The Impact of Foreign Direct Investment on Poverty Reduction in Turkey: A Time Series Analysis

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Abstract

Foreign direct investment can be outlined as the net inflows of investment to take possession of permanent management. Foreign direct investments can support poverty alleviation especially for developing countries which needs capital. Global foreign direct investment sums $1.5 trillion in 2019 decreased to a calculated $859 billion in 2020 as the UNCTAD report indicates. Foreign direct investment flows are expected to remain weak with uncertainty due to Covid-19. For almost 25 years, extreme poverty, was steadily declining, on the contrary, expected to rise in 2020 between 88 million and 115 million added as the disruption of the Covid-19 on the global supply chain due to lockdowns.

Time series analysis of foreign direct investments and poverty reduction relationship for Turkey between the 1996-2019 period confirms that foreign direct investment net infows reduce poverty: %1 increase of FDI inflow to Turkey increases % 0.011 of household final consumption which used as proxy for poverty. Turkish policymakers should develop an appropriate economic environment to appeal as much as foreign direct investment to Turkey.

1 Introduction

Foreign direct investment is an investment made by a firm or individual in one country for commercial purposes in another country. Foreign direct investments often involve more than just a capital investment. The most important feature of foreign direct investment is that it effectively controls or at least significantly influences the decision-making process of a foreign enterprise.

FDI inflows are in a constant upward trend, except for the years in which economic crises and unstable cyclical fluctuations were experienced. According to the 2015 World Investment Report of the United Nations Conference on Trade and Development, developing countries have managed to receive 55% of the world's FDI. Although it is seen as an important indicator of development, it is difficult to measure the economic effects of FDI exactly. The effects of FDI on the country's economy depend on different factors. It varies according to the sector in which the investment is made, the type of investment, the attitude of foreign companies towards the host country, and the conditions in the country (Nur and Dilber, 2017: 16).

As seen from Table 1, Investment Trends Monitor (UNCTAD, 2021) report says global foreign direct investment decreased around 42% in the year 2020 from $1.5 trillion in 2019 to an estimated $859 billion, also the same report expects global FDI flows to remain fragile due to uncertainty of the COVID-19 pandemic. In 2019, net FDI inflows (% of GDP) for Turkey was 1.2 %.

Total Shares	**2019**	**2020**	**2021***
Global FDI	$1.5 trillion	$859 billion (- %42)	$774 to $817 billion
Developed economies	$730 billion	$229 billion (- %69)	
North America	$166 billion	$309 billion (-%46)	
Developing countries	$ 702 billion	$616 billion (-%12)	
Turkey	$9,266 billion	$7.7 billion (-%16.5)	

Table 1. *Global FDI (billion US $).* ***Source:*** *UNCTAD 2021, * estimate.*

2 Literature review on foreign direct investment and poverty relationship

According to the World Bank 2005 report, global FDI flows raised from US $55 billion in 1958 to US $573 billion in 2003 (Nourbakhshian et al, 2012). Over the past 20 years, FDI flows increased in many countries thus showing an indication of the globalization to the global economy (Busse and Groiozard, 2005).

For countries with insufficient capital accumulation, it becomes necessary to resort to external financing resources, and foreign direct investments play a prominent role in closing this gap. It is accepted that foreign direct investments have various benefits for the host countries. Multinational companies that make FDI transfer the technology they use to the country they invest in, take production knowledge, management and organization experience, and marketing information with them, increase competition with efficiency in the national and international market of the host country, facilitate information trade, and positively affect the foreign trade balance predicted to affect (Şahbaz, et. al, 2016: 1107).

