

FDI and JV distribution in Kurdistan Region

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Abstract. This study investigates the determinants of inward foreign direct investment (FDI) and joint ventures (JVs) in the Kurdistan Region of Iraq (KRI). Using a hand-collected firm-level dataset from 2007–2021 and employing a Poisson Pseudo-Maximum Likelihood (PPML) estimator, the results show that both FDI and JVs are significantly hindered by greater geographical distance, exposure to ISIS-related conflict, and weaker local labour market conditions, while they are positively associated with GDP and infrastructure quality, including transportation networks and airport connectivity. When examining how inward FDI and JVs are distributed across the governorates of the KRI, the results reveal substantial regional differences in foreign investment allocation. Inward FDI is highly concentrated in Erbil, while JVs are more concentrated in Sulaymaniyah Governorate, suggesting distinct location preferences within the KRI. These findings contribute to the literature on investment in post-conflict economies by demonstrating the uneven geographic distribution of foreign investment across the region. The results highlight the need for policies that improve infrastructure, strengthen labour market conditions, and promote a more balanced distribution of investment and greater sectoral diversification across governorates.

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1. Introduction

Over recent decades, foreign direct investment (FDI) has become an important component of the global economy and has attracted considerable attention from researchers and policymakers. According to UN Trade and Development (UNCTAD, 2026), global inward FDI increased by 6% to approximately US\$1.6 trillion in 2025, compared with US\$1.5 trillion in 2024, although this recovery remained uneven across economies. Prior studies asserted that inward FDI by multinational enterprises (MNEs) is a vital driver of economic development in developing and emerging economies (Kola-Bezka & Kuzel, 2023). Inward FDI plays an important role in stimulating economic development through industrial development, technological spillovers, human capital accumulation, wage growth, and poverty reduction (Feenstra & Hanson, 1997; Agosin & Machado, 2005; Alvarez & Molero, 2005; Gohou & Soumaré, 2012; Geise et al., 2025). Governments across countries provide locational incentives to attract inward FDI to increase economic growth. Inward FDI can impose economic costs by displacing domestic firms when policies are deficient (De Mello, 1997; Bevan & Estrin, 2004; Dunning & Lundan, 2008).

Joint ventures (JVs) represent another important form of foreign market entry in emerging economies where local knowledge, institutional familiarity, and risk sharing are critical for business operations. JVs enable foreign firms collaborate with domestic partners, gaining access to local resources, managerial expertise, and market networks while reducing uncertainty and investment risk.

In this context, the Kurdistan Region of Iraq (KRI) (*Note 1*) has emerged as an appealing destination for foreign investors seeking promising opportunities in the Middle East. In 2006, the KRI developed the Investment Law, aimed at creating a conducive environment for foreign investors by encouraging capital inflows and fostering economic diversification. With its semiautonomous status, abundant natural resources, substantial human capital, and strategic geographic location, the KRI has positioned itself as a potential centre for foreign investment across various sectors. Despite its general attractiveness, FDI in the region has not been evenly distributed among governorates and sectors. This has led to disagreements among scholars, politicians and locals over the government, prompting calling for closer examination to achieve a more equitable allocation of investments (Khdir & Cieřlik, 2025).

Addressing these concerns, this study examines the determinants of inward FDI and JVs and investigates the persistent locational and sectoral

disparities across cities in the KRI. We use original data collected in person from the Kurdistan Investment Board in person. The dataset includes 43 FDI and 44 JV projects from 2007-2021. Using a Poisson pseudo-maximum likelihood (PPML) model with multiple fixed effects, we find that inward FDI is negatively associated with geographical distance, war threats, and weaker labour market conditions, while it is positively related to GDP and infrastructure quality, including transportation networks and airport connectivity. The findings further reveal a highly uneven distribution of FDI across KRI governorates. Erbil accounts for 93% of total FDI inflows, while Sulaymaniyah and Duhok jointly receive only 7%. In contrast, JV activity is more concentrated in Sulaymaniyah, which receives 66% of total JV investment, followed by Erbil 18% and Duhok, 16%. Sectoral analysis further shows that banking and real estate receive the largest share of FDI, whereas agriculture attracts limited foreign investment. The findings highlight substantial regional and sectoral imbalances in FDI and JV activity, suggesting the need for targeted policy reforms to promote more balanced regional development and greater sectoral diversification.

The study has three main contributions. First, this study contributes to the literature on sub-national location choice by providing empirical evidence from the KRI using a unique, original firm-level dataset. While prior research (e.g. Khdir & Cieřlik, 2025) has focused on the determinants of inward FDI, we extend this line of inquiry by systematically incorporating joint venture (JV) activity into the analysis. Our dataset should facilitate future research on investment location, ownership structure, and firm behaviour in the region. Second, we enhance the methodological rigour of regional investment studies in the Middle East by employing the PPML estimation technique with high-dimensional fixed effects. Unlike traditional OLS or log-linear models used in prior studies, the PPML approach effectively accounts for 'zero-investment' observations and heteroscedasticity common in firm-level data. By controlling for unobserved time-invariant industry and location characteristics, our model provides more robust estimates of the drivers of spatial concentration in transition economies.

Finally, the study presents a critical policy evaluation of the Kurdistan Region's 2006 Investment Law, assessing its effectiveness in achieving one of its central objectives. While the policy was designed to attract inward FDI across all governorates and promote sectoral diversification, our findings provide systematic evidence of persistent spatial and sectoral concentration, particularly in inward FDI and the

uneven distribution of investment across sectors. This suggests that, despite substantial liberalisation efforts, the policy has only partially achieved its intended outcomes. By linking firm-level investment behaviour to institutional and geographic conditions, the study highlights the limitations of investment promotion policies in addressing deep-rooted regional disparities in resource-dependent areas.

The article is organised as follows. Section 2 provides a theoretical framework and an overview of the KRI's investment law. Section 3 explains the evolution of FDI and JVs in the KRI. Section 4 describes our research methodology. Section 5 summarises and concludes with final remarks and policy recommendations.

2. Research materials and methods

This study adopts the New Economic Geography (NEG) framework to explain the spatial distribution of foreign investments. NEG argues that economic activity is not randomly distributed across space but tends to concentrate in specific locations due to the interaction of increasing returns to scale, transport costs, and market access (Krugman, 1991; Fujita et al., 1999). Firms seek to maximise profitability by locating their facilities where production costs are lower and access to consumers and intermediate inputs is better. Within this framework, market potential plays a central role in firms' location decisions. Regions with larger markets, stronger infrastructure, and better connectivity provide greater economic advantages and are, therefore, more attractive to investment. This mechanism is particularly important for multinational firms, as FDI involves substantial fixed costs associated with establishing foreign operations (Markusen, 1995; Brainard, 1997). Consequently, FDI is expected to concentrate in locations that offer better market access and economic opportunities rather than being evenly distributed across regions.

NEG also highlights the role of agglomeration economies in reinforcing spatial concentration. Existing economic activity may generate cumulative advantages through labour market pooling, supplier linkages, and knowledge spillovers, which can reduce costs and attract additional investment (Fujita et al., 1999). As a result, regions with an established economic base tend to attract further investments, creating persistent spatial disparities.

In the context of the KRI, the NEG framework suggests that foreign investments are more likely to cluster in governorates and urban centres with higher economic activity, stronger infrastructure,

and better market connectivity. Therefore, regional differences in FDI and JVs can be interpreted as outcomes of profit-maximising location decisions rather than random spatial patterns. Consistent with NEG predictions, our empirical analysis examines whether factors such as market size, accessibility, infrastructure, and previous investment patterns explain the concentration of foreign investment across the region.

2.1. Institutional background of KRI's investment law

Many developing countries have undertaken significant liberalisation reforms in recent years, recognising the positive role of FDI in economic growth, job creation, managerial skills and technology transfer. For instance, Jordan revoked a minimum capital requirement imposed on foreign investors and expanded the sectors open to full foreign ownership in 2016. In 2019, it further eased restrictions in some service sectors. Tunisia removed a requirement that foreign investors receive approval for equity stakes exceeding 50% of a firm's capital in 2016. In 2020, Algeria ended its most substantial restriction, a cap on foreign equity of 49% in all sectors. Chile, Guatemala, Georgia, and Montenegro allowed foreign ownership in all major sectors of their economies (OECD, 2021).

Some other countries restrict FDI in some specific sectors due to monopolistic market structures or due to national sensitivities. For example, Mauritius limited FDI (as well as all private investment) in nationalised sectors such as electricity transmission and distribution, waste management and recycling, and port and airport operation. China has limited FDI in the media and defence sectors due to political and national sensitivities.

According to the OECD FDI Regulatory Restrictiveness Index (OECD, 2008), the EU countries are generally more open to FDI than others. Among non-OECD countries, Chile and Argentina are among the most open, while India, China, and Russia are the most restrictive countries. The most restricted sectors are electricity, transport, telecommunications, and finance. Sectors such as manufacturing, tourism, construction, and distribution are the least restricted sectors (World Bank Group, 2010).

In comparison to the aforementioned countries, the KRI's FDI policy is quite liberal and welcoming in all sectors. According to the new investment law of the KRI, foreign investors are free to invest in all sectors with the approval of the Board of Investment.

These sectors include manufacturing, agriculture, scientific and technological research, information technology, modern transportation and telecommunications, banks, insurance companies, infrastructural investments, and education. However, the new KRI's investment law still does not allow foreign investors to own land that contains oil and gas (KRI investment law, Article 19). There are foreign companies, such as Turkish, British and Russian companies that invested in the oil and gas sectors previously, but they were not given land for ownership. Instead, the lands were assigned for exploration with long-term leasing contracts.

The KRI is constitutionally designated as a semi-autonomous region in the northern part of Iraq, administered by the Kurdistan Regional Government (KRG). The KRG has the power to develop certain autonomous policies, including those aimed at supporting private-sector development and attracting foreign investment (Baser, 2018). However, the KRG does not retain an autonomous monetary policy and relies on its budget. The revenue primarily derives from two main revenue sources. First, according to the Iraqi constitution, a 17% (Note 2) of the budget share comes from Iraq's federal government, which is giving the administration of the semi-autonomous northern Kurdish region. Second, the revenues are generated from taxes, domestic fees, customs duties on imported goods, licenses, permits, services, and foreign aid from other countries.

Since the Iraqi War in 2003, the KRI encountered a multitude of challenges, including political instability, an influx of refugees, and fluctuating oil prices. These challenges had a substantial impact on its economic prospects. Thus, in July 2006, the KRG introduced a new investment law to increase non-oil revenues through attracting foreign direct investments. The context of the investment law covers general provisions, exemptions and obligations, investment hierarchy and licensing, and arbitration for foreign investment in the region.

