

Competitiveness and FDI: An Econometric Analysis

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Abstract

This paper examines the econometric relationship between competitiveness and FDI, GDP, or trade. Using the World Economic Forum's (WEF) Global Competitiveness Index (GCI), I demonstrate that there is a strong, positive relationship between competitiveness and FDI from the U.S. Using the sub-measures of competitiveness within the GCI, I also demonstrate that there are significant gains to be made by a country adopting policies that make domestic markets more competitive.

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1 Introduction

In May 2022, the United States launched the Indo-Pacific Economic Framework for Prosperity (IPEF) with twelve other countries, Australia, Brunei Darussalam, Fiji, India, Indonesia, Japan, the Republic of Korea, Malaysia, New Zealand, Philippines, Singapore, Thailand, and Vietnam. From the website of the Office of the US Trade Representative (USTR): “This framework will advance resilience, sustainability, inclusiveness, economic growth, fairness, and competitiveness for our economies. Through this initiative, the IPEF partners aim to contribute to cooperation, stability, prosperity, development, and peace within the region.”¹ USTR further explains that of the four pillars of the agreement, Pillar I (Trade) will be designed to advance U.S. goals of “resilience, sustainability, and inclusivity by negotiating commitments in the following areas: labor; environment; digital economy; agriculture; transparency and good regulatory practices; competition policy; trade facilitation; inclusivity; and technical and economic cooperation.”

Like the Trade Pillar in IPEF, one third of U.S. free trade agreements feature chapters on competition. These chapters aim to promote competitive markets among U.S. trading partners. The provisions typically target three things: (1) non-discriminatory and fair treatment in antitrust proceedings of each partner, (2) cooperation between antitrust agencies, and (3) disciplines related to state enterprises or state-sanctioned monopolies (United States; 2019, pg. 2).

In this paper I examine how competition in domestic markets impacts FDI, trade, and other macroeconomic indicators within the U.S. There are two ways to address the question of how competition in the domestic market of trading partners potentially impacts the U.S. economy. First, how do changes in competition policy of an country impact specific

¹USTR “Indo-Pacific Economic Framework for Prosperity (IPEF).” <https://ustr.gov/trade-agreements/agreements-under-negotiation/indo-pacific-economic-framework-prosperity-ipef> [accessed February 23, 2023]

firms in specific industries? This question would lend itself to more microeconomic, partial-equilibrium analysis. Second, how would improvement in the competitive environment of the U.S. and its trading partners improve economic outcomes in the U.S.? This paper addresses the latter of these two questions.

To address the question of how competition policy impacts economic outcomes in the U.S., I use data on U.S. FDI stocks abroad and the World Economic Forum’s Global Competitiveness Index (GCI) to estimate the direct impact of a measure of market competition on FDI stock. I also decompose the GCI into submeasures more specific to competition, like a measure of how effective a country’s anti-monopoly policies are and a measure of how intense competition is in domestic markets, to estimate how much a country’s stock of FDI from the U.S. would potentially increase from adopting competition policy consistent with the U.S. For the first set of econometric estimates, I adopt the approach used in [Riker \(2022\)](#). In his paper, [Riker](#) uses a measure of regulatory quality to estimate the effect regulatory quality has on trade.

The rest of the paper proceeds as follows: first, in [section 2](#), I briefly discuss some of the related literature on this topic. In [section 3](#), I outline the econometric approach for analyzing the impact of competition policy. [Section 4](#) discusses the data used for the analysis. Results of the econometric analysis are in [section 5](#). [Section 6](#) discusses potential ways to further the analysis through future work.

2 Related Literature

This paper fits into a larger literature examining the impact of market competitiveness and a country’s competition policy on FDI. In this section, I do not try to discuss the full breadth of this literature, but instead will highlight a few papers on the topic.²

²The EU also published a comprehensive report on the topic of ex-post evaluation of competition policy enforcement in [2015](#). [Ilzkovitz and Dierx \(2015\)](#) breaks the report into microeconomic analysis and

Several studies look at how competition policy impacts different types of FDI. [Slangen and Beugelsdijk \(2010\)](#), for example, study how governance deficiencies and cultural distance discourage foreign multinational activity, finding that these obstacles have a greater chilling effect on vertical activity than horizontal activity and that the governance obstacle is the greater of the two obstacles. The authors use an aggregate of 31 measures of governance for their analysis such as the Political Risk Services' *International Country Risk Guide*, the Heritage Foundation's *Economic Freedom Index*, the World Bank's *Country Policy and Institutional Assessments*, and the World Economic Forum's *Global Competitiveness Report*. Composite governance measures are intended to be more robust pictures of governance than any from a single source.

