

THE CHANGING DRIVERS OF FOREIGN DIRECT INVESTMENT IN ICELAND: EVIDENCE FROM THE KNOWLEDGE-CAPITAL FRAMEWORK, 1998–2024

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Abstract. Foreign direct investment (FDI) is an important source of capital and economic development for small open economies, yet relatively little is known about whether the determinants of FDI remain stable during periods of major macroeconomic disruption. This study examines whether the drivers of inward FDI into Iceland changed across three distinct macroeconomic regimes: a pre-crisis expansion period (1998–2009), a post-crisis recovery period (2010–2019), and a pandemic and post-pandemic period (2020–2024). Using annual bilateral FDI stock data from fifteen source countries over the period 1998–2024, the analysis applies an extended Knowledge-Capital framework incorporating interaction effects between key explanatory variables and macroeconomic regimes. To accommodate the presence of zero and negative FDI observations and reduce the influence of extreme values, the primary specification employs a random-effects panel model using an inverse hyperbolic sine transformation of FDI stocks. Fixed-effects and alternative random-effects specifications are estimated as robustness checks. The results indicate significant temporal variation in the determinants of inward FDI. Joint Market Size and geographic distance exhibit statistically significant changes across macroeconomic regimes, whereas skill differences and institutional quality remain comparatively stable. Market-size effects are positive during the pre-crisis period, become negative during the post-crisis recovery period, and return to a positive association during the post-pandemic period. Geographic distance remains a significant deterrent to investment throughout the study period and becomes more influential during periods of heightened economic uncertainty. The findings suggest that the determinants of FDI in small open economies are not temporally fixed but vary according to broader macroeconomic conditions. The study contributes to the Knowledge-Capital literature by demonstrating the importance of accounting for regime-dependent effects when analysing long-run FDI patterns.

Keywords: Foreign Direct Investment (FDI), Knowledge-Capital Model, Macroeconomic Shocks, Small Open Economy, Time-Varying Determinants.

JEL Classification: F21, F23, F41, C23.

1. Introduction

Foreign direct investment (FDI) is an important source of capital, technology transfer, managerial expertise, and international market integration, particularly for small open economies with limited domestic capital markets. Understanding the determinants of inward FDI is therefore central to explaining how small economies attract and retain foreign capital during periods of economic change.

A widely used theoretical framework for explaining multinational investment is the Knowledge-Capital (KK) model, developed by Markusen (1997) and Carr et al. (2001). The KK model integrates two central motives for FDI. Horizontal FDI is primarily market-seeking and is expected to increase with market size, while vertical FDI reflects differences in factor endowments, production costs, and productivity across countries. Within this framework, bilateral FDI is

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commonly explained by variables such as joint market size, skill or income differences, geographic distance, and institutional frictions.

Although the KK and the gravity model framework has been applied to small economies like Iceland (Kristjánsdóttir, 2010; Kristjánsdóttir, Ágústsdóttir, Jónsdóttir, 2023), less is known about whether these determinants remain stable during periods of major macroeconomic disruption. This is an important question because financial crises, policy interventions, and global shocks may alter investor risk perceptions, financing conditions, and the relative importance of traditional FDI drivers. Consequently, determinants that are influential during periods of economic expansion may operate differently during periods of restructuring and uncertainty.

Iceland provides a particularly useful setting for examining this issue. During the study period, the Icelandic economy experienced a sequence of major disruptions, most notably the 2008 financial crisis, the subsequent introduction of capital controls and economic restructuring (Baldursson et al., 2023), and the global COVID-19 pandemic. These events fundamentally altered the domestic economic environment and may have changed the factors influencing foreign investment decisions.

To capture these structural shifts, the analysis distinguishes between three macroeconomic regimes: a pre-crisis expansion period (1998–2009), a post-crisis recovery period (2010–2019), and a pandemic and post-pandemic period (2020–2024). This regime-based perspective allows an explicit assessment of whether the determinants of inward FDI remained stable or changed across markedly different economic environments.

Using annual bilateral FDI stock data from fifteen source countries over the period 1998–2024, the study extends the traditional Knowledge-Capital framework by allowing key determinants to vary across time through era-specific interaction effects. The central research question is whether the structural drivers of inward FDI in a small open economy shift significantly in response to major macroeconomic shocks.

The contribution of the study is twofold. First, it provides new empirical evidence on the temporal stability of Knowledge-Capital determinants in a small open economy exposed to successive economic shocks. Second, it demonstrates that the influence of market size and geographic distance varies significantly across macroeconomic regimes, whereas evidence for changing factor-endowment effects is comparatively weak. The findings therefore suggest that the determinants of inward FDI are not temporally fixed but may depend strongly on the broader macro economic environment.