The KRG offer various incentives based on the new investment law. For instance, the law provides tax and import duty exemptions for FDI projects over ten years, along with a two-year tax and duty exemption for investment equipment, such as machinery and vehicles. Moreover, the law provides legal guarantees for foreign investors, ensuring equal treatment with domestic businesses. Additionally, it promises to allocate plots of land for FDI investments in non-oil sectors while prohibiting land allocation for oil, gas, and expensive heavy mineral resources. Finally, the law permits unrestricted profit and capital transfer to the investors' home countries (Board of

Investment, Law of Investment in Kurdistan Region, 2021).

To date, numerous studies have investigated the determinants of FDI in the KRI, producing diverse findings. Heshmati and Davis (2007) explored FDI determinants, emphasising the need to identify locally specific factors for promoting investment in the region. Natali (2007) studied post-Gulf War transition patterns and their impacts on FDI in the KRI. Costantini (2013) investigated the relationship between state-building and FDI in post-conflict phases, highlighting the potential implications of FDI on Iraq's dynamics. More recently, Unegbu and Okanlawon (2015) examined the sectoral distribution of FDI in non-oil sectors and suggested a "fiscal-cashless" policy to further stimulate FDI.

2.2. Evolution of FDI and Joint Ventures in KRI

The KRI's new investment law, which went into force in 2006, was designed to increase non-oil revenue and attract FDI and JV investments to boost its economy. The investment law provides various incentives for foreign investment, as discussed in the previous section. In addition, the KRG has adopted new business policies to reduce entry barriers and improve the investment climate.

According to the FDI Magazine, which is a subsidiary of the British publication Financial Times, Erbil, as the capital city of KRI, was ranked fifth among the top cities in the Middle East in terms of its potential for FDI in 2006 (Iraq-Business News 2011). Since 2006, the KRI attracted US\$ 10.5 billion in FDI inflows. It is equivalent to about 6 per cent of total FDI inflows to Middle East countries. Given its relatively large size in the Middle East, the KRI has emerged over time as a substantial recipient of FDI in the Middle East.

Figure 1 shows that the FDI inflows measured in terms of the number of firms steadily increased from 2008 to 2020, whereas the number of JVs experienced ups and downs. We observe a relatively higher number of firms engaged in FDI and JVs between 2008 and 2013 than in the period between 2014 and 2022. The rapid growth of the number of companies making FDI during this period reflected the overall confidence of investors in the KRI's economy and its business environment in those years. Political stability was another primary reason for the increase in inward FDI in the region.

Figure 2 shows inward FDI and JV between 2007 and 2021. Between 2011 and 2013, we observed quite

high levels of FDI and JVs, during which the KRI received a total of US\$7.01 billion worth of investments from different countries. This surge in the FDI and JVs is related to the smooth revenue transfers from Baghdad to the KRG during this period. As mentioned before, the KRI has a 17% constitutionally mandated share of the budget of the central government. By 2013, the KRG's budget share reached US\$12 billion, which funded the KRG's budget for government employee salaries, capital expenditures and other investments (World Bank Group, 2016). The availability of the KRG spending, which is the main source of income for many, created a better investment climate for the foreign companies as well.

However, licensed investment projects (domestic and foreign) declined from US\$12.4 billion in 2013 to US\$4.4 billion in 2014. The sharp decline of investments in 2014 was related to the changing security environment and the drop in the KRG's revenues. Furthermore, with the rise of the Islamic State of Iraq and Al-Sham (ISIS), Iraq's and the KRI's security environments have significantly changed in 2014. The oil prices also dropped from above \$100 per barrel at the end of 2013 to around \$50 per barrel at the end of 2014. The KRG not only lost revenues due to the drop in oil prices but also did not receive its 17% budget shares fully due to disputes between the KRG and the central government of Iraq (Sumer & Joseph 2018:10) (*Note 3*).

In parallel to the drop in KRG revenues, investment activities in multiple sectors also dropped. Major foreign oil companies such as Anglo-Turkish

Genel Energy, DNO of Norway, and the UK's Gulf Keystone Petroleum discontinued their investments in new oil field developments. In the meantime, the KRI received 1.8 million internally displaced people (IDPs) due to the ISIS threat. Even though multiple international NGOs have been helping with the IDPs, the KRG's expenditures for them increased as well. The situation also affected property prices, as they dropped by about 50% by early 2016 from their peak in early 2014, affecting the wealth in the region. In order to address the financial and political challenges, the KRG continued with its efforts to promote investment inflows and develop the economy. Because of these efforts, the KRI attracted US\$ 10.5 billion of FDI inflows in 2021, equivalent to 12% of the FDI stock of the Gulf Cooperation Council (GCC) countries.

Figure 3 shows the FDI stock differences between KRI and the GCC countries between 2009 and 2017. According to the above figure, the KRI received higher US \$ FDI stock than Oman and Bahrain, and lower than that of Qatar, the UAE, Kuwait and Saudi Arabia. However, the economic size of KRI is much smaller than that of any of the GCC countries. The significant FDI inflow is a good indicator showing that the KRI is increasingly seen as a commercial gateway to Iraq.

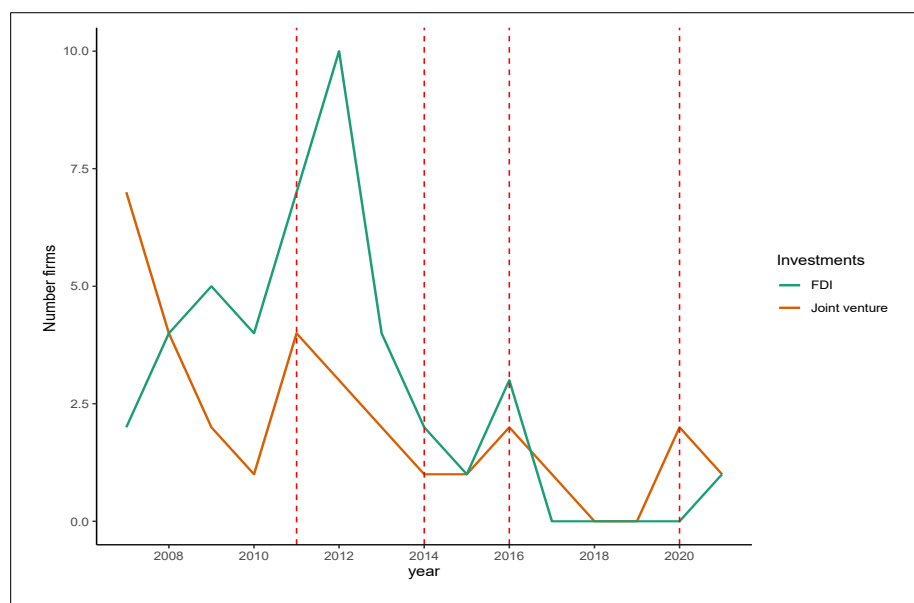


Fig. 1. Number of firms engaged in FDI and JVs between 2007 and 2021

Source: Own creation using data from the KRI's Board of Investment, 2021

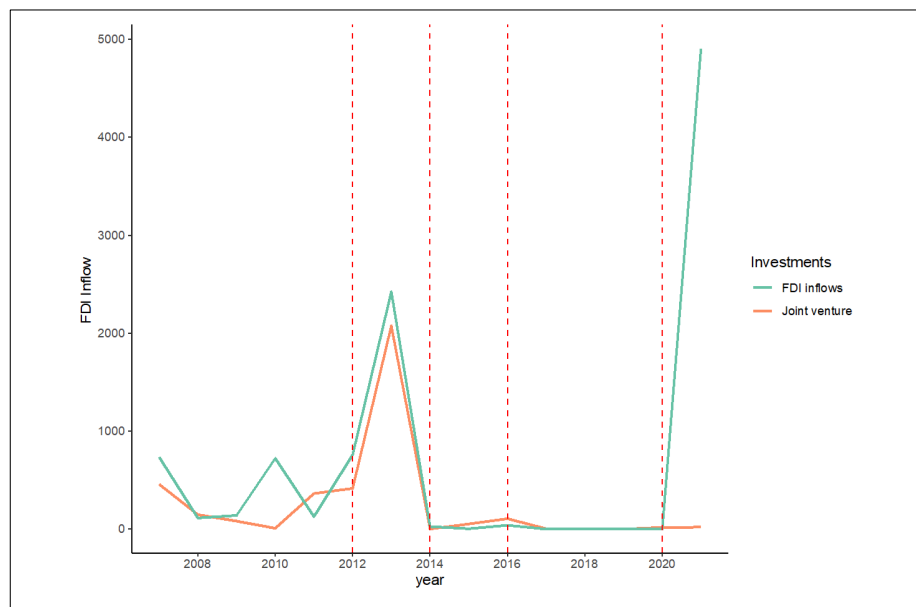


Fig. 2. FDI and JV inflows between 2007 and 2021, million US\$

Source: Own creation, using data from the KRI's Board of Investment, 2021

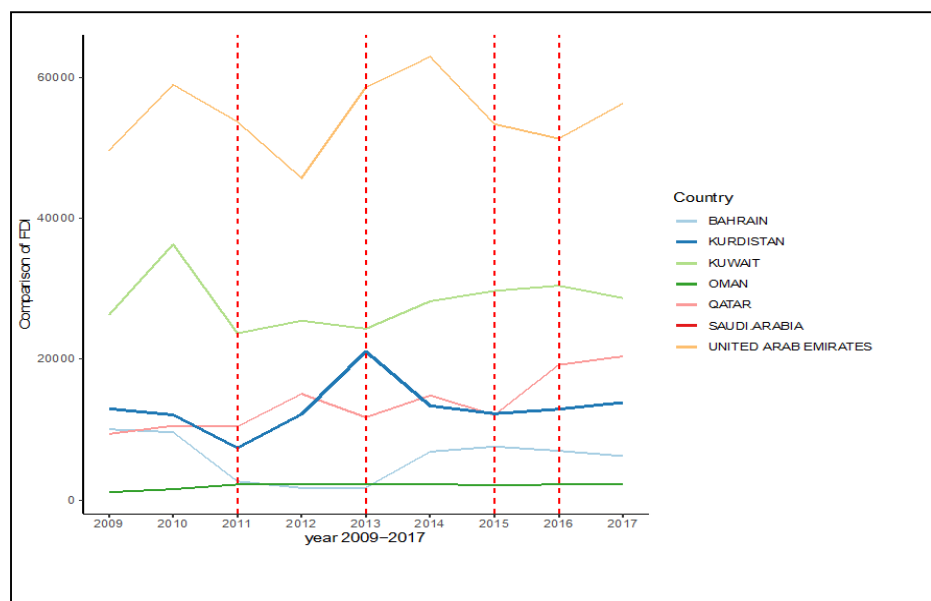


Fig. 3. Comparison of KRI's FDI stock to that of the GCC countries between 2009 and 2017, in millions of US\$

Source: Own creation based on the KRI's Board of Investment, 2021

2.3. Origin of FDI and Joint Venture in KRI

Table 1 presents inward FDI. The number of FDI and JV projects is 74, with a total investment value of approximately US\$11 billion. China is the major investing country that accounted for (US\$ 4.906 billion), followed by the United Arab Emirates (UAE) (US\$ 2.527 billion), and Turkey (US\$ 1.232 billion).

