR) at the Central Bank, to control short-term inflows and outflows of funds, thereby addressing short-term speculative risks.

If Iceland had followed the IMF's advice and lifted its capital controls earlier, the country would not have achieved such a stable growth. Unfortunately, the successful experience of capital controls in Iceland has not been reflected at all in recent IMF programmes (e.g.,

Argentina [2018-2020]), and the same policies have continued[17].

In view of the above, the introduction of management and control of capital flows, including exchange controls on short-term capital movements, is essential if a small country such as Iceland is to achieve stable growth in the long-term. The Icelandic experience shows the importance of maintaining capital controls over a relatively long period of time, rather than short-term and temporary, in countries facing capital account crises associated with short-term capital outflows. The importance of introducing capital controls, especially during a crisis on the capital account, is an issue that should be seriously considered by all countries, not just small ones[18].

Capital flow management and controls are still maintained in Iceland, mainly through central bank supervision, including indirect controls such as the Special Reserve Requirement (SRR). The current account balance has improved substantially in recent years due to increased exports and tourism revenues resulting from a weaker currency.

Conclusion

The objectives of this paper are to assess the effectiveness of the capital controls introduced in Iceland and to show that the flexible management of IMF programmes, avoiding short-term austerity measures, contributes to a rapid economic recovery. This paper analyses the background and consequences of Iceland's policies before and after the Global Financial Crisis, the IMF program, and the country's implementation of its own capital control measures. This paper uses econometric analysis based on BVAR model to assess and analyse Iceland's early recovery after the global financial and capital account crises by introducing strong regulatory measures, including restrictions on capital outflows.

Prior to the outbreak of the Global Financial Crisis in 2008, Iceland had been pursuing capital and financial liberalisation with the aim of becoming a financial centre of Nordic region. However, following the Global Financial Crisis, the country's prosperity changed dramatically, and capital outflows accelerated, plunging the country into crisis, and placing it under an IMF programme from November 2008 to 2011. Furthermore, capital controls introduced in Iceland in November 2008 remained in place for a long period of time until 2017, after which they were carefully relaxed and liberalised. It should be noted that various capital and exchange controls still remain in place in the country today.

Analysis based on the BVAR models shows that before the introduction of capital controls, there were large capital inflows and short-term capital flows from banks were the main determinant of real economy and markets, which was pro-cyclical and risky. However, during the period of capital controls (2008Q4-2017Q1), the impact of short-term capital flows on the economy and financial markets was limited. In addition, the introduction of capital flow management and controls have contributed to the stabilisation of the domestic economy and financial market in Iceland.

Iceland achieved a much faster recovery and normalisation than the other GIIPS (Greece, Ireland, Italy, Portugal and Spain), affected by the Euro crisis and the duration of the IMF programme was minimised to less than three years (November 2008 - September 2011). Initially, the IMF attributed this "success" to the country's rapid recovery and success, citing reasons unrelated to the nature of the crisis as a capital account crisis, such as the Nordic

roots of social welfare policies in the country as a safety hedge.

Iceland's IMF programme differed significantly from the general programme applied in many other countries in two main respects:

First, the IMF conditionality for Iceland was generally moderate, without the sharp austerity measures usually associated with IMF programmes, and the structural reforms were constructive, aimed at restructuring financial institutions[19]. Second, strict capital controls, including restrictions on capital outflows, were introduced for a relatively long period (more than eight years), despite repeated requests by the IMF for liberalisation of capital controls.

The IMF programme in Iceland gave the country a great deal of autonomy and did not introduce any strict austerity measures, but it did introduce exceptional restrictions on capital transactions, particularly on outflows. This was not an explicit conditionality in the Letter of Intent for the IMF programme, but was implemented by the Icelandic government in recognition of the imminent collapse of the country without capital controls.

The IMF has encouraged the relaxation and liberalisation of capital controls at every review during and after the programme[20]. However, the government was extremely cautious about lifting restrictions on capital transactions and continued to impose capital controls for a long time (more than eight years from November 2008 to March 2017.

Today, foreign exchange and capital transactions have been eased to pre-crisis levels, but not all financial and capital transactions have been liberalised in Iceland as in the EU and Euro countries. On the other hand, even recently the IMF has never acknowledged that Iceland's "success" was the introduction of capital controls, only that it was due to a strong government ownership commitment to the programme[21].

The Icelandic experience should encourage the IMF to fundamentally change the way it manages its programmes, especially in the event of a capital account crisis. The IMF should fundamentally change its policies towards crisis-hit countries. In other words, in implementing IMF programmes, the IMF should stop introducing unnecessary austerity measures and adopt economic policies that promote long-term sustainable economic growth. Furthermore, the IMF should prepare a manual on the management and control of capital flows, which should be introduced in countries facing capital account crises and actively introduced in the countries concerned.

Notes

1) Ocampo & Palma (2008) clearly demonstrate the superiority of direct regulation over indirect regulation.

2) Please see a short sheet titled 'Iceland: Spectacular Turnaround from Financial Meltdown.' (https://www.imf.org/en/Countries/ISL/iceland-lending-case-study) Although one of the IMF staff members acknowledged the capital controls measures introduced in Iceland were necessary in such an urgency, this is not yet reflected in official IMF documents of IMF; see Thomsen (2018).