Author	Country/Countries of study, Period	Methodology	Findings
Ato-Mensah, and Long (2021)	Ghana	Research article	FDI can promote economic development, employment and reduce poverty in Ghana
Hanim (2021)	Indonesia 33 provinces 2012-2016	multiple regression and moderation regression models	FDI had a significant positive effect on economic growth
Sikandar et al. (2021)	14 developing economies of Latin America, Asia, and Eastern Europe	panel unit root test and pool mean group estimation	poverty reduction could be positively affected
Nguea, Noumba and Noula (2020)	Cameroon	ARDL-Bounds Testing Approach	A short-run positive impact of FDI on poverty
Ahmad et. al (2019)	ASEAN and SAARC economies 1990-2014	Panel regression model	The positive and strongly significant relationship between FDI net inflows and poverty reduction
Durowah (2018)	91 developing countries 2000-2014	Panel data analysis	FDI reduced poverty
Trinh (2017)	63 provinces of Vietnam 2002-2012	Panel data analysis	FDI reduced poverty
Hmani (2017)	MENA region 1990-2014	Simultaneous Equations Model	FDI reduced poverty
Arabyat (2017)	Developing countries 1980-2012	Unbalanced panel data analysis	A negligible positive impact of FDI on poverty reduction
Awunyo and Sackey (2018)	Ghana 1975 to 2017	Descriptive statistic, unit root test, Granger causality test and error correction model (ECM).	A unit change in FDI flow into the agricultural sector will cause a 2,6 % unit change in economic growth
Fauzel, Seetanah and Sannassee (2016)	Mauritius 1980-2013	Dynamic vector autoregressive model	Uni-directional causality between FDI and poverty reduction.
Uttama (2015)	Southeast Asia 1995-2011	Panel data analysis	FDI reduced poverty
Soumare (2015)	Northern Africa 1990-2011	Dynamic panel data regression	FDI reduced poverty
Fowowe and Shuaibu (2014)	selected African economies	System generalized method of moments	FDI reduced poverty
Reiter and Steensma, (2010)	49 developing countries 1980-2005	Unbalanced panel data	FDI reduced poverty
Gohou and Soumare (2012)	52 African countries 1990- 2007	Panel data analysis	FDI reduced poverty
Zaman et al. (2012)	Pakistan 1985-2011	Ordinary Least Squares	FDI reduced poverty
Apergis et al (2007)	27 transitional European economies 1991-2004	Panel dataset	FDI reduced poverty
Hansen and Rand (2006)	31 developing countries 1970-2000	Bivariate vector autoregressive model	A strong causal link between FDI and GDP, even in the long run
Jalilian and Weiss (2002)	ASEAN countries 1991-1997	Panel data analysis	FDI reduced poverty

Table 2. *Literature review.* ***Source:*** *Magombeyi et. al, 2017. Tsaurai, 2018.*

The general opinion about the relationship between FDI and its affect on economic development is mixed, but the majority of research remarks that FDI increases economic growth. The spillover effects can be seen in the enhancing exportability of local firms and the use of modern technology can promote competition. Another linkage of direct impact is in job opportunities if the percentage of job opportunities is remarkably larger than FDI-related unemployment (Ahmad et al, 2019: 3-4).

FDI brings capital and technology to target firms, industries, and locations, affecting demand for labor force composition, employment, average productivity, wage levels, and wage inequality. For developing economies, the literature also finds an overwhelmingly positive effect on total employment and productivity, while the effects on these outcomes for advanced economies are mixed (Hale and Xu, 2016).

UNCTAD (2012) report remarks that FDI has the magnitude to reduce poverty in emerging and developing countries due to its ability to guide positive economic development and growth. The majority of theoretical literature reinforces that FDI has an indirect positive impact on poverty through its capacity to intensify economic growth.

Sometimes FDI can cause both positive and negative spillover effects to the host country. The opposition views are listed such as FDI may crowding out effect on domestic investment, external vulnerability and dependence, destructive competition of foreign connections to domestic firms (Nourbakhshian et al, 2012).

In Table 2, a list of the literature review is given as positive relationship found by authors between FDI and poverty.

In Table 3, a list of the literature review is given as negative relationship found by authors between FDI and poverty.

Le et al. (2021)	**Vietnam 2012–2018**	**Generalized Method of Moment (GMM)**	**FDI increase income inequality**
Lazreg and Zouari (2018)	North Africa 1985-2005	Fully modified ordinary least squares (FMOLS)	FDI increased poverty when GINI index was used
Basnet and Pradhan (2014)	five SAARC countries 1990 to 2010	Time-series data	FDI on economic growth is not significant
Herzer (2012)	44 developing countries	heterogeneous panel co-integration techniques	A negative effect on growth in developing countries
Huang et al. (2010)	12 countries from East and Latin America 1970-2005	Unbalanced panel data	Inward FDI to have a negative impact on poverty reduction
Ali and Nishat (2010)	Pakistan	Ordinary least squares ARDL	A negative relationship between FDI and poverty reduction

Table 3. *Literature review.* ***Source:*** *Magombeyi et. al, 2017. Tsaurai, 2018.*

In Table 4, a list of the literature review is given as insignificant relationship found by authors between FDI and poverty.