In terms of US\$ values of total inward FDI, these three countries account for nearly 86% of the total amount of FDI. FDI inflows from Lebanon are also significant, with US\$ 1,031 (Board Investment, 2021). Further, Iran and the UAE are the leading countries in terms of the US dollar value of JV projects. Turkey, with 7 JV projects, is the leading country in terms of the number of JVs.

Table 1. Countries that made FDI and JV investments in KRI, 2007-2021

FDI inflows				Joint ventures			
Country	million US\$	ratio %	no. projects	Country	million US\$	ratio %	no. projects
China	4,906	49.05	1	Iran	2,000	53.3	1
United Arab Emirates	2,527	25.27	2	United Arab Emirates	433	11.56	3
Turkey	1,232	12.32	16	Korea-Canada-Iraq	343	9.15	1
Lebanon	1,031	10.31	9	United States	316	8.44	3
United States	115	1.16	4	Turkey	271	7.23	7
New Zealand	98	0.98	1	United Kingdom	109	2.91	2
Germany	24	0.24	2	Germany	82	2.21	2
France	7.08	0.07	1	France	52	1.41	1
Sweden	17	0.17	1	Kuwait	51	1.37	1
Iran	14	0.15	1	Sweden	20	0.56	1
United Kingdom	12	0.12	1	Jordan	15	0.42	1
Kuwait	10	0.11	1	China	13	0.36	1
Syria	8	0.08	1	Pakistan	13	0.35	1
Russia	2	0.03	1	South Africa	4	0.11	1
Georgia	0.6	0.01	1	Iraq / Lebanon / Franc	4	0.11	1
				Iraq/Egypt/Canada	4	0.11	1
				Spain	3	0.09	1
				Netherlands	2	0.07	1
				Canada	2	0.05	1
Total	10,002		43		3,753		31

Source: Own creation based on data collected from the KRI's Board of Investment, 2022

Figure 4 presents the distribution of inward FDI by country of origin. FDI inflows into the Kurdistan Region of Iraq originated from 15 foreign countries during the study period. China emerges as the largest source of FDI, followed by the UAE, Turkey, Lebanon, and the United States. Collectively, these countries account for approximately 98% of the total value of inward FDI. China alone represents nearly half of total FDI inflows (49.05%), followed by the UAE (25.27%), Turkey (12.32%), Lebanon (10.31%), and the United States (1.16%). The remaining countries jointly account for only 1.87% of total inward FDI, indicating a high concentration of investment among a limited number of source countries.

Figure 5 presents the country distribution of JV investments. The results indicate that Iran is the dominant source of JV investment, accounting for 53.3% of total JV inflows, followed by the UAE with 11.56%. Unlike FDI, JV activity is more geographically diversified across source countries. Several European countries have participated in JV investments, including Germany (2.21%), France (1.41%),

Sweden (0.56%), and Spain (0.09%). In terms of project numbers, Turkey records the largest number of investment projects, accounting for 16 FDI projects and 7 JV projects. These findings suggest differences in the structure and geographic composition of FDI and JV investment patterns within the region.

2.4. Locational and sectoral distribution of FDI and JVs

The KRI comprises three officially recognised governorates: Erbil, Sulaymaniyah, and Duhok. In 2021, the Iraqi government formally recognised Halabja as the fourth governorate of the KRI. However, for this study, the analysis focuses exclusively on the three original governorates, Erbil, Sulaymaniyah, and Duhok and excludes Halabja, as it was administratively a part of Sulaymaniyah during the study period.

Table 2 shows FDI and JV investments along with investments made by national firms across the three governorates of KRI. Erbil is the largest recipient of both FDI and investments made by national firms. Duhok received the second-highest FDI but was far

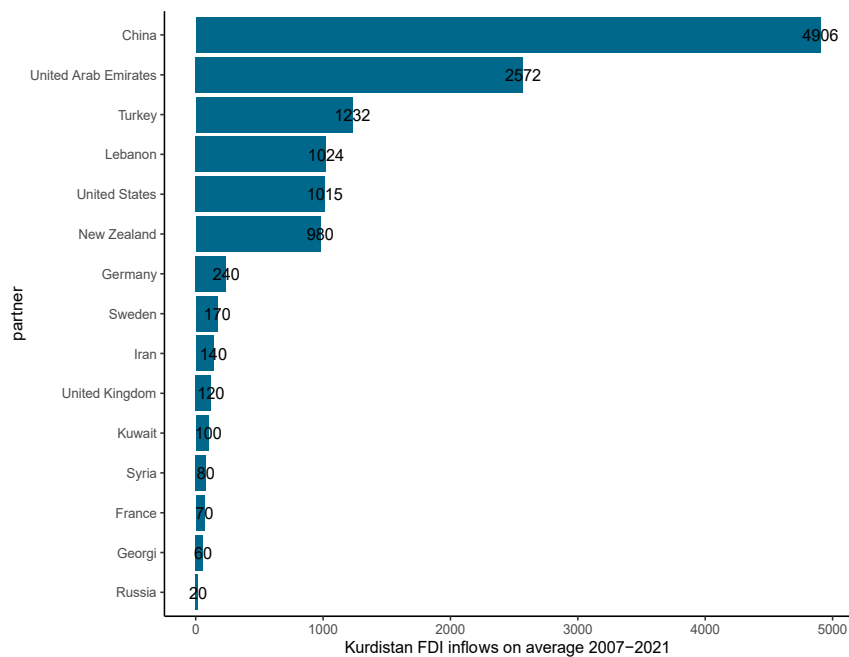


Fig. 4. Inward FDI in KRI in million US\$, 2007-2021

Source: Own calculation using the data from the KRI's Board of Investment, 2021

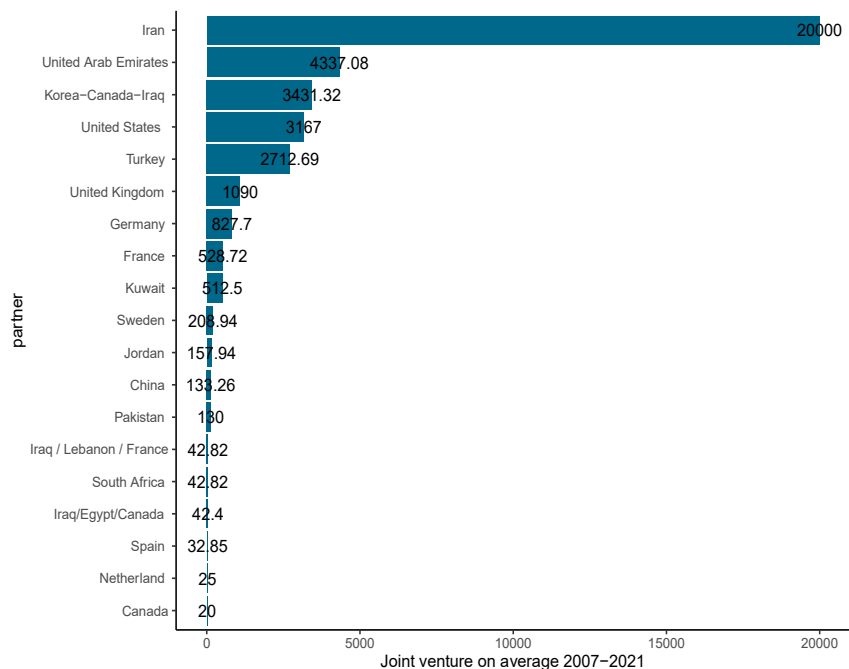


Fig. 5. FDI in KRI in million US\$, 2007-2021

Source: Own calculation using the data from the KRI's Board of Investment, 2021

from Erbil. Sulaymaniyah received the highest amount of JV investments and the second highest amount of investments made by national firms, but did not receive any FDI. Finally, Duhok is the third in JVs and investments made by national firms.

The data show that FDI is unequally distributed among the KRI governorates. When we consider the total investment activities (FDI, JV, and national firms), Erbil received more than double the investments that Sulaymaniyah received, and more than

Table 2. FDI, JVs, and national firm Investments in US\$, between 2007 and 2021

Investment activities	Erbil	Sulaymaniyah	Duhok	Total
FDI	9,397,603,720	0	605,012,459	10,002,616,179
Joint ventures	679,254,503	2,476,407,227	596,360,013	3,752,021,743
National firms	31,596,366,684	15,146,890,710	5,356,510,288	52,099,767,681

Note: Oil and gas sectors are excluded from the data.

Source: Own summary based on data collected from the KRI's Board of Investment, 2022.

six times the investments that Duhok received. One reason for such unequal distribution could be a better infrastructure and market size, political stability and institutional support compared to the other governorates.

Table 3 shows the specific percentage investment shares of the governorates. It also confirms Erbil's lead in both FDI and national firm investments. Considering the total US million-dollar amounts of the investments, Erbil received 93% of the total FDI, Duhok received only about 7% of the FDI, and Sulaymaniyah received no inward FDI. Hence, it appears that Sulaymaniyah was less attractive to FDI during this period. Interestingly, Sulaymaniyah is the leading recipient of the JVs, with 66%, whereas Erbil

and Duhok are close to one another, with approximately 18% and 16% of the JVs, respectively.

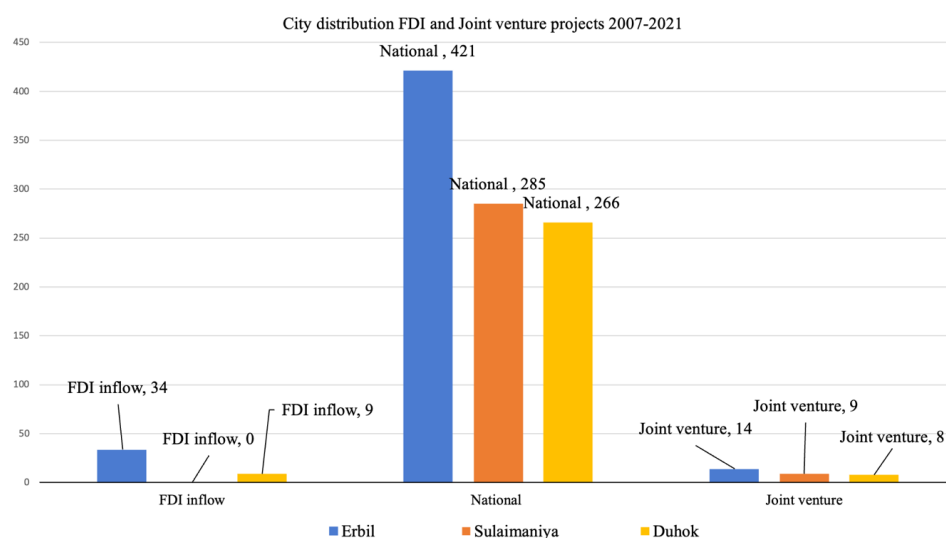
Erbil is also the largest recipient of investments by national firms, with around 60%, whereas Sulaymaniyah is about one-half of that of Erbil, with about 30%, and the remaining 10% was located in Duhok. Erbil is also leading in terms of the investment made by a national firm, but again, this can be related to Erbil's bigger size and being the centre of economic activity in KRI.