2. Literature Review

2.1 Knowledge-Capital Theory and Spatial Investment Logic

The Knowledge-Capital (KK) model provides one of the most influential theoretical frameworks for explaining the location decisions of multinational enterprises (Carr et al., 2001; Markusen, 1997). The model integrates horizontal and vertical theories of foreign direct investment (FDI) within a unified framework. Horizontal FDI occurs when firms establish production facilities abroad to serve local markets and avoid trade costs, while vertical FDI arises when firms geographically separate stages of production to exploit differences in factor endowments, labour costs, or productivity.

The intellectual foundations of the KK framework can be traced to the New Trade Theory developed by Krugman (1979, 1991). Krugman demonstrated how economies of scale and trade costs create incentives for firms to concentrate production in locations offering access to large markets. Within the context of multinational enterprise activity, these mechanisms imply that larger combined markets increase the attractiveness of foreign investment, whereas geographic distance acts as a friction that raises transportation, coordination, and information costs.

Empirical applications of the KK framework generally support the importance of market size, factor-endowment differences, and geographic frictions in explaining bilateral FDI patterns. Carr et al. (2001) provided one of the first comprehensive empirical tests of the model, while subsequent work refined both the theoretical specification and empirical implementation. In particular, Davies (2008) demonstrated that multinational investment decisions remain highly sensitive to bilateral frictions and spatial constraints, suggesting that distance continues to influence investment behaviour despite increasing globalization.

Taken together, the literature suggests that market size, factor-endowment differences, and geographic distance represent the core structural determinants of bilateral FDI and therefore provide a suitable foundation for analysing inward investment into Iceland.

2.2 FDI Determinants in Small Open Economies

Although the Knowledge-Capital framework was originally developed to explain multinational activity across a broad range of countries, its application to small open economies presents additional considerations. In economies with limited domestic markets, market-seeking motives may be complemented or partially offset by factors such as institutional quality, specialized

human capital, natural resources, and strategic geographic positioning.

Previous research on Iceland supports the relevance of the Knowledge-Capital framework while highlighting the importance of country-specific characteristics. Kristjánsdóttir (2010) found that traditional Knowledge-Capital variables explain a substantial share of Iceland's inward FDI patterns, although the relative importance of individual determinants differs from those typically observed in larger economies. More recently, Kristjánsdóttir and Óskarsdóttir, (2021) extended this perspective by examining FDI determinants across a broader group of small European economies. Their findings suggest that while market size and traditional Knowledge-Capital variables remain important, institutional conditions and country-specific characteristics can play a comparatively larger role in shaping investment decisions in small open economies than is typically observed in larger markets. Together, these studies indicate that the Knowledge-Capital framework remains applicable to small economies, but that the relative importance of its determinants may vary according to national context and economic structure.

2.3 Structural Shocks and the Stability of FDI Determinants

A growing body of research suggests that the determinants of FDI may not remain constant over time. Financial crises, policy interventions, and global disruptions can alter investor risk perceptions, financing conditions, and the relative attractiveness of potential host countries.

Desbordes and Wei (2017) demonstrate that external financing conditions influence FDI differently during normal periods and periods of financial stress, while Kellard et al. (2022) show that sovereign and banking-sector risks can significantly deter foreign investment. More recently, the COVID-19 pandemic generated substantial shifts in global investment patterns, accelerating investment in digital infrastructure and technology-intensive sectors while reducing investment in more vulnerable industries (Abdelkafi et al., 2022; Moukil & Attallah, 2021).

Recent empirical evidence further suggests that major disruptions can alter not only the volume of FDI but also the relative importance of its determinants. Jarde et al. (2023) show that economic and policy uncertainty exert significant effects on FDI inflows across a large panel of countries, while Firdos et al. (2024) demonstrate that the COVID-19 pandemic modified the relationship between macroeconomic variables and FDI in South Asian economies. Similarly, Ölmez et al. (2024) highlight the interaction between policy uncertainty, institutional quality, and foreign investment decisions. Collectively, these

studies suggest that the determinants of FDI may be regime-dependent rather than temporally stable, particularly during periods of heightened uncertainty and structural adjustment.

Despite this growing literature, relatively little research has examined whether the core determinants of the Knowledge-Capital framework themselves vary across successive macroeconomic regimes. Most empirical studies estimate average effects over extended periods, implicitly assuming that the influence of market size, factor-endowment differences, and geographic distance remains stable through time. This assumption may be particularly problematic in small open economies exposed to major economic shocks.