Ogunniyi and Igberi, (2014)	Nigeria	Ordinary least squares OLS	Insignificant impact
Herzer et al. (2008)	28 developing countries	co-integration techniques	No evidence for the long- and short-run impact of FDI on economic growth
Tsai and Huang (2007)	Taiwan 1964-2003	Time series data	FDI have an insignificant impact on the average income of the poor.

Table 4. *Literature review.* ***Source:*** *Magombeyi et. al, 2017. Tsaurai, 2018.*

3 FDI inflows and poverty in Turkey

Between 1980 and 2002, total FDI into Turkey was around USD 15 billion, while the country has since attracted around USD 225 billion of FDI with finance (%33) and manufacturing (%24) sectors has attracted the highest number of investments in Turkey during the 2003-2020 period. The majority of FDI inflows to Turkey have originated from Europe (Netherlands, %15,9), North America (%7,8), and the Gulf countries (%7) during the past 17 years. As of end-2020, the number of companies with foreign capital in Turkey reached almost 74,000 up from 5,600 in the year 2002 (Investment Office, 2021).

According to World Bank's Doing Business Report "Ease of Doing Business" Turkeys' 2017 rank is 60, 2018 rank was 43 and 2019 rank is 33 of 1-190. A high ease of doing business ranking indicates that regulatory environment is more helpful to the starting and running of a local firm. New Zealand has rank 1 and Singapore has rank 2 for the year 2019 (WB, 2021d).

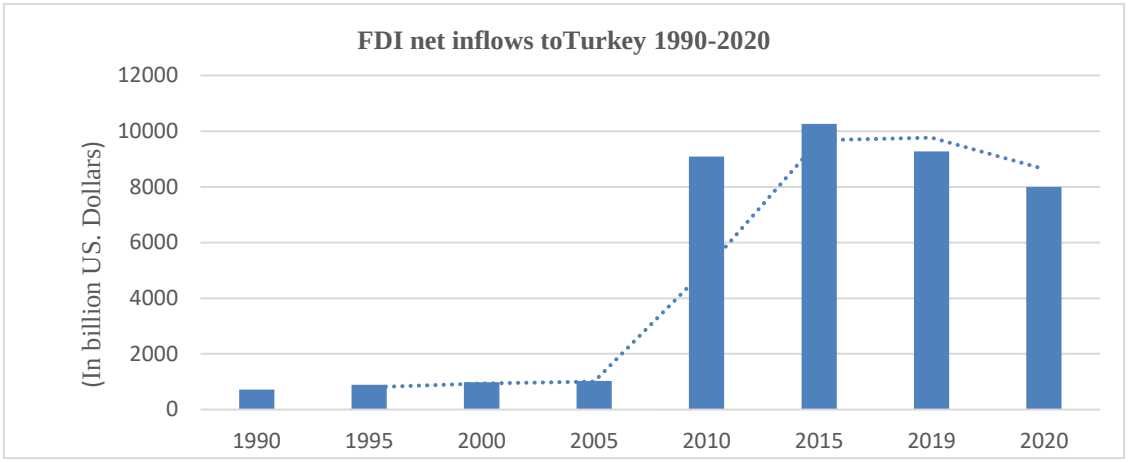

Figure 1. *FDI net Inflows to Turkey 1990-2020 (billion US $).* ***Source:*** *WB (2021a).*

Turkish companies' FDI outflow has increased by almost 10 times over the past 15 years. Turkish businesses made a total of 85 greenfield investments abroad which totaled around $2.8 billion in the year 2016, a report from the Foreign Investments of Turkey Index, which was prepared by DEİK and Bain & Company (Hürriyet, 2017). 10% of all greenfield investments and acquisitions made by Turkish companies in 2018 were in the United Kingdom and Serbia 13% (DEIK and Bain & Company, 2019).