However, high engagements of FDI in a few relatively advanced provinces might prevent the dissemination of possible benefits of FDI to the whole economy. This is because positive spillover effects

Table 3. Investment Percentage Shares Across Governorates 2007-2021

Investment activities	Erbil %	Sulaymaniyah %	Duhok %
FDI	93.95	0	6.0485
Joint venture	18.10	66.002	15.894
National firms	60.65	29.073	10.281

Source: Own summary based on data collected from the KRI's Board of Investment, 2022.

**Fig. 6.** Number of firms that invested across three governorates, 2007-2021

Source: Own creation using data from the KRI's Board of Investment, 2022

of FDI tend to diminish with distance (Mukim & Nunnenkamp, 2012).

Figure 6 shows the number of firms that invested in these governorates. Between 2007 and 2021, the KRI's Board of Investment issued 43 FDI licenses. Erbil received the highest number of FDIs, with 34 firms; Duhok received 15, and Sulaymaniyah did not receive any projects. Erbil also received the highest number of investments by national firms, with 421 firms, whereas Sulaymaniyah received investments by 285 firms, and Duhok received 266. Out of 31 JV projects, Erbil received 14 of them, and Sulaymaniyah and Duhok received 9 and 8 projects, respectively. JV distribution is more normal, given the sizes of cities, in terms of the number of JV firms.

Sulaymaniyah did not receive any FDI investment but has the second place in terms of the number of national firms and JVs. Duhok is second in FDI, but third in JVs and investments by national firms. These numbers also confirm that the investment distribution is highly unequal across the three governorates, especially in terms of FDI. The question that remains now is why Sulaymaniyah received JV investments but not FDI investments. This may be an interesting topic for future research.

2.5. Sectoral Investment distribution across governorates

Table 4 shows the sectoral distribution of FDI and JVs across the three governorates, based on the

number of licences issued. Table 5 shows the sectoral distribution of FDI and JVs across the three governorates in terms of their US\$ values. For the sake of comparison, investments made by national firms are also given in these sectors so that all information can be examined comparatively. Based on the information presented in these tables, we can make the following observations.

In terms of the number of firms that invested, the manufacturing industry, housing, tourism, and trading sectors received most of the FDI in Erbil. However, in terms of US\$ value of these investments, the tourism sector is leading, followed by housing and banking. The manufacturing sector is in fourth place. All other sectors received much lower amounts of investment. Sulaymaniyah did not receive any FDI investments, and the biggest US\$ value of FDI in Duhok mainly went to housing, and a smaller amount went to industry. In terms of the number of firms, the manufacturing sector attracted five firms that invested there, whereas the housing sector got two firms that invested in Duhok. The data show that FDI investments were focused on a relatively small number of sectors, including tourism, housing, and, to some extent, also manufacturing and trading. This is parallel to national firm investments, as both the number of investments and the US\$ values of investments by national firms are higher in these sectors than in other sectors. These sectors must have been faster-growing sectors and probably more profitable sectors.

Table 4. Sectoral distributions FDI, JVs and National Firm projects, 2007–2021

Sectors	Erbil			Sulaymaniyah			Duhok		
	FDI	JV	National	FDI	JV	National	FDI	JV	National
Agriculture	1	1	14		2	7		1	10
Art			3						1
Bank	1		3			1			1
Communication			1	1	3				
Education	3		20	1	11				14
Health	2		35			7			20
Housing	7	3	83			58	4	2	32
Industry	8	6	106		3	76	5	5	58
Service			5	1	6				2
Sport			3			14			15
Tourism	7	2	84			24			66
Trading	5	2	61	1	78				47
Transportation			3						
Total projects	34	14	421	0	9	285	9	8	266

Source: Own calculation with the data from the KRI's Board of Investment, 2022

Table 5. Total investment values across the KRI's governorates 2007-2021 in US\$

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) FDI	1														
(2) Large firm	0.234***	1													
(3) Medium Firm	0.028***	-0.169**	1												
(4) Small Firm	0.136**	-0.552***	-0.091	1											
(5) Micro Firm	0.160**	-0.502***	-0.014	-0.308***	1										
(6) CAPITAL	0.249***	-0.044	-0.186***	0.044***	0.066	1									
(7) GDP	0.028***	-0.114*	-0.127*	0.040***	0.134**	0.581***	1								
(8) MOBILE	0.021***	-0.108*	0.195***	-0.127*	0.175***	-0.158**	0.142**	1							
(9) LABOUR	0.156**	0.059	-0.164**	-0.183**	0.158**	-0.529***	0.214***	0.305***	1						
(10) AIRPORT	-0.316***	-0.184***	0.015	0.029***	0.176***	-0.098	0.434***	0.176***	0.539***	1					
(11) TRANSPORT	-0.190***	-0.068***	0.074***	-0.143**	0.184***	0.671***	0.390***	-0.058	-0.525***	-0.234***	1				
(12) UNEMPLOYMENT	-0.005	-0.018	-0.001	-0.003	-0.003	0.020	0.006	-0.005	0.023	0.018	-0.004	1			
(13) $DIST_{Syria}$	-0.005	-0.019	0.001	0.003	0.004	-0.017	-0.006	0.000	-0.026	-0.016	0.004	-0.211***	1		
(14) $DIST_{Iran}$	0.004	0.015	-0.001	-0.003	-0.003	0.008	0.005	0.005	0.022	0.01	-0.003	0.561***	-0.552***	1	
(15) $DIST_{Turkey}$	-0.005	-0.016	0.001	0.003	0.003	-0.010	-0.006	-0.004	-0.023	-0.011	0.003	-0.245***	0.103***	-0.194***	1

Source: Own calculation with the data from the KRI's Board of Investment, 2022

In Duhok, JV investments are located mainly in the agriculture, housing and manufacturing industry sectors. In Erbil, the housing sector received the biggest US\$ value of JV investments, followed by tourism, industry, and trading. In terms of the number of JV firms, the industry is the leading sector, followed by housing, tourism, and trading. Sulaymaniyah received significant JV investments in industry, both in terms of the number of firms and the US\$ value of investments. JV investments in other sectors are significantly low. In terms of the US\$ value of JV, education and trading have been in the second and third places. It is also possible to observe that investments by national firms are more spread out across different sectors, whereas FDI and JV investments are more concentrated in a few sectors.

Figure 7 shows the per cent shares of FDI, JVs and national firm investments in KRI in different sectors. As a percentage, the banking sector is dominated by FDI investments, and shares of the national firms are very low. The tourism sector is also dominated by FDI. Real estate and education sectors also have significant FDI investments, as a percentage of total sector investments. In some sectors, FDI is either low or non-existent. The percentage shares of JVs are the highest in agriculture, followed by education, communications, services, and industry. There is no FDI in communication and services, even though there are joint venture investments. The low levels of FDI are reported in agriculture, trading, industry, health, and education.

2.6. Empirical models

We use hand-collected data from the Kurdistan Investment Board in person. The dataset includes 43 FDIs and 44 JV projects from 2007-2021. Appendices 1 and 2 detail the inward FDI and JVs by sectors across KRI's governorates. The data cover 12 sectors and develop the following regression (Note 4).

$$\begin{aligned} \frac{FDI_{it}}{JV_{it}} = & \beta_0 + \beta_1 DIST_c + \beta_2 CAPITAL_c + \beta_3 GDP_c + \\ & + \beta_4 MOBILE_{it} + \beta_5 LABOUR_c + \beta_6 AIRPORT_c + \\ & + \beta_7 TRANSPORTATION_c + \beta_8 UNEMPLOYMENT_c + \\ & + \beta_9 ISIS_c + \lambda_c + \tau_t + \varepsilon_{it} \end{aligned}$$

where FDI_{it} denotes inward foreign direct investment at the firm level in the KRI, and JV_{it} represents joint venture activity for firm i in year t . i indexes firms, t indexes years, and c denotes countries. $DIST_c$ measures the geographical distance (in

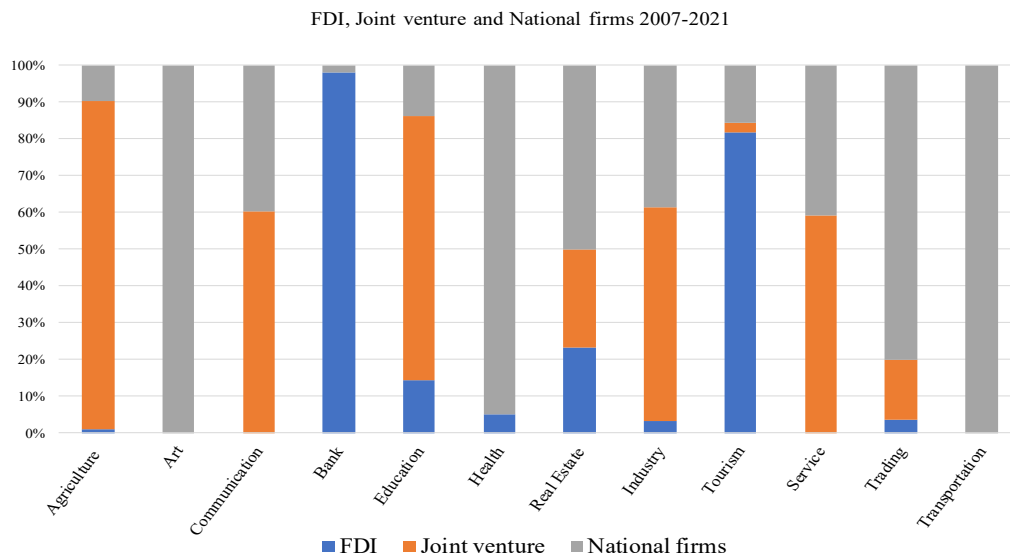


Fig. 7. Sectoral distribution of FDI, JVs and national firms from 2007 to 2021

Note: The figure did not include FDI and Joint venture data for the Art and Transportation sectors due to data availability

Source: Own calculation with the data from the KRI's Board of Investment, 2022

kilometres) between the Kurdistan Region and its neighbouring countries (Syria, Iran, and Turkey). Distance is calculated using google search based on geographic coordinates. The model includes standard determinants of FDI identified in the literature, including $CAPITAL_c$ and $LABOUR_c$, as well as economic development measured by GDP_c . We also control for key infrastructure and macroeconomic factors. $MOBILE_{it}$ captures telecommunications infrastructure, $AIRPORT_c$ proxies transport connectivity, and $TRANSPORTATION_c$ reflects domestic transport infrastructure. $UNEMPLOYMENT_c$ captures labour market conditions. $ISIS_c$ is a conflict indicator capturing exposure to the Islamic State (ISIS) war period, defined as 2013–2019, which corresponds to the years of active conflict in Iraq and Syria. ε_{ijt} is the error term, $t = 2007, \dots, 2021$, and B 's are the parameters to be estimated.