The Icelandic case provides an opportunity to examine this issue directly. Between 1998 and 2024, Iceland experienced a banking collapse, a prolonged recovery period characterized by capital controls and economic restructuring, and the COVID-19 pandemic. These events provide a natural setting for evaluating whether the traditional determinants of FDI remain stable or whether their influence changes across distinct macroeconomic environments.

Accordingly, this study addresses this gap by explicitly modelling time-varying effects within the Knowledge-Capital framework. By analysing Iceland's distinct macroeconomic regimes, this research provides needed empirical evidence on how FDI determinants evolve during periods of profound structural adjustment.

3. Data and Methodology

3.1 Data

The analysis utilizes annual panel data covering bilateral inward FDI stocks into Iceland between 1998 and 2024. The raw bilateral FDI stock data were sourced from the Central Bank of Iceland (*Seðlabanki Íslands*, 2026). To account for inflation and ensure comparability over the 27-year period, the dependent variable, the real stock of inward FDI from country i in year t , was converted into constant 2025 U.S. dollars. This adjustment was calculated using the Gross Domestic Product Implicit Price Deflator (Index 2017=100) obtained from the Federal Reserve Economic Data (FRED) database (Federal Reserve Bank of St. Louis., 2026).

The explanatory variables are derived from the Knowledge-Capital framework, with data compiled from several international databases:

Joint Market Size (Jmf): Following Carr et al. (2001), Joint Market Size is measured as the combined GDP of Iceland and the source country and serves as the principal proxy for market-seeking (horizontal) FDI within the Knowledge-Capital framework. The underlying Gross Domestic Product data

is sourced from the International Monetary Fund (IMF, 2026)

Skill Difference (*Sdif*): Calculated using GDP per capita data sourced from the International Monetary Fund (IMF, 2026).

Distance: The bilateral geographic distance between Iceland and the source country, sourced from the CEPII GeoDist database (Mayer & Zignago, 2011).

Index of Economic Freedom (*Ief*): Used as a proxy for the institutional quality and investment environment of the source country, sourced from The Heritage Foundation (2026).

The initial dataset provided by the Central Bank of Iceland included 16 categories: Australia, Cyprus, Denmark, Germany, Guernsey, Ireland, Italy, Luxembourg, Malta, the Netherlands, Norway, Sweden, Switzerland, the United Kingdom, the United States, and a "Not allocated" category. The "Not allocated" category was excluded from the final dataset. This exclusion was primarily necessary because it does not represent a sovereign physical entity and therefore lacks the measurable attributes required for the Knowledge-Capital framework, such as physical distance, per capita GDP, or an index of economic freedom.

It is important to note that while this unallocated category represented a negligible fraction of total inward FDI during the pre-crisis era (averaging less than 2%), its share increased notably during the post-crisis recovery and peaked at 22.8% in 2021. In international investment data, such opaque or unallocated flows frequently represent pass-through capital, multinational holding-company structures, or investments routed through offshore financial centers (SPEs), which often spike during periods of macroeconomic uncertainty. Because the Knowledge-Capital framework is designed to evaluate genuine structural drivers of productive investment, such as market-seeking or factor-seeking behavior, excluding these opaque financial flows is theoretically necessary to prevent distortion and ensure the model accurately reflects real multinational investment motives. Consequently, the final dataset comprises 15 source countries, yielding 405 total observations spanning the study period.

To capture structural changes, three macroeconomic eras are identified:

Era 1: 1998–2009 (Pre-crisis expansion)

Era 2: 2010–2019 (Post-crisis recovery)

Era 3: 2020–2024 (Pandemic and post-pandemic)

Table 1 outlines the descriptive statistics for the dependent and independent variables utilized across these eras.

As observed in Table 1, the dependent variable (*Gfdis*) exhibits substantial volatility, ranging from negative values (-\$3,783 million) to a maximum of \$14,936 million. Negative FDI stock values represent a specific methodological hurdle, as they typically result from divestments, asset write-downs, or shifting valuations of foreign-owned assets rather than standard outward flows. Furthermore, the explanatory variables demonstrate a wide spectrum of macroeconomic conditions across the source countries, with geographic distance spanning from 1,502 km to 16,444 km, and institutional quality scores (*Ief*) ranging from 58.3 to 84.2.

3.2 Econometric Specification

A methodological challenge arises because bilateral FDI stocks exhibit substantial skewness and include both zero and negative values. Negative values may occur due to divestments, write-downs, or changes in the valuation of foreign-owned assets, representing reverse investment or capital withdrawals as defined by standard international accounting practices. (IMF, 2010; OECD, 2025). Consequently, standard logarithmic transformations are inappropriate. To address this methodological hurdle, the dependent variable was transformed using the inverse hyperbolic sine (IHS) function. As demonstrated by Burbidge et al. (1988) and more recently by Bellemare and Wichman (2020), the IHS transformation effectively accommodates positive, zero, and negative observations while reducing the influence of extreme values and allowing for an interpretation analogous to a standard log transformation.