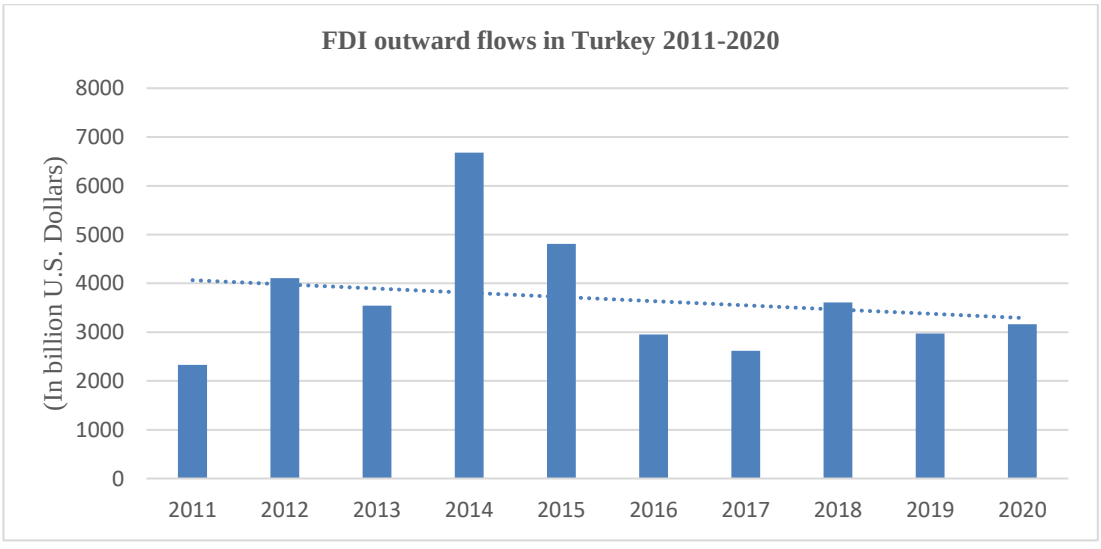

Figure 2. *FDI Outward flows in Turkey 2011-2020 (billion US $).* ***Source:*** *Statista (2021).*

Foreign direct investment, net outflows (BoP, current US$) – Turkey Foreign direct investment, net inflows (BoP, current US$) - Turkey

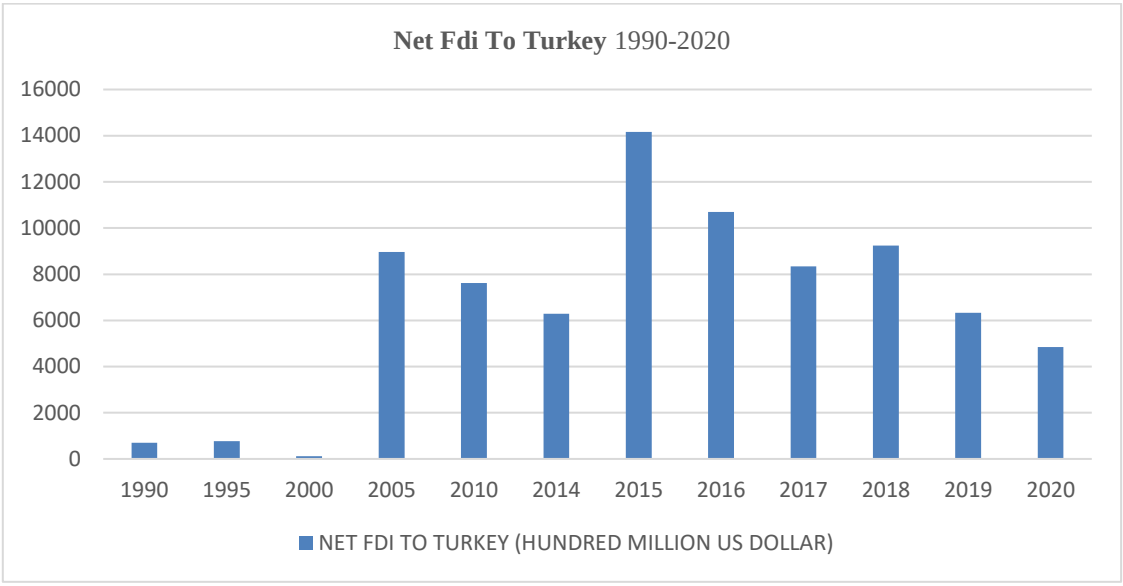

Figure 3. *Net FDI inflows to Turkey 1990-2020 period* ***Source:*** *World Bank, 2021e*

The TUIK's (Turkish Statistical Institute) surveys classify families as "poor" if their incomes are less than 60% of the median income. TUIK (2019) survey found that 21.5% of families in the country were poor According to the 2019 survey, which is the most recent one, up to 17 million people live below the poverty line in Turkey (Al-Monitor, 2021).