All macroeconomic variables were obtained from the World Development Indicators (WDI). Given the absence of region-specific data for the KRI, national-level Iraqi data are used as a proxy. This approach is appropriate as the KRI is an autonomous region within Iraq and shares national statistical reporting structures. This strategy is consistent with prior studies (Khdir & Cieřlik, 2025), which also employ Iraqi-level data to analyse FDI patterns in Kurdistan.

To estimate equation (1), we employ the PPML regression with multiple fixed effects developed in Correia et al. (2020), which is estimated through

an iteratively reweighted least-squares algorithm. Weidner and Zylkin (2021) demonstrate that the PPML estimator is the only consistent estimator among a wide range of gravity estimators. The PPML regression generates better results than other methods, such as the OLS and Nonlinear Least Squares, Feasible Generalised Least Squares, and Tobit. As a result, we use PPML consistently throughout our study.

3. Research results

3.1. Descriptive statistics

Table 6 presents the descriptive statistics for all variables used in the empirical analysis. The sample consists of 223 firm-year observations. Large firms constitute 50.7% of observations, medium firms account for 2.7%, small firms for 22.9%, and micro firms for 24.2%. Capital ($CAPITAL$) has a mean value of 2.502, GDP per capita (GDP) 4.502, and telecommunications infrastructure ($MOBILE$) shows limited dispersion, suggesting relatively homogeneous mobile penetration across observations. Labour market conditions ($LABOUR$) display considerable heterogeneity, with a relatively large standard deviation, reflecting differences in labour availability across countries or regions. Airport infrastructure ($AIRPORT$) and transportation infrastructure ($TRANSPORT$) also exhibit meaningful variation, indicating differences

in connectivity and logistical capacity. Unemployment (*UNEMPLOYMENT*) shows moderate variation across the sample. Geographical distance of Syria (6.57), Iran (7.11), and Turkey (7.01). Overall, the descriptive statistics indicate substantial heterogeneity across firms, macroeconomic conditions, infrastructure quality, and conflict exposure, which provides suitable variation for identifying the determinants of FDI and joint venture activity.

Table 7 reports pairwise correlations. The dependent variable, FDI, is positively correlated with all firm size categories, and in particular with large firms (0.234). This suggests that larger firms are more likely to attract higher levels of FDI. In contrast, medium firms exhibit a weak positive association, while the relationship for small and micro firms is weaker but still positive, indicating heterogeneity in FDI distribution across firm types. *CAPITAL* is positively associated with FDI (0.249), consistent with the notion that better capital conditions enhance investment attractiveness. GDP is only weakly positively correlated with FDI (0.028), reflecting limited but positive economic scale effects. Labour market conditions also show a positive relationship with FDI (0.156), suggesting that labour availability is associated with higher investment inflows. Infrastructure variables exhibit mixed correlations. Mobile telecommunications

(*MOBILE*) is positively associated with FDI, whereas airport infrastructure shows a negative correlation (-0.316), potentially reflecting collinearity with other development indicators or regional infrastructure concentration. Transportation infrastructure is negatively correlated with FDI (-0.190), indicating that areas with stronger transport networks may be associated with alternative economic structures or spatial distribution effects. Unemployment shows no meaningful correlation with FDI. The ISIS conflict indicator is weakly negatively correlated with FDI (-0.005), suggesting limited unconditional association, though its effect may operate through multivariate channels once controls are included. Geographical distance variables display high internal consistency patterns across neighbouring countries. Distance to Syria, Iran, and Turkey is strongly correlated across measures, reflecting the shared geographic structure of the Kurdistan Region's borders. Overall, the correlation matrix does not indicate severe multicollinearity concerns among the main explanatory variables.

3.2 Main results

Table 8 presents the main results obtained from Equation (1). These results show that geographical

Table 6. Summary statistics

Variable	N	Mean	SD	p25	Median	p75
FDI	223	2.507	2.501	2.000	4.000	9.000
Large Firm	223	0.507	0.501	0.000	1.000	1.000
Medium Firm	223	0.027	0.162	0.000	0.000	0.000
Small Firm	223	0.229	0.421	0.000	0.000	0.000
Micro Firm	223	0.242	0.429	0.000	0.000	0.000
<i>CAPITAL</i>	223	2.502	0.156	1.393	2.411	4.130
GDP	223	4.502	0.153	2.303	3.061	4.700
<i>MOBILE</i>	223	0.502	0.016	1.103	1.461	2.170
<i>LABOUR</i>	223	6.537	11.976	6.416	9.009	10.431
<i>AIRPORT</i>	223	3.287	0.677	42.837	43.149	43.471
<i>TRANSPORT</i>	223	1.070	1.537	0.000	2.190	4.250
<i>UNEMPLOYMENT</i>	223	2.430	1.101	2.125	2.480	3.590
<i>ISIS_t</i>	223	0.296	0.458	0.000	0.000	1.000
<i>DIST_{Syria}</i>	223	6.579	0.105	6.433	6.637	6.669
<i>DIST_{Iran}</i>	223	7.114	0.111	6.967	7.138	7.236
<i>DIST_{Turkey}</i>	223	7.012	0.127	6.862	7.004	7.172

Note: FDI is foreign direct investment. Firm size is classified into four categories: large firms, medium-sized firms, small firms, and micro firms. *CAPITAL* represents the level of capital endowment, while GDP measures economic development. *MOBILE* captures telecommunications infrastructure. *LABOUR* reflects labour market conditions. *AIRPORT* and *TRANSPORT* (transportation) proxy for physical infrastructure and connectivity. *UNEMPLOYMENT* measures the unemployment rate. *ISIS* is an indicator variable capturing exposure to the Islamic State conflict period. *DIST_{Syria}*, *DIST_{Iran}*, *DIST_{Turkey}* measure the geographical distance (in kilometres) between the Kurdistan Region and its neighbouring countries, reflecting spatial proximity and market access conditions. ***, **, and * for p-values <0.01, <0.05, and <0.1, respectively.

Source: Own elaboration.

Table 7. Pairwise correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) FDI	1														
(2) Large firm	0.234***	1													
(3) Medium Firm	0.028***	-0.169**	1												
(4) Small Firm	0.136**	-0.552***	-0.091	1											
(5) Micro Firm	0.160**	-0.502***	-0.014	-0.308***	1										
(6) CAPITAL	0.249***	-0.044	-0.186***	0.044***	0.066	1									
(7) GDP	0.028***	-0.114*	-0.127*	0.040***	0.134**	0.581***	1								
(8) MOBILE	0.021***	-0.108*	0.195***	-0.127*	0.175***	-0.158**	0.142**	1							
(9) LABOUR	0.156**	0.059	-0.164**	-0.183**	0.158**	-0.529***	0.214***	0.305***	1						
(10) AIRPORT	-0.316***	-0.184***	0.015	0.029***	0.176***	-0.098	0.434***	0.176***	0.539***	1					
(11) TRANSPORT	-0.190***	-0.068***	0.074***	-0.143**	0.184***	0.671***	0.390***	-0.058	-0.525***	-0.234***	1				
(12) UNEMPLOYMENT	-0.005	-0.018	-0.001	-0.003	-0.003	0.020	0.006	-0.005	0.023	0.018	-0.004	1			
(13) $DIST_{Syria}$	-0.005	-0.019	0.001	0.003	0.004	-0.017	-0.006	0.000	-0.026	-0.016	0.004	-0.211***	1		
(14) $DIST_{Iran}$	0.004	0.015	-0.001	-0.003	-0.003	0.008	0.005	0.005	0.022	0.01	-0.003	0.561***	-0.552***	1	
(15) $DIST_{Turkey}$	-0.005	-0.016	0.001	0.003	0.003	-0.010	-0.006	-0.004	-0.023	-0.011	0.003	-0.245***	0.103***	-0.194***	1

Note: FDI is foreign direct investment. Firm size is classified into four categories: large firms, medium-sized firms, small firms, and micro firms. CAPITAL represents the level of capital endowment, while GDP measures economic development. MOBILE captures telecommunications infrastructure. LABOUR reflects labour market conditions. AIRPORT and TRANSPORT (transportation) proxy for physical infrastructure and connectivity. UNEMPLOYMENT measures the unemployment rate. ISIS is an indicator variable capturing exposure to the Islamic State conflict period. $DIST_{Syria}$, $DIST_{Iran}$, $DIST_{Turkey}$ measure the geographical distance (in kilometres) between the Kurdistan Region and its neighbouring countries, reflecting spatial proximity and market access conditions. ***, **, and * for p-values <0.01, <0.05, and <0.1, respectively.

Source: Own elaboration.

distance variables are negatively associated with FDI and JV activity, although the magnitude and significance vary across firm sizes. Distance to Syria is consistently negative and statistically significant at the 1% and 5% levels for large firms and medium firms, indicating that greater geographic distance is associated with lower inward FDI. Similarly, distance to Turkey and Iran shows negative and statistically significant coefficients across most specifications, particularly for large and small firms, suggesting that proximity to neighbouring markets plays an important role in shaping investment decisions.

Capital (CAPITAL) shows a positive and statistically significant effect for large firms, particularly in the FDI specification, indicating that higher capital endowments enhance investment attractiveness at the upper end of the firm size distribution. However, the effect is weaker and generally insignificant for medium and micro firms. Macroeconomic development, proxied by GDP, is generally positive but statistically insignificant across most specifications, suggesting limited direct influence on FDI and JV once firm and country fixed effects are controlled for. Similarly, telecommunications infrastructure (MOBILE) shows no statistically significant effects across all firm categories. Labour market conditions (LABOUR) are consistently positive and highly statistically significant at the 1% level across all firm sizes and both FDI and JV specifications. This finding indicates that labour

availability is a key determinant of foreign investment and partnership formation, regardless of firm size.