All statistical and econometric analyses were conducted using Stata 18 (StataCorp, 2026). To establish the baseline distribution of the data and assess potential multicollinearity among the explanatory variables, standard descriptive statistics and pairwise correlation matrices were generated. The primary specification employs a random-effects panel regression, executed

Table 1

Descriptive statistics for the dependent and independent variables used in the analyses.

The dataset comprises 15 source countries over 27 years 1998-2024, (N=405).

Variable	Description	Mean	Std. Dev.	Min	Max
<i>Gfdis</i>	Bilateral FDI stock in Iceland (Millions USD, 2025 prices)	622	1941	-3,783	14,936
<i>Jmf</i>	Joint Market Size (Source GDP + Iceland GDP)	2,647,150	5,661,972	17,493	30,160,956
<i>Sdif</i>	Skill Difference (Source GDP per capita - Iceland GDP per capita)	-5,530	30,630	-77,225	100,364
Distance	Geographic Distance from source country to Iceland (km)	3,613	3,621	1,502	16,444
<i>Ief</i>	Index of Economic Freedom (Source Country)	74.0	5.7	58.3	84.2

via Stata's xtreg framework, to account for unobserved country-specific effects over time (Wooldridge, 2010). The baseline specification is:

$$IHS(FDI_{it}) = \beta_0 + \sum_{j=1}^4 \beta_j X_{jit} + \sum_{k=2}^3 \gamma_k Era_{kt} + \sum_{j=1}^4 \sum_{k=2}^3 \delta_{jk} (X_{jit} \times Era_{kt}) + u_i + \varepsilon_{it} \quad (1)$$

Where:

$IHS(FDI_{it})$ is the inverse hyperbolic sine of the real FDI stock from country i in year t . X_{jit} represents the vector of Knowledge-Capital variables (Joint Market Size, Skill Difference, Distance, and Index of Economic Freedom). Era_{kt} represents the dummy variables for the macroeconomic eras (Era 2 and Era 3, with Era 1 serving as the baseline). u_i captures the unobserved, country-specific random effects. ε_{it} is the idiosyncratic error term.

To test for structural variations across the identified macroeconomic regimes, factor-variable notation was employed. This allowed the continuous Knowledge-Capital variables to be fully interacted with the categorical era indicators, generating the interaction terms necessary to capture era-specific deviations from the baseline. Random-effects and fixed-effects models using the untransformed dependent variable were also

estimated as robustness checks. To account for potential within-cluster correlation and heteroskedasticity over the 27-year panel, standard errors were clustered at the source-country level across all model specifications, following the recommendations of Colin Cameron & Miller (2015). Finally, to isolate and explicitly quantify the absolute effect of the independent variables within each specific era (as presented in Table 5), post-estimation linear combinations of the baseline coefficients and their corresponding era-interaction terms were calculated.

4. Results

Before examining the econometric models, it is instructive to observe the overall trajectory of inward FDI across the timeline of the study.

To ensure the explanatory variables are appropriate for the econometric models, a baseline correlation analysis was conducted. Table 2 presents the correlation matrix for the variables. Pairwise correlations among explanatory variables were modest, suggesting that multicollinearity is unlikely to influence the results. Notably, countries with larger GDP-per-capita differences relative to Iceland tend to have larger FDI stocks in Iceland.

The primary econometric analysis utilizes a random-effects panel model with an inverse hyperbolic sine