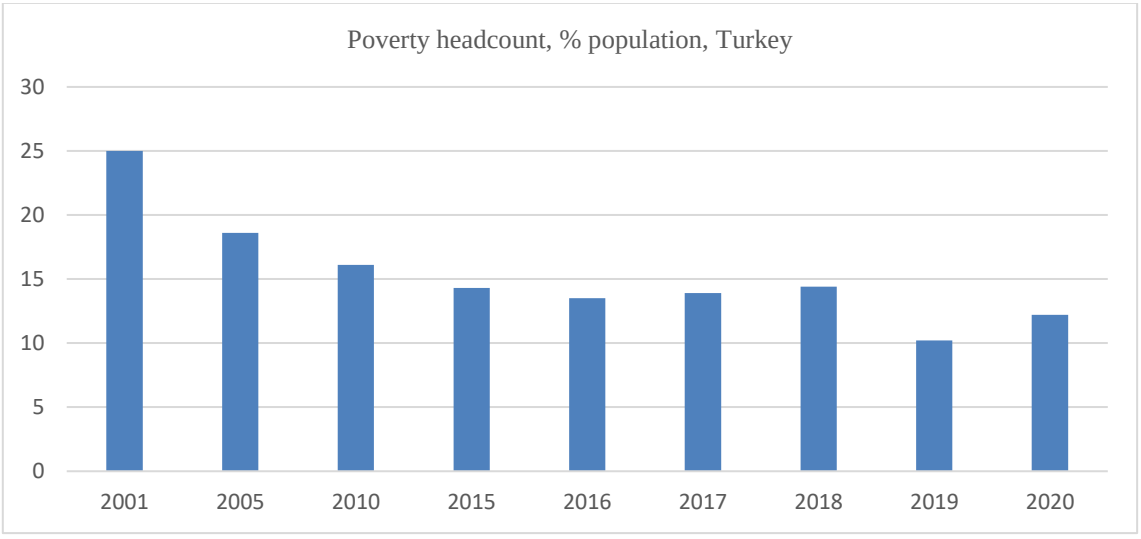

Figure 2. *Poverty Headcount of Turkey 2001-2020 (%).* ***Source:*** *WB (2021b).*

4 Methodology

In this study, that aims to examine the effect of changes in foreign direct capital inflows on poverty reduction, the data set covers the period the 1996-2019. Time series data for Turkey between 1996-2019 period households and NPISHs final consumption expenditure (constant 2010 US$), foreign direct investment, net inflows (BoP, current US$) and GDP (constant 2010 US$) were taken from World Bank Development Indicators (WB, 2021c). STATA 14 program used for econometric analysis. The logarithmic values of the series were used in the analysis.

In empirical studies using time series, it is recommended to use different proxies to measure poverty. In this context, recently it is seen that the reported consumption expenditure per capita, which has a very stable structure, is used as an indicator of poverty (Ravallion, 1992). Household spending is the sum of final consumption expenditure made by households to satisfy their daily. Researchers and policy makers are mostly interested in household consumption due to its conventional metric to evaluate poverty (Meyer and Sullivan, 2003).

According to Odhiambo (2009), per capita consumption expenditures are also consistent with the World Bank's definition of poverty as "not being able to provide a minimum standard of living". Although the expenditures of per capita consumption are not a quality indicator for measuring poverty, there is no harm in using it as a proxy

variable (Şahbaz, et. al, 2016: 1111). A time series is stationary if its mean, variance, and covariance do not change over time. However, it is also possible for the time series to have a stochastic trend and its average to change over time. If such a situation is in question, it is stated that the spurious regression problem may arise in the analyzes to be made with these series (Granger and Newbold, 1974).

To investigate whether the effect of foreign direct investment on poverty reduction for Turkey the model is specifed as,

$$\text{lnhousehold}_t = \alpha_0 + \beta_1\ \text{fdi}_t + \beta_2\ \text{gdp}_t + e_t$$

where, *household* stands for (proxy variable for poverty) households and NPISHs final consumption expenditure, *fdi* represents foreign direct investment net inflows, *gdp* stands for GDP of Turkey and *household* is the dependent variable.

All series were found not stationary when the Augmented Dickey-Fuller (ADF) test for unit root test applied. The time-series properties of the variables used in the estimation process were examined with the Augmented Dickey-Fuller (ADF) unit root test developed by Dickey and Fuller (1979). While determining the optimal lag length for the VAR model, final prediction error (FPE), Akaike (AIC), Schwarz (SC) and Hannan-Quinn (HQ) information criteria were used and because all four criteria show a lag length of 1, the lag level was taken as 1 in the estimation.