Infrastructure variables also play an important role. Airport infrastructure (AIRPORT) is positive and statistically significant across all specifications, highlighting the importance of international connectivity in attracting both FDI and JV activity. Transportation infrastructure (TRANSPORT) is also generally positive and significant, although its magnitude varies across firm categories. Unemployment (UNEMPLOYMENT) shows mixed effects. It is negatively and significantly associated with FDI in several specifications, particularly for large and small firms, while its relationship with JV activity is less consistent. The ISIS war variable is negative and statistically significant across all firm sizes and both FDI and JV specifications. The coefficients indicate that exposure to the ISIS conflict period is associated with a substantial reduction in both foreign direct investment and joint venture activity, with the strongest adverse effects observed for large firms. This result highlights the significant destabilising impact of geopolitical conflict on investment flows. Taken together, these results highlight the destabilising impact of geopolitical conflict on investment flows and firm-level internationalisation decisions.

Table 9 reports the estimation results of border effects on FDI across the three main cities of the Kurdistan Region of Iraq, Erbil, Sulaymaniyah, and Duhok, over the period 2007–2021. The analysis is

Table 8. Benchmark estimation results 2007-2021

Variable	Firm-level Estimation							
	Large Firms		Middle Firms		Small Firms		Micro Firms	
	FDI (1)	JV (2)	FDI (3)	JV (4)	FDI (5)	JV (6)	FDI (7)	JV (8)
<i>DIST_{SYRIA}</i>	-2.520*** (0.311)	-2.310*** (0.111)	-0.310** (0.230)	-0.112** (0.002)	-1.710** (0.070)	-0.013 (0.003)	-2.870*** (0.550)	-0.145 (0.023)
<i>DIST_{TURKEY}</i>	-2.320** (0.240)	-2.370** (-0.101)	1.184* (0.801)	-0.432* (0.040)	1.630* (0.141)	-0.750* (0.210)	-2.790*** (0.240)	-0.034* (0.111)
<i>DIST_{IRAN}</i>	-1.120* (0.040)	-0.900*** (0.030)	-0.066 (0.575)	-0.863** (0.070)	-2.020** (0.730)	-1.200** (0.210)	-0.330 (0.201)	-0.029 (0.031)
<i>CAPITAL</i>	1.660** (0.011)	0.340* (0.890)	0.540 (1.061)	0.341 (0.060)	-0.960* (2.220)	0.610 (1.580)	0.059 (0.110)	0.019 (0.020)
<i>GDP</i>	0.412 (0.513)	0.201 (0.342)	0.423 (2.131)	0.020 (0.001)	0.371 (0.742)	0.300 (0.320)	3.000 (0.480)	2.003 (0.322)
<i>MOBILE</i>	0.112 (0.113)	0.101 (0.142)	0.023 (1.031)	0.020 (0.131)	0.370 (0.042)	0.310 (0.320)	3.000 (0.480)	2.003 (0.322)
<i>LABOUR</i>	2.984*** (-0.105)	2.013*** (0.451)	2.510*** (0.020)	2.313*** (0.210)	2.823*** (0.480)	2.590*** (1.730)	4.301*** (1.881)	3.601*** (1.510)
<i>AIRPORT</i>	0.405*** (0.220)	2.010*** (0.240)	2.110*** (1.340)	3.111*** (1.303)	2.470*** (0.390)	2.310** (3.120)	3.062*** (1.830)	2.045*** (0.871)
<i>TRANSPORT</i>	0.061*** (0.130)	0.340*** (0.020)	0.540*** (0.010)	0.230* (0.012)	1.053 *** (0.700)	0.041** (0.600)	0.141 (0.060)	0.190 (0.980)
<i>UNEMPLOYMENT</i>	-2.120*** (0.531)	-0.180 (0.150)	3.140** (2.120)	1.440** (0.122)	-1.050 (0.740)	-2.440*** (0.661)	-1.703* (0.550)	0.991*** (0.720)
<i>ISIS</i>	-3.434*** (0.140)	-2.972*** (0.270)	-1.591** (0.310)	-1.093** (0.110)	-0.410** (-0.050)	-0.300** (0.030)	-0.773** (0.071)	-0.020* (-0.000)
<i>constant</i>	-2.091 (0.711)	5.690*** (0.632)	3.770*** (1.670)	4.271*** (1.672)	3.490*** (1.500)	1.150* (2.430)	4.090*** (1.630)	2.311*** (0.443)
<i>No. observations</i>	223	223	223	223	223	223	223	223
<i>Firm FE</i>	✓	✓	✓	✓	✓	✓	✓	✓
<i>Country FE</i>	✓	✓	✓	✓	✓	✓	✓	✓
<i>Adj. R²</i>	0.54	0.54	0.52	0.55	0.50	0.53	0.55	0.56

Note: Table 8 represents estimation analysis from Equation (1). Firm size is classified into four categories: large firms, medium-sized firms, small firms, and micro firms. FDI is foreign direct investment. Firm size is classified into four categories: large firms, medium-sized firms, small firms, and micro firms. CAPITAL represents the level of capital endowment, while GDP measures economic development. MOBILE captures telecommunications infrastructure. LABOUR reflects labour market conditions. AIRPORT and TRANSPORT (transportation) proxy for physical infrastructure and connectivity. UNEMPLOYMENT measures the unemployment rate. ISIS is an indicator variable capturing exposure to the Islamic State conflict period. *DIST_{SYRIA}*, *DIST_{IRAN}*, *DIST_{TURKEY}* measure the geographical distance (in kilometres) between the Kurdistan Region and its neighbouring countries, reflecting spatial proximity and market access conditions. ***, **, and * for p-values <0.01, <0.05, and <0.1, respectively.

Source: Own estimations.

Table 9. Estimation results of border effects 2007-2021

Variable	Location analysis FDI											
	Erbil				Sulaymaniyah				Duhok			
	Micro (1)	Small (2)	Medium (3)	Large (4)	Micro (5)	Small (6)	Medium (7)	Large (8)	Micro (9)	Small (10)	Medium (11)	Large (12)
<i>DIST_{SYRIA}</i>	-0.230** (1.200)	-0.619** (1.010)	-0.980** (0.290)	-2.160** (0.690)	-0.331* (0.100)	-0.345** (0.760)	-1.680** (0.430)	3.421*** (2.250)	-1.050* (0.211)	-1.481** (0.210)	-2.080** (0.010)	-3.031** (1.110)
<i>DIST_{TURKEY}</i>	-1.600*** (0.501)	-2.410*** (1.120)	-2.180*** (0.340)	-2.710** (2.650)	-1.830** (0.550)	-0.241** (0.181)	-1.101** (0.072)	1.970 (2.643)	-1.862* (0.384)	-1.112* (0.082)	-2.693*** (0.911)	-4.190*** (3.160)
<i>DIST_{IRAN}</i>	-0.932** (1.170)	-1.671** (1.120)	-0.365** (0.080)	2.875** (2.161)	3.531 (0.540)	2.080 (1.011)	1.401 (0.432)	0.180** (2.290)	-1.040 (1.600)	-0.740 (1.211)	-0.250** (0.410)	-0.300** (0.502)
<i>CAPITAL</i>	0.731 (1.232)	-0.420 (1.170)	-9.570 (-0.041)	-0.511 (2.201)	0.290 (2.301)	0.450 (0.320)	-0.980 (-0.230)	-0.610* (2.31)	0.491* (2.350)	0.910 (0.700)	0.610 (1.010)	-0.62*** (4.371)
<i>GDP</i>	5.740*** (1.412)	2.802** (0.360)	3.610*** (0.100)	4.191*** (1.911)	2.382*** (0.662)	3.971*** (1.121)	3.050*** (0.401)	3.122*** (1.020)	2.621** (0.715)	5.070*** (1.500)	3.532*** (0.510)	0.833*** (3.300)
<i>MOBILE</i>	2.012** (1.44)	0.240*** (0.070)	1.381** (0.071)	0.802** (0.100)	0.900** (1.462)	0.501** (0.102)	4.270*** (1.071)	3.420*** (0.140)	1.662** (0.502)	-2.581 (0.171)	2.120*** (0.611)	2.311** (0.680)
<i>LABOUR</i>	-3.540 (0.270)	2.781 (0.003)	0.050 (0.012)	4.100* (0.112)	-1.440* (0.121)	-0.630 (-0.161)	0.560 (0.210)	4.490 (0.250)	-1.651* (2.350)	-1.652 (0.680)	-3.152 (1.060)	7.331*** (4.310)
<i>AIRPORT</i>	4.540*** (1.270)	2.780*** (1.183)	2.052** (0.020)	4.102*** (2.110)	0.003* (0.000)	0.004* (0.001)	0.011* (0.002)	0.090* (0.051)	(0) (.)	(0) (.)	(0) (.)	(0) (.)
<i>TRANSPORT</i>	0.601** (0.082)	1.890*** (0.300)	0.011* (0.040)	4.330*** (2.110)	-0.320 (0.101)	-0.420 (-0.270)	0.310*** (0.480)	2.291** (0.150)	-0.612 (0.320)	-1.333 (0.500)	-1.101 (0.201)	4.334 (0.101)
<i>UNEMPLOYMENT</i>	-0.230 (0.553)	-0.103 (0.870)	-0.560 (0.807)	-1.921*** (2.050)	-1.125 (0.915)	-1.484 (1.511)	1.071 (1.094)	1.745** (2.511)	-1.638 (0.912)	-1.604 (1.710)	0.173 (0.180)	0.241 (0.320)
<i>ISIS</i>	-2.230** (0.353)	-1.103** (0.270)	-2.560** (1.407)	-3.921*** (1.050)	-2.125** (1.015)	-2.484** (0.411)	2.071** (0.194)	3.745** (1.311)	-2.638** (0.212)	-2.604** (0.710)	-2.173** (0.280)	-2.241** (0.320)
<i>Constant</i>	-22.100 (0.530)	10.400 (1.101)	12.110 (0.270)	12.400* (2.208)	-13.800 (1.830)	-12.100 (0.154)	8.000 (0.140)	2.6000 (1.910)	-2.500 (1.901)	-2.7000 (0.711)	-4.000 (1.072)	7.80*** (3.721)
No. observations	223	223	223	223	223	223	223	223	223	223	223	223
Firm FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Adj. R ²	0.55	0.50	0.54	0.43	0.12	0.12	0.21	0.23	0.04	0.10	0.09	0.11

Note: FDI is foreign direct investment. Firm size is classified into four categories: large firms, medium-sized firms, small firms, and micro firms. CAPITAL represents the level of capital endowment, while GDP measures economic development. MOBILE captures telecommunications infrastructure. LABOUR reflects labour market conditions. AIRPORT and TRANSPORT (transportation) proxy for physical infrastructure and connectivity. UNEMPLOYMENT measures the unemployment rate. ISIS is an indicator variable capturing exposure to the Islamic State conflict period. $DIST_{SYRIA}$ and $DIST_{IRAN}$ measure the geographical distance (in kilometres) between the Kurdistan Region and its neighbouring countries, reflecting spatial proximity and market access conditions. ***, **, and * for p-values <0.01, <0.05, and <0.1, respectively. Source: Own estimations.