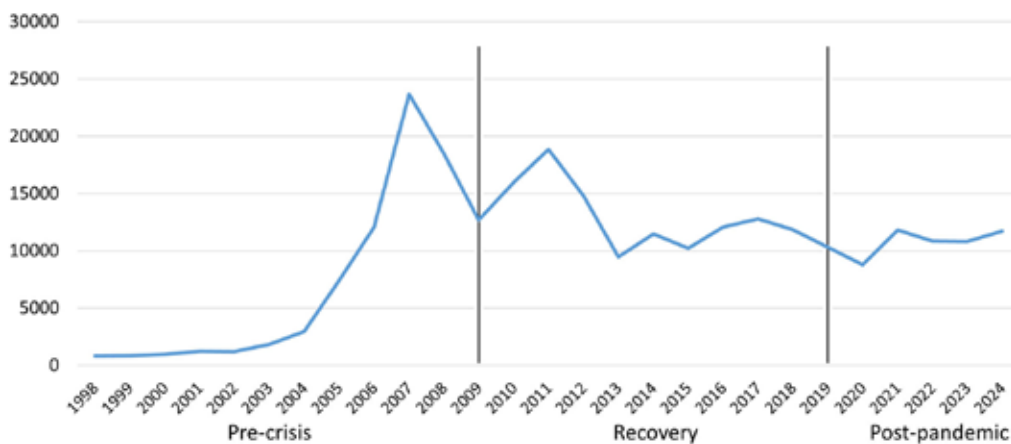


Figure 1. Total inward FDI stock in Iceland, 1998–2024 (million USD, constant 2025 prices). Vertical lines indicate the boundaries between the three macroeconomic eras used in the analysis

Table 2

Correlation Matrix

Variable	<i>Gfdis</i>	<i>Jmf</i>	<i>Sdif</i>	<i>Distance</i>	<i>Ief</i>
<i>Gfdis</i>	1.0000				
<i>Jmf</i>	-0.1199*	1.0000			
<i>Sdif</i>	0.5080***	-0.0422	1.0000		
<i>Distance</i>	-0.1249*	0.1341**	-0.1664***	1.0000	
<i>Ief</i>	0.1040*	0.0812	0.3646***	0.1771***	1.0000

(* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$)

(IHS) transformation. The results reveal significant structural variation in the determinants of FDI across periods. Table 3 details these baseline findings.

Table 3

Random-effects IHS model of bilateral FDI stocks into Iceland, 1998–2024

Variables	Coefficient	(SE)
<i>Jmf</i>	1.61E-07 [*]	(7.50E-08)
<i>Era 2</i>	9.71235	(9.45872)
<i>Era 3</i>	-1.9289	(8.24151)
<i>Era2</i> × <i>Jmf</i>	-3.18E-07 ^{***}	(6.78E-08)
<i>Era3</i> × <i>Jmf</i>	-6.61E-08	(7.43E-08)
<i>Sdif</i>	-9.95E-06	(1.97E-05)
<i>Era2</i> × <i>Sdif</i>	-9.55E-07	(1.42 E-05)
<i>Era3</i> × <i>Sdif</i>	-4.55E-06	(1.48 E-05)
<i>Ief</i>	0.08878	(0.09070)
<i>Era2</i> × <i>Ief</i>	-0.09649	(0.13619)
<i>Era3</i> × <i>Ief</i>	0.04156	(0.11242)
<i>Distance</i>	-0.00028 ^{***}	(7.79E-05)
<i>Era2</i> × <i>Distance</i>	-0.00027 ^{**}	(0.00011)
<i>Era3</i> × <i>Distance</i>	-0.00016 [†]	(0.00009)
Constant	-2.2499	(6.34408)
Model statistics:		
Statistic	Value	
Observations	405	
Countries	15	
Within R ²	0.195	
Between R ²	0.221	
Overall R ²	0.206	
Wald χ^2	283,437.6	
p-value	<0.001	

([†] p < .10, ^{*} p < .05, ^{**} p < .01, ^{***} p < .001)

The strongest evidence of structural change concerns market size. In both the fixed-effects and random-effects models, the interaction terms between Joint Market Size and the era indicators are jointly significant ($p < 0.001$), indicating that the influence of market size changed substantially across periods. In the preferred IHS specification, market size exerts a positive effect during the pre-crisis period. During the recovery era (2010–2019), the effect becomes negative and statistically significant, suggesting that larger source-country markets were no longer associated with greater investment in Iceland. Following the pandemic, the relationship becomes positive once again.

By contrast, there is limited evidence that the influence of skill differences changed systematically across periods. Interaction terms involving Skill Difference are generally insignificant and fail to achieve joint significance in the preferred specification.

Distance exhibits a consistently negative relationship with FDI after accounting for extreme observations, indicating that geographic frictions continue to matter despite advances in international communication and transportation. Institutional quality, measured by the Index of Economic Freedom, is not found to be a statistically significant determinant of bilateral FDI stocks in any specification. Overall, the results suggest that variation in market-size effects represents the principal source of structural change in Iceland's FDI determinants during the study period.

To confirm the reliability of these findings, a robustness analysis was conducted using random-effects and fixed-effects panel models on the untransformed bilateral FDI stocks (Table 4). The effect of market size on inward FDI to Iceland changed significantly across macroeconomic regimes, and this result is robust across alternative panel specifications.