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-1517.33				2.1e+62	152.033	152.063	152.183
1	-1454.62	125.43	9	0.000	1.0e+60*	146.662*	146.779*	147.26*
2	-1446.90	15.447	9	0.079	1.2e+60	146.79	146.994	147.835
3	-1441.87	10.051	9	0.346	2.3e+60	147.187	147.479	148.681
4	-1428.66	26.42*	9	0.002	2.3e+60	146.766	147.145	148.708

Table 5. *Results of lag selection*

Variables	Z(t)	%5	MacKinnon p-value for Z(t)
household lag(1)	0,801	-3,000	0,9916
fdi lag(1)	0,247	-3,000	0,2475
gdp lag(1)	1,036	-3,000	0,9946

Table 6. *Results of Augmented Dickey-Fuller (ADF) test*

After taken first differences all time series became stationary.

Variables	Z(t)	%5	MacKinnon p-value for Z(t)
household dif(1)	-3,747	-3,000	0,0035
fdi dif(1)	-3,793	-3,000	0,0030
gdp dif(1)	-3,487	-3,000	0,0083

Table 7. *Results of MacKinnon approximate p-value for Z(t)*

maximum rank	parms	LL	eigenvalue	trace statistic	%5 critical value
0	12	-1541.8798	.	30.8100	29.68
1	17	-1533.3873	0.55461	13.8250*	15.41
2	20	-1527.6032	0.42355	2.2567	3.76
3	21	-1526.4748	0.10189		

Table 8. *Results of VECM model*

All variables were tested for long-term cointegration relationship by using Johansen cointegration test so for long-term relationships, Johansen (1988) test for cointegration applied. After Johansen normalization restriction imposed, results are:

beta	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]
_ce1 householdvar	1	.	.	.	.
fdivar	0.011	0.006	1.87	0.062	-.0005639 .022914
gdpvar	-0.931	0.023	-39.74	0.000	-.9765734 -.8847694
_cons	-1.643	.	.	.	.

Table 9. *Johansen normalization*

The parameter estimates of the normalized equation obtained from the cointegration relationship between the variables are presented in Table 10.

Normalized Cointegration Equation
household (final consumption) = 0.011 fdi - 0.931 gdp

Table 10. *Estimation of Cointegration Equation*

According to these coefficients, which also show their long-term elasticity, they reveal that the elasticity of per capita consumption is positive in terms of FDI inflows. A 1% increase in foreign direct capital inflows increases household final consumption (proxy variable used for poverty) by about 0.011%. Likewise, a 1% increase in GDP decreases household final consumption by (proxy variable used for poverty) approximately 0.931%.

Granger causality Wald tests confirm no casual relationship between fdi and gdp variables.

Equation	Excluded	chi2	df	Prob > chi2
householdvar	fdivar	1.124	1	0.289
householdvar	gdpvar	.853	1	0.355
householdvar	ALL	2.96	2	0.228
fdivar	householdvar	.150	1	0.698
fdivar	gdpvar	.005	1	0.944
fdivar	ALL	1.29	2	0.523
gdpvar	householdvar	1.80	1	0.179
gdpvar	fdivar	1.18	1	0.276
gdpvar	ALL	3.62	2	0.163

Table 11. *Granger causality results*

5 Conclusion

FDI has promoted effective economic growth in several developing countries as a stimulus in economic growth. For several decades FDI and economic growth have a relationship which has been a topical issue. FDI's net employment effect should take in consideration as well.

To attract more FDI, Turkey needs to develop enforcement of international trade rules, secure the transparency and convenient implementation of legal systems, increase commitment with foreign investors on policy matters, and follow policies to encourage sustainable, and balanced economic growth. Turkey also needs to take other political measures to strengthen secureness and predictability for foreign investors.

A time-series analysis of foreign direct investments and poverty reduction for Turkey between the 1996-2019 period confirms as expected economic literature foreign direct investments reduce poverty. Turkish policymakers should develop an appropriate economic environment to appeal as much as foreign direct investment to Turkey. Econometric analysis reveals that a %1 increase of FDI inflow to Turkey increases % 0.11 of Household final consumption which is used as a proxy variable representing poverty. Thus, Turkish policymakers should develop an appropriate economic environment for competing (export processing zones and tax incentives) to appeal as much as foreign direct investment to Turkey among other developing countries. Policies for improving the human capital of workers (STEM education) can attract more FDI inflows due to technical developments in lean production processes happening in Industrial Revolution 4.0 and the digital transformation of society 5.0.

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