3) However, the IMF's position towards capital controls is still too restrictive (see Bretton Woods Project, 2021).

4) Sigurgeirsdottir and Wade (2015) discussed on the background of capital controls continued for long period in Iceland.

5) It points out that while Greece was a eurozone crisis centred on government bonds, Iceland was originally a problem with the debts of the national banks (the three largest banks), and that in the latter case the government's short-term measures were more effective.

6) It should be noted that the exchange rate did not stabilise until early 2017, which may have justified the authorities' decision to extend capital controls, despite repeated requests from the IMF to do so.

7) See IMF (2017a). To date, the IMF has not made any official written request for capital or financial liberalisation.

8) The IMF's periodic Article IV-based reports(2022/2023) do not mention capital controls at all, focusing mainly only on macroeconomic trends and related policies. This may be due to the fact that the focus of economic research has been on assessing the response to the Corona crisis over the past few years, while capital and exchange controls in Iceland have been gradually relaxed (KAOPEN).

9) 'The Chinn-Ito Capital Account Openness Index' (http://web.pdx.edu/~ito/Chinn-Ito_website.htm)

10) The analysis based on the BVAR model analyses the impact on growth and output of capital (net) inflows of the sum of all net inflows of FDI, Portfolio / Other investment rather than by capital inflow item. This considers the possibility that FDI is nowadays used as a means of diverting short-term financial investment rather than necessarily long-term investment.

11) As the manufacturing INDEX is only published up to 2017, the analysis is vers the period up to 2017.

12) As the KAOPEN indicator is only published up to 2020, this analysis covers the period up to 2020. In addition, the indicator is only available on an annual basis, so changes are only included for some periods on a quarterly basis (e.g., Q1 2017).

13) The lag periods are two for the periods 2011Q4-2017Q1 and 2017Q2-2022Q4, given the impact on the analysis of fewer variables.

14) As the global shocks associated with the Covid-19 have rather reduced capital inflows and outflows for Iceland, the analysis in this analysis covers the period up to Q4 2022

15) This section covers until 2017Q1 since the official statistics on industrial production in Iceland period after 2017Q2 is not available.

16) The IMF held a conference in Iceland in 2011, after the Icelandic programme had ended, as an example of a successful crisis-experienced country (see IMF, 2011). However, the content of the conference was still that capital controls were undesirable and urged immediate deregulation and liberalisation.

17) The IMF has yet to publish detailed guidelines on the methods and operations in introducing capital flow management and controls.

18) See Grabel (2016) for a discussion of the need to introduce capital controls in several countries.

19) This contrasts with the Asian crisis (1997/8), when IMF programmes (Thailand, Indonesia and Korea) typically conditioned structural reforms that were not related to the shortage of foreign exchange reserves, thereby aggravating the crisis in the countries concerned.

20) In its report after the end of the programme (August 2011), the IMF persistently pressed for the liberalisation of capital transactions See IMF reports (2011~2016)

21) See Thomsen (2018). The IMF seems to have only recently engaged in a serious dialogue with relevant institutions and others about the utility of capital flow management (Furness, 2019). This may have considered the failure of Argentina in the recent past. However, there is still

little prospect of introducing emergency capital and financial regulations in the IMF conditionality itself. This may be because foreign investors and the financial community see crises in countries as opportunities to increase their profits, and it is not in their interest for the IMF to introduce capital and financial regulations in its conditionality.

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成功したIMFプログラム下におけるアイスランドの資本規制

本稿では、アイスランドが世界金融危機（2018年）後、他のGIIPS（ギリシャ、アイルランド、イタリア、ポルトガル、スペイン）よりもはるかに早い回復と正常化を遂げた原因と背景について論じる。アイスランドは危機当時IMFのプログラム下にあったにもかかわらず、独自の資本・金融規制、特に資金流出規制を導入した。本稿では、資本自由化と規制を含む1999年から2022年までの期間について、ベイジアンVAR（自己回帰）モデルに基づいて、アイスランドの資本規制がGDP成長率、鉱工業生産、為替レート、金利に与えた影響の有効性を分析している。その結果、危機発生後の2008年第4四半期から2017年までの資本規制の期間は、それ以前の資本・金融自由化の期間と比較して、実体経済（GDP/生産高）に及ぼす影響が低下し、順循環的（Pro-cyclicality）動きが抑制され、為替レートと金融市場（金利の変動）も安定した。アイスランドの場合、通常のIMFプログラムとは異なり比較的必要な措置にコンディショナリティを限定し緊縮政策の導入は控えられたため、比較的早期に経済が正常化した。

アイスランドの経験は、資本収支危機に直面している国では資本流出規制を含む強い資本規制が必要であり、当該国の経済・金融市場の回復に役立つことを示している。さらに、IMFはプログラム終了（2011年8月）後も資本規制緩和・自由化を要請していたが、アイスランドはそれを採用せず比較的長期にわたり金融市場が安定化するまで継続した。こうしたアイスランドの経験は資本収支危機に直面した国が資本規制（流出規制を含む）を長期にわたって導入したことの有効性が実証されたことを示す。

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