Table 4

Robustness analysis: Random-effects and fixed-effects panel models of bilateral FDI stocks

Variables	RE Model	FE Model
<i>Jmf</i>	4.88E-05 ^{**}	0.00020
<i>Era2</i> × <i>Jmf</i>	-0.00011 ^{***}	-0.00014 ^{***}
<i>Era3</i> × <i>Jmf</i>	2.84E-07	5.29E-05
<i>Sdif</i>	0.01335	0.00958
<i>Era2</i> × <i>Sdif</i>	0.01444 ^{**}	0.01603 ^{**}
<i>Era3</i> × <i>Sdif</i>	-0.01909	-0.01782
<i>Ief</i>	-14.402	-19.840
<i>Era2</i> × <i>Ief</i>	-11.150	-18.575
<i>Era3</i> × <i>Ief</i>	74.696	68.724
<i>Distance</i>	-0.01703	—
<i>Era2</i> × <i>Distance</i>	-0.03984	—
<i>Era3</i> × <i>Distance</i>	-0.06076	—
Observations	405	405
Countries	15	15
Within R ²	0.160	0.159

Notes: Standard errors clustered by country. Distance is omitted from the FE model because it is time-invariant within countries. ^{*}p < .05, ^{**}p < .01, ^{***}p < .001.

To further isolate and assess whether the effects of the Knowledge-Capital variables varied across macroeconomic periods, joint significance tests were conducted for the interaction terms between each explanatory variable and the era indicators. The results revealed significant temporal variation in the effects of Joint Market Size ($\chi^2=75.58$, $p < 0.001$) and Distance ($\chi^2=6.18$, $p=0.046$). In contrast, the interaction terms for Skill Difference ($\chi^2=0.17$, $p=0.920$) and the Index of Economic Freedom ($\chi^2=1.17$, $p=0.558$) were not jointly significant. These findings indicate that changes in the determinants of inward FDI over time were

primarily associated with market-size effects and geographic distance, whereas the influence of skill differences and institutional quality remained relatively stable across periods.

Table 5 explicitly presents the estimated era-specific effects derived from the preferred IHS random-effects model.

Table 5

**Era-specific effects
from the preferred IHS random-effects model**

Variable	Era 1 (1998–2009)	Era 2 (2010–2019)	Era 3 (2020–2024)
Joint Market Size (Jmf)	1.61E-07*	-1.57E-07***	9.48E-08*
Skill Difference ($Sdif$)	-9.95E-06	-1.09E-05	-1.45E-05
Distance	-2.82E-4***	-5.54E-04***	-4.34E-04***

Era-specific effects calculated using linear combinations of interaction terms. ($p < 0.05$, ** $p < 0.01$, *** $p < 0.001$)*

Joint Market Size exhibited a positive association with FDI during the pre-crisis period (1998–2009), a negative association during the post-crisis recovery period (2010–2019), and a positive association again during the post-pandemic period (2020–2024). Distance maintained a negative effect throughout the study period, with the strongest deterrent effect observed during the recovery era. By contrast, the estimated effects of Skill Difference remained small and statistically insignificant across all periods.

While the interaction coefficients reported in Table 3 establish the presence of significant temporal variation, the substantive magnitude and direction of these changes are more easily interpreted through the era-specific estimates presented in Table 5.

Figure 2 visualizes the corresponding Joint Market Size effects across the three macroeconomic regimes, illustrating the reversal observed during the recovery period and the subsequent return to a positive relationship in the post-pandemic era.

This notable fluctuation in the impact of market size over time is visually summarized in Figure 2.

To assess the robustness of the main findings and address potential endogeneity concerns arising from contemporaneous feedback between inward FDI and economic activity, an additional specification was estimated using a one-year lagged measure of Joint Market Size (Jmf_{t-1}). The results, reported in Appendix Table A1, were substantively similar to those obtained in the main analysis. The interaction terms for lagged Joint Market Size remained jointly highly significant ($F = 76.56$, $p < .001$), and the negative interaction effect observed during the post-crisis recovery period (2010–2019) persisted across both random-effects and fixed-effects specifications. These findings suggest that the observed temporal variation in market-size effects is not driven by contemporaneous GDP fluctuations and provide additional support for the conclusion that the influence of market size on inward FDI varied significantly across macroeconomic regimes.