Table 10. Estimation results of border effects 2007-2021

Variable	Location analysis Joint Ventures											
	Erbil			Sulaymaniyah			Duhok					
	Micro (1)	Small (2)	Medium (3)	Large (4)	Micro (5)	Small (6)	Medium (7)	Large (8)	Micro (9)	Small (10)	Medium (11)	Large (12)
<i>DIST_{SYRIA}</i>	-3.000* (1.362)	-0.021*** (0.000)	-0.247 (0.284)	-2.160** (0.690)	-0.492* (0.248)	-1.461 (0.021)	-0.772*** (0.021)	-0.133 (0.379)	-0.239* (0.348)	-1.136 (0.031)	-0.882*** (0.031)	-0.233 (0.479)
<i>DIST_{TURKEY}</i>	-0.044*** (0.012)	0.015*** (0.000)	-0.796 (0.688)	-2.710** (2.650)	-0.492* (0.248)	1.461 (0.021)	0.772*** (0.021)	-0.133 (0.379)	-0.896 (0.688)	-3.710*** (2.650)	-2.034** (0.102)	-0.592* (0.148)
<i>DIST_{IRAN}</i>	-0.861 (0.556)	-0.014*** (0.000)	-0.175 (0.386)	-2.875** (2.161)	0.492* (0.248)	1.461 (0.320)	0.772** (0.021)	-0.133 (0.379)	2.361* (0.320)	1.272** (0.121)	-1.133 (0.279)	0.461 (0.120)
<i>CAPITAL</i>	6.450 (0.000)	-2.040*** (0.000)	0.549* (0.272)	-0.511 (2.201)	0.492* (0.248)	1.461 (0.500)	0.772*** (0.021)	-0.133 (0.379)	0.592* (0.348)	1.261** (0.510)	0.472*** (0.121)	-0.233 (0.379)
<i>GDP</i>	0.416 (0.338)	0.012*** (0.000)	3.022 (1.634)	4.191*** (1.911)	0.083*** (0.023)	1.141 (0.201)	0.032*** (0.002)	-0.447*** (0.052)	0.203*** (0.023)	1.241** (0.201)	0.232*** (0.002)	0.547*** (0.052)
<i>MOBAIL</i>	-0.191 (0.298)	0.017*** (0.000)	-0.0407* (0.018)	0.802** (4.100)	-0.010 (0.101)	-1.850 (1.710)	0.103*** (0.008)	0.115 (0.154)	1.462** (0.502)	-2.481 (0.171)	2.220*** (0.611)	2.211** (0.680)
<i>LABOUR</i>	-0.036 (0.134)	-0.098 (0.000)	0.74 (0.585)	4.100* (2.110)	0.0162 (0.514)	-1.332 (0.320)	-0.015 (0.043)	-0.255 (0.818)	-1.451* (2.305)	-1.252 (0.680)	-2.152 (1.060)	1.331*** (4.310)
<i>AIRPORT</i>	0.339* (0.033)	0.014 (0.000)	0.081* (0.000)	4.102*** (2.110)	0.039 (0.317)	2.591 (0.082)	0.045 (0.027)	0.114 (0.507)	0 (.)	0 (.)	0 (.)	0 (.)
<i>TRANSPORT</i>	0.210 (0.393)	0.053*** (0.000)	0.485 (0.334)	4.330*** (2.110)	-0.32 (0.101)	-0.42 (-0.270)	0.310*** (0.480)	2.291** (0.150)	0.512 (0.321)	1.433 (0.520)	1.101 (0.201)	4.334 (0.101)
<i>UNEMPLOYMENT</i>	1.134* (0.539)	-0.039*** (0.000)	-0.484 (0.417)	-1.921*** (2.050)	-1.125 (0.915)	-1.484 (1.511)	1.071 (1.094)	1.745** (2.511)	-1.638 (0.902)	-1.604 (1.711)	0.173 (0.181)	0.241 (0.322)
<i>ISIS</i>	0.104* (0.539)	-0.119*** (0.000)	-1.404 (0.417)	-0.221*** (2.050)	-0.125 (0.915)	-2.484 (1.511)	2.071 (1.094)	2.745** (2.511)	-2.638 (0.902)	-3.604 (1.711)	3.173 (0.181)	4.241 (0.322)
<i>constant</i>	-6.880* (23.160)	3.347*** (0.004)	-51.65* (23.260)	12.400* (2.208)	-4.225 (5.991)	-1.423 (0.700)	26.65*** (0.502)	22.11* (9.469)	-2.115 (1.901)	-2.237 (0.711)	-4.0234 (1.072)	3.80*** (3.721)
No. observations	223	223	223	223	223	223	223	223	223	223	223	223
Firm FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Adj. R ²	0.35	0.30	0.44	0.43	0.11	0.10	0.14	0.15	0.20	0.22	0.22	0.21

Note: FDI is foreign direct investment. Firm size is classified into four categories: large firms, medium-sized firms, small firms, and micro firms. CAPITAL represents the level of capital endowment, while GDP measures economic development. MOBILE captures telecommunications infrastructure. LABOUR reflects labour market conditions. AIRPORT and TRANSPORT (transportation) proxy for physical infrastructure and connectivity. UNEMPLOYMENT measures the unemployment rate. ISIS is an indicator variable capturing exposure to the Islamic State conflict period. $DIST_{SYRIA}$, $DIST_{IRAN}$, $DIST_{TURKEY}$ measure the geographical distance (in kilometres) between the Kurdistan Region and its neighbouring countries, reflecting spatial proximity and market access conditions. ***, **, and * for p-values <0.01, <0.05, and <0.1, respectively. Source: Own estimations.

further disaggregated by firm size (i.e. micro, small, medium, and large firms) and includes firm and country fixed effects. Across all the cities, *DISTANCE* variables indicate a negative effect on inward FDI. However, we observe a positive association between *DISTANCE* and inward FDI of Iraq to Sulaymaniyah. This is mainly due to a very close border together. This may reduce the distance cost for investment between the two regions. Distance to Iran shows mixed effects, with predominantly negative and significant coefficients in Erbil and Duhok.

GDP is consistently positive and statistically significant at conventional levels (1% and 5%) across nearly all specifications, indicating that higher levels of economic development strongly support FDI inflows regardless of city or firm size. Capital (*CAPITAL*), however, shows weaker and less stable effects, with significance appearing only in selected specifications, suggesting that its influence is less robust once city-level heterogeneity is considered. Infrastructure variables exhibit strong and economically meaningful effects. Telecommunications infrastructure (*MOBILE*) is generally positive and statistically significant across most specifications, particularly in Sulaymaniyah and Duhok, indicating that improved connectivity supports FDI location decisions. Airport infrastructure (*AIRPORT*) is one of the most robust determinants of FDI in Erbil, where it is positive and highly significant across all firm sizes, while its effect is weaker or statistically insignificant in other cities. Transportation infrastructure (*TRANSPORT*) also shows predominantly positive and significant coefficients, especially in Erbil, highlighting the importance of domestic logistics and accessibility for attracting investment.

Labour market conditions (*LABOUR*) display heterogeneous effects across cities. In Erbil, labour conditions are generally positive for larger firms, while in Sulaymaniyah and Duhok, the effects are more mixed, with several negative or insignificant coefficients. This suggests that labour market dynamics affect FDI location decisions differently depending on city characteristics and industrial structure. Unemployment (*UNEMPLOYMENT*) shows limited and inconsistent effects across specifications. In some cases, particularly for large firms in Erbil, unemployment is negatively and significantly associated with FDI, whereas in other cities the coefficients are statistically insignificant or vary in sign. The ISIS conflict variable exhibits a consistently negative and statistically significant effect across almost all specifications, confirming that exposure to the ISIS war period significantly reduced FDI inflows across cities and firm sizes. The magnitude of the coefficients is particularly pronounced for large firms in Erbil, indicating that geopolitical instability disproportionately affects higher-scale investment.

Table 10 presents the estimation results of border effects on JV activity across Erbil, Sulaymaniyah, and Duhok. Overall, the JV results are highly consistent with the earlier FDI findings in terms of both direction and significance of key determinants, with only minor differences in coefficient magnitude and statistical strength. Geographical distance variables remain largely negative and statistically significant, confirming that greater distance to Syria, Turkey, and Iran reduces JV formation, consistent with the FDI results. GDP continues to exert a positive and statistically significant effect across most specifications, reinforcing its role as a key driver of both FDI and JV activity. Capital shows similar mixed but occasionally significant effects, particularly for small and medium firms, mirroring the FDI patterns.

Infrastructure variables also remain broadly consistent with the FDI results. Telecommunications (*MOBILE*), airport infrastructure, and transportation infrastructure generally exhibit positive and significant effects, particularly in Erbil and for larger firms, highlighting the importance of connectivity and logistics. Labour market variables and unemployment display heterogeneous and less stable effects, as in the FDI model, indicating limited robustness across cities and firm sizes. The ISIS war variable remains negative and, in several cases, statistically significant, confirming that conflict exposure consistently reduces JV activity. Overall, the JV results closely replicate the FDI findings, with only minor differences in statistical precision and city-level variation, confirming the robustness of the baseline results across investment types.

4. Conclusions

This study investigated the determinants of inward FDI and JVs across the governorates of the KRI over the period 2007–2021 using the PPML estimation technique. Our findings indicate that inward FDI is negatively associated with geographical distance, political instability, and weaker labour market conditions, while it is positively related to GDP and infrastructure quality, including transportation networks and airport connectivity. Further, the results reveal a highly uneven spatial distribution of FDI. Erbil governorate received approximately 93% of total inward FDI, whereas Sulaymaniyah and Duhok together accounted for only 7%. Of national firms, Erbil received 60%, Sulaymaniyah about 30%, and Duhok only 10%.

Moreover, our analysis showed that JV investment projects were more concentrated in Sulaymaniyah, which received 66% of total JV investment, followed

by Erbil 18% and Duhok, 16%. Banking and real estate attract the largest share of inward FDI, while agriculture receives limited foreign investment. Countries such as China, the UAE, Turkey, and Lebanon account for more than 70% of total FDI in the region, while Iran and the UAE contribute approximately 65% of total JV investments.