5. Discussion

5.1 Regime-Dependent Determinants of FDI

The primary finding of this study is that the determinants of inward FDI into Iceland are not temporally stable but vary across macroeconomic regimes. This result supports the broader literature suggesting that major economic shocks alter investor

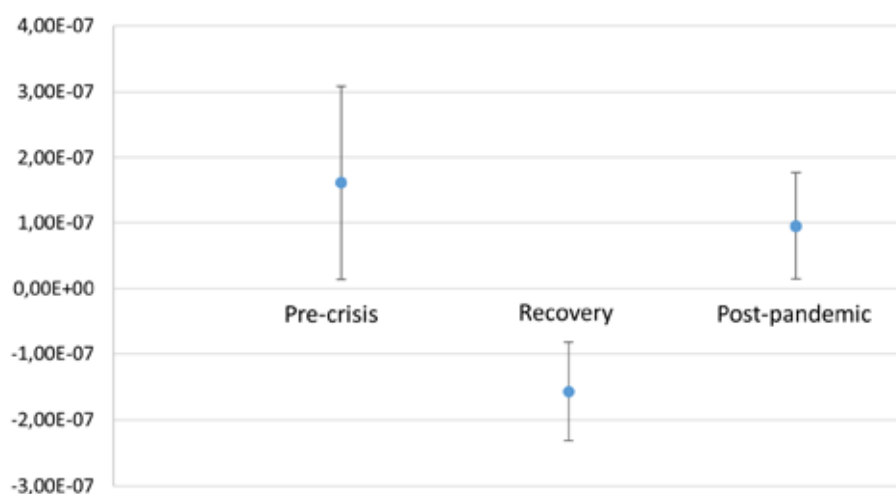


Figure 2. Era-specific effects of Joint Market Size on inward FDI into Iceland Estimates are derived from the preferred inverse hyperbolic sine (IHS) random-effects model. Error bars represent 95% confidence intervals. The effect of Joint Market Size is positive during the pre-crisis and post-pandemic periods but negative during the post-crisis recovery period

behaviour by changing risk perceptions, financing conditions, and the relative attractiveness of host-country characteristics (Desbordes & Wei, 2017; Kellard et al., 2022). More specifically, the findings indicate that the explanatory power of key Knowledge-Capital determinants depends on the prevailing macroeconomic environment rather than remaining constant through time.

The strongest evidence concerns Joint Market Size. While market size exerted a positive influence on inward FDI during the pre-crisis expansion period, this relationship became negative during the post-crisis recovery before returning to a positive association during the post-pandemic period. The significant interaction effects observed across the three eras indicate that market-seeking motives were highly sensitive to changing economic conditions. These findings suggest that the traditional Knowledge-Capital assumption of stable market-size effects may be less applicable in small open economies exposed to major external shocks.

5.2 Market Size and Post-Crisis Economic Restructuring

The reversal of market-size effects during the 2010–2019 recovery period is particularly noteworthy. From a traditional Knowledge-Capital perspective, larger markets should consistently attract greater foreign investment because they provide greater opportunities for firms to exploit economies of scale (Carr et al., 2001; Markusen, 1997). However, the Icelandic recovery period appears to represent an exception to this pattern.

One possible explanation is that the post-crisis period was characterized by economic restructuring rather than broad-based market expansion. Following the collapse of Iceland's banking sector, investment decisions may have been influenced less by aggregate market potential and more by sector-specific opportunities associated with export-oriented growth, including tourism, renewable energy, and specialized services. While the aggregate data employed in this study do not allow direct testing of sectoral investment patterns, the findings are consistent with a temporary shift away from traditional market-seeking behaviour toward investments linked to specific restructuring opportunities within the Icelandic economy.

The subsequent re-emergence of positive market-size effects during the post-pandemic period suggests a partial return to more conventional investment behaviour. As global economic conditions stabilized and international capital flows recovered, market-seeking motives appear to have regained importance. This pattern supports the view that the relationship between market size and FDI is contingent upon broader

macroeconomic conditions rather than representing a fixed structural characteristic.

5.3 The Persistent Role of Geographic Distance

A second important finding concerns geographic distance. Unlike several recent narratives suggesting that globalization and digitalization have reduced the importance of spatial frictions, the results indicate that distance remained a significant deterrent to inward FDI throughout the study period. Furthermore, the negative effect of distance strengthened during the recovery era and remained substantial during the post-pandemic period.

This finding is consistent with the theoretical foundations of both New Trade Theory and the Knowledge-Capital framework (Carr et al., 2001; Krugman, 1991). Despite advances in communication technologies and the increasing digitalization of economic activity, multinational firms continue to face coordination costs, informational barriers, and logistical constraints associated with geographic separation. The Icelandic case therefore provides evidence that distance remains a relevant determinant of international investment even in highly globalized environments.

The strengthening of distance effects during periods of heightened uncertainty may also indicate that investors place greater emphasis on proximity and familiarity when economic risks increase. This interpretation builds on foundational research highlighting the persistent role of spatial frictions (Davies, 2008), an effect that can be further amplified during financial crises (Kellard et al., 2022).

5.4 Stability of Vertical Investment Motives

In contrast to market size and distance, the study finds little evidence that factor-endowment differences changed significantly across macroeconomic regimes. Neither the interaction effects nor the era-specific estimates provide strong support for a systematic shift in the influence of Skill Difference over time.

This result is important because it challenges the notion that Iceland experienced a transition from predominantly horizontal to predominantly vertical FDI following the financial crisis. While some individual coefficients achieve statistical significance in alternative specifications, the overall evidence suggests that vertical investment motives remained comparatively stable across the study period.

One interpretation is that Iceland's underlying economic characteristics, including its highly educated workforce, institutional quality, and integration into international markets, remained relatively consistent despite substantial macroeconomic turbulence. As a result, the attractiveness of Iceland's factor

endowments may have changed less dramatically than broader market conditions or perceived investment risks.

5.5 Implications for Theory and Policy

Taken together, the findings suggest that the Knowledge-Capital framework remains useful for explaining inward FDI into small open economies, but its determinants should not be assumed to operate with constant intensity over time. While the theoretical mechanisms identified by the model remain relevant, their empirical importance appears to vary according to broader macroeconomic conditions.

For policymakers, the results imply that investment promotion strategies should be adaptive rather than static. During periods of economic stability, policies emphasizing market access and growth opportunities may be effective in attracting foreign investment. During periods of crisis or restructuring, however, investors may place greater emphasis on resilience, sector-specific opportunities, and the ability to manage geographic and informational frictions. Consequently, successful FDI strategies in small open economies may require greater flexibility than is often assumed in conventional investment promotion frameworks.

6. Conclusion

This study examined whether the determinants of inward foreign direct investment (FDI) into Iceland remained stable across three distinct macroeconomic regimes between 1998 and 2024. Using bilateral FDI stock data from fifteen source countries and an extended Knowledge-Capital framework incorporating era-specific interaction effects, the analysis assessed how market size, factor-endowment differences,

institutional quality, and geographic distance influenced investment behaviour over time.

The results indicate that the determinants of inward FDI were not temporally stable. The strongest evidence concerns Joint Market Size and geographic distance, both of which exhibited significant variation across macroeconomic regimes. Market-size effects were positive during the pre-crisis period, became negative during the post-crisis recovery period, and returned to a positive association during the post-pandemic period. Geographic distance remained a significant deterrent to investment throughout the study period and became more influential during periods of heightened economic uncertainty. By contrast, there was little evidence that the effects of skill differences or institutional quality changed significantly across regimes.

These findings contribute to the literature by demonstrating that the explanatory power of traditional Knowledge-Capital determinants may vary across different macroeconomic environments. While the framework remains useful for understanding FDI in small open economies, the results suggest that its determinants should not be assumed to operate with constant intensity through time. Instead, major economic disruptions may alter the relative importance of market-seeking motives and spatial frictions.

For policymakers, the findings imply that strategies aimed at attracting foreign investment should be responsive to changing economic conditions. Policies that are effective during periods of expansion may be less effective during periods of crisis or restructuring. Future research could extend this analysis by examining sector-level FDI patterns, alternative measures of institutional quality, and comparisons with other small open economies exposed to similar macroeconomic shocks.

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Appendix

Table A1. Robustness Check Using Lagged Joint Market Size

Variables	IHS RE (Lagged <i>Jmf</i>)	RE Levels (Lagged <i>Jmf</i>)	FE Levels (Lagged <i>Jmf</i>)
Lagged <i>Jmf</i>	1.36E-07	0.0000504*	0.0001755
<i>Era2</i> × Lagged <i>Jmf</i>	-3.18E-07***	-0.000109***	-0.000133***
<i>Era3</i> × Lagged <i>Jmf</i>	-6.31E-08	-0.000001	-0.000044
<i>Sdif</i>	-0.000014	0.01256	0.00864
<i>Era2</i> × <i>Sdif</i>	0.0000001	0.01348*	0.01522*
<i>Era3</i> × <i>Sdif</i>	-0.0000038	-0.02082	-0.01915
<i>Ief</i>	0.0727	-26.57	-31.33
<i>Era2</i> × <i>Ief</i>	-0.0975	-6.71	-13.68
<i>Era3</i> × <i>Ief</i>	0.0435	83.53	76.52
Distance	-0.000292***	-0.01797	—
<i>Era2</i> × Distance	-0.000253*	-0.03742	—
<i>Era3</i> × Distance	-0.000139	-0.06269	—
N	390	390	390

Notes: Standard errors clustered by country. Distance omitted from FE because it is time invariant. *p < .05, **p < .01, ***p < .001.