High spatial concentration of foreign investment is controversial and not desirable. Aghion et al. (2005) argue that FDI stimulates growth mainly in advanced regions, with limited effects in less developed areas. Heshmati and Davis (2007) contend that FDI concentration in capital cities restricts spillover effects to the wider economy. Ma (2006) finds that uneven FDI distribution increases wage inequality across provinces. Similarly, Kanabi Yaba (2018) highlights that such disparities generate social and economic challenges in the KRI.

Our findings have several important policy implications. First, to address the existing disparity in FDI distribution among the governorates, the government could consider a revision of the investment law by providing enhanced incentives for FDI investments in Sulaymaniyah and Duhok governorates. A strategic focus on infrastructure enhancement and connectivity across all governorates is highly recommended. This could upgrade transportation networks, improve communication systems and infrastructure, and strengthen political stability. The government should also encourage greater foreign investment in productive sectors, particularly agriculture and manufacturing, to reduce reliance on real estate and housing investments. Further, the KRG could focus on creating specialised economic zones in underdeveloped areas. These zones could streamline regulatory processes, reduce bureaucratic hurdles, and improve local job opportunities. Finally, expanding bilateral and multilateral economic partnerships, including preferential trade agreements with countries in the Middle East, the GCC, and the European Union, can further enhance the region's attractiveness to foreign investors and promote a more balanced distribution of investment across governorates.

Our study is subject to a limitation. Due to the limitation of sub-national statistical indicators, we use macroeconomic factors at the federal Iraqi level. Thus, the findings should be interpreted with caution, as they may reflect broader national dynamics alongside regional conditions. Future research could investigate whether inward FDI and joint ventures

generate productivity, employment, technology-transfer, and wage spillovers across governorates in the KRI. Given the high spatial concentration of FDI in Erbil compared with other governorates, an important unanswered question is whether foreign investment benefits neighbouring governorates through knowledge diffusion, supply-chain linkages, and labour mobility, or whether it exacerbates regional economic disparities. Examining these channels would provide deeper insights into FDI's broader developmental impact.

Notes

1. KRI is a federal region of Iraq that exports oil and uses Production Sharing Contracts (PSCs) for oil extraction and export activities (Hasan & Perot, 2021). KRI has an area of 40,000 square kilometres with three governorates consisting of Erbil, Sulaymaniyah, and Duhok. In 2014, the KRI split Halabja city from the Sulaymaniyah governorate and introduced it as a fourth governorate in the KRI. Due to a lack of available data, we limit ourselves to a description of data from all governorates, excluding Halabja.
2. In 2023, the Iraqi Parliament reduced the KRI's budget share from 17% to 12.6%.
3. See the paper for a more detailed discussion of the changes in the security environment and economic situation after 2014.
4. Sectors are (Agriculture, Banking, Communication, Education, Health, Housing, Industry, Service, Tourism, Trading).

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Appendix

Table A1. Firm-level data of FDI inflows 2007-2021

Year	License N	Location	Sector	Project	Country origin	Capital US\$	Area km
2007	10	Erbil	Bank	Byblos Bank / Hawler/branch	Lebanon	700,000,000	0.23
2007	24	Erbil	Tourism	Rotana Hotel/ Hawler	Lebanon	35,000,000	96.00
2008	145	Erbil	Agriculture	IK Cow Building and Dairy Products	UK	12500,000	3.00
2008	72	Erbil	Trading	American Jonder Equipment	USA	2,930,769	3.52
2009	161	Erbil	Industry	Medical Paper Product Factory	Lebanon	13,621,654	8.31
2009	167	Erbil	Tourism	Erbil Arjaan by Rotana	Lebanon	24,323,257	1.60
2009	155	Erbil	Housing	Nobel village	Sweden	17,372,000	71,32
2009	147	Erbil	Education	Belkent School	Turkey	40,000,000	300
2009	194	Erbil	Housing	Ozal Village	Turkey	45,000,000	150
2010	248	Erbil	Health	German Hospital	Germany	8,450,000	1.60
2010	241	Erbil	Education	Lebanese-France University	Lebanon/France	7,082,207	20.00
2010	270	Duhok	Housing	Avro City	Turkey	55,7000,000	438.7
2010	281	Erbil	Industry	Polteks dogra factory- production of iron	Turkey	150,000,000	145.62
2011	407	Erbil	Industry	Plastic Pipes, PVC and Cement Factory	Germany	15,905,712	32.00
2011	341	Erbil	Health	Antalya Specialists Complex	turkey	2,300,000	
2011	344	Erbil	Education	Ishik University	Turkey	79,411,530	52.00
2011	4	Duhok	Housing	Dubra City	Turkey	7,465,260	52.00
2011	5	Duhok	Housing	Stera Zevi City	Turkey	10,000,000	6.37
2011	11	Duhok	Housing	Rona City	Turkey	12,600,000	6.31
2011	368	Erbil	Housing	The Atlantic	United States	96,106,156	156.00
2012	36	Erbil	Housing	Orbela	emirates	142,865,250	116.58
2012	64	Duhok	Industry	Plastic Recycling Factory	Georgi	600,000	3.06
2012	48	Erbil	Trading	Dilan Resort Hotel	Iran	14,950,802	4.50
2012	8	Erbil	Housing	Lebanes Village	Lebanon	312,851,252	96.00
2012	46	Erbil	Trading	Bakery & More	Lebanon	2,500000	1.20
2012	46	Erbil	Trading	Mali New Centre	Russia	2,805,670	1.20
2012	27	Erbil	Housing	Deutsches Dorf	Turkey	150,000,000	147.47
2012	40	Erbil	Industry	Fomex Factory for Carpet, Spring Beds and Furniture	Turkey	115,346,610	44.00
2012	25	Duhok	Industry	Yaseen Factory for Concert Molds	USA	2,000,000	2.00
2012	37	Erbil	Tourism	Doubletree Suites by Hilton Hotels	USA	14,786,000	2.49
2013	32	Erbil	Tourism	Downtown	Emirates	2,384,350,750	220.00
2013	97	Duhok	Industry	Stone Crusher Plant	Lebanon	4,160,000	6.21
2013	68	Erbil	Tourism	Dedaman 5-Star Hotel	Turkey	31,122,200	1.02
2014	117	Erbil	Industry	Kherat Al-Sharq-Producing Sunflower Oil	Turkey	25,430,174	20.00
2014	132	Duhok	Industry	Production Factory of Siramik and Ponza Block	Turkey	617,199	2.40
2015	745	Erbil	Industry	Gona Factory for the Aluminium Company	Turkey	3,547,700	8.00
2016	761	Duhok	Industry	Duhok Steel Factory for the Production Iron	Kuwait	10,570,000	4.32
2016	765	Erbil	Trading	Complex Stores	Lebanon	21,145,100	2.40
2016	781	Erbil	Industry	Sivan dough	Syria	8,300,000	4.60
2021	1055	Erbil	Tourism	Happy City Complex Project	China	4,906,110,000	2,000

Note: Byblos Bank and Tishk Universities have branches in the Sulaymaniyah governorate, but they are registered in Erbil.

Source: KRI's Board of Investment, 2022

Table A2. Data of Joint venture (JVs) investment from 2007 to 2021

Year	Licence	Location	Sector	Name of project	Country origin	Capital US\$	Area km
2007	12	Erbil	Housing	Hawler Commercial Project	Iraq/United Kingdom	100,000,000	41.6
2007	20	Erbil	Agriculture	Rasson Bird Company for Poultry	Iraq /Germany	7,770,000	210
2007	23	Sulaymaniyah	Communication	Fibre Optic Network Project	Iraq /Sweden	20,893,549	
2007	26	Sulaymaniyah	Education	American University in Iraq	Iraq/United States	235,000,000	677.84
2007	38	Erbil	Housing	American Khanzad Village	Iraq/United States	80,000,000	127.00
2007	41	Erbil	Tourism	Aur Tourists' Company	Iraq/Canada	2,000,000	17.20
2007	43	Erbil	Industry	Koya Cigarette Company	Iraq/South Africa	12,000,000	50.00
2008	97	Sulaymaniyah	Trading	City Centre Mall	Iraq/Kuwait	51,250,000	24.00
2008	130	Erbil	Tourism	Dewan Hotel	Iraq/Kuwait	84,634,507	24.00
2008	146	Erbil	Industry	Hareer Canning Plant for Production Pomato Paste & Fruit	Iraq/United States	1,700,000	37.00
2009	195	Duhok	Housing	War City	Iraq/Turkey	54,016,013	500.00
2009	201	Sulaymaniyah	Service	Kargaw Village	Iraq/UAE	11,555,555	100.00
2010	297	Duhok	Housing	Roo City	Iraq/Turkey	9,050,000	5.70
2011	360	Duhok	Industry	M.S. Factory for Producing Cleaning	Iraq/Turkey	2,000,000	2.32
2011	396	Erbil	Industry	Factory for Producing PVC	Iraq/Spain	3,284,530	9.50
2011	1	Erbil	Housing	Korean Village	Korea/Canada/Iraq	343,132,266	1,592
2011	14	Duhok	Industry	Cakes, Ice Cream, Juice Jelly Cubes, Boxes and a Silicon Factory	Iraq/Jordan	15,794,000	40.33
2012	224	Duhok	Industry	Excavators Production Factory	Iraq/New Zealand	2,500,000	-
2012	53	Duhok	Industry	Iron Production Factory	Iraq /Pakistan	13,000,000	24.00
2012	71	Duhok	Agriculture	Dry port of Duhok/PDP	Iraq/UAE	400,000,000	360.00
2013	64	Sulaymaniyah	Industry	AluminumProfiles Factory and Glass Enhancement	Iraq/Germany	75,000,000	137.00
2013	64	Suli	Industry	Arbat Industrial City	Iraq/Iran	2,000,000,000	1000.00
2014	132	Erbil	Industry	ErdemliFactory	Iraq/Turkey	1,750,000	0.80
2015	729	Sulaymaniyah	Industry	Ecocem Station for Waste Recycling	Iraq /France	52,872,278	204.00
2016	757	Duhok	Industry	BahadrePower Station	Iraq/Turkey	100,000,000	81.25
2016	759	Erbil	Trading	Alhain Aldwalia co. for Insurance	Iraq/UAE	5,599,200	1.19
2017	804	Sulaymaniyah	Agriculture	tural and Gardening Tools Showroom	Iraq/Lebanon/France	4,282,400	1.32
2020	971	Erbil	Industry	Factory for investing in a Material Hospital	Iraq/Egypt/Canada	4,240,000	10.80
2020	982	Erbil	Trading	SSAVELAMall	Iraq/China	13,326,000	4.41
2021	1061	Erbil	Industry	Erbil factory for Producing Profael	Iraq/Turkey	19,818,000	9.00

Source: Khdir & Cieslik (2025) based on KRI's Board of Investment, 2022.