[Daude and Stein \(2007\)](#) examine determinants of bilateral FDI stocks around the world, looking at which institutional factors are most important. The authors find that the most important determinants are the unpredictability of laws, regulations, and policies; excessive regulatory burden; government instability; and lack of commitment. The authors note that there is likely a degree of endogeneity between FDI and the measures of institutional factors, either real or perceived. The "real" endogeneity would reflect the idea that institutions are improved once FDI occurs, potentially as a result of lobbying by the foreign firms that have already invested in the economy. The "perceived" endogeneity would be the influence that FDI stock has on how survey questions about institutions are answered: respondents may assume institutions are better *because* there is FDI, even if that is not actually true. To handle potential endogeneity between the measure of institutions and FDI, the authors use instrumental variables regressions and find similar results in terms of which factors are significant determinants of FDI.

[van Hoorn and Maseland \(2016\)](#) explore how an FDI host country's institutional environment and how differences between the host country and the sending country's institutional macroeconomic analysis of the effectiveness of competition policy, including several examples of both.

environments impact cross-border investment. The authors first demonstrate why these two features have a unique impact on investment and then use data on multiple host countries to allow them to separate the two (something which is not possible when using only one host country in analysis). Because my model focuses only on U.S. FDI, the interpretation of my results runs into the same issue that the [van Hoorn and Maseland](#) warns against: it is not possible to say for certain that the impact of competition policy observed in my results is showing why *better* institutions matter instead of saying why *more similar* institutions matter. For the purposes of this paper, I will not differentiate between institutional quality and institutional similarity.

In a survey of the literature on this topic, [Bailey \(2018\)](#) uses meta-analysis to examine what institutional factors influence FDI. Of the results discussed, [Bailey](#) finds rule of law and democracy attract FDI, corruption and high tax rates deter it, and the effects from what he calls “the competitive industry environment” vary, where competitive environment in his work is a reflection of sector (manufacturing, services, etc.) receiving FDI.

[Contractor et al. \(2020\)](#) examine how different regulatory factors (like contract enforcement and international trade regulations) and their interactions with each other influence inward FDI flows. Their findings suggest a trade off among regulatory factors, where firms are willing to invest even if one regulatory factor is weaker as long as another is strong.

[Mariotti and Marzano \(2021\)](#) uses a sample of 63 countries over 37 years (1980–2017) to show that increased enforcement of pro-competitive policies attracts FDI in low-trust business environments with what high-quality regulatory environments. Their paper studies specifically how trust and regulatory institutional environment (RIE) interact to determine how credible and how needed competition policy is. On one end, in a high-trust society, competition policy is less needed (trust serves as a substitute for formal enforcement). A low-quality RIE results in competition policy lacking credibility, which creates uncertainty in the business environment for foreign investors. Measures of trust and RIE interact to

define the space for which competition policy is needed and credible to attract investment. As a measure of trust, the authors use the World Values Survey answer to the question “Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?” As the measure of RIE, the authors use the regulatory quality index from the World Bank’s Worldwide Governance Indicators. The authors also use the example of work by [Dasgupta and Žaldokas \(2019\)](#) on how anticollusion enforcement impacts firm investment and equity issuance and incorporate the passage of “leniency laws.” Leniency laws are designed to improve enforcement of anti-cartel laws and increase cost of anticompetitive behavior by firms by providing immunity to cartels who cooperate in efforts of deterrence and detection.

[Clougherty and Zhang \(2021\)](#) look at how antitrust and competition policies may be protectionist in nature. They use sector-level data on merger investigations and the presence of foreign acquirers in U.S. merger and acquisition (M&A) markets between 2002–2017. [Clougherty and Zhang](#) argue that risk and uncertainty inherent to U.S. competition and merger policies deter foreign FDI. Their two key explanatory variables are the measure of policy risk, the number of annual antitrust investigations divided by the number of horizontal transactions in a sector, and the measure of policy uncertainty, the standard deviation in the annual number of antitrust investigations in a sector. The analysis here is unable to make these sorts of conclusions due to the simplified nature of the data sources used compared to sectoral M&A data. I discuss this topic further related to future work section [6](#).

3 Econometric Measurement of Competition

In this section, I explore the potential for increased competition in domestic markets to have a significant impact on FDI from the U.S., GDP, or other macroeconomic indica-

tors.³ I use the approach from Riker (2022) (which analyzed the impact of improvements in regulatory quality on a country's GDP and its exports to the U.S.).

Equation (1) shows how FDI from the U.S. ($\ln FDI_{ct}$) is impacted by a country's GDP ($\ln Y_{ct}$) and a measurement of the competitiveness of a country's markets (CI_{ct}), controlling for other unobserved factors using country fixed effects (γ_c) and year fixed effects (δ_t):

$$\ln FDI_{ct} = \alpha \ln Y_{ct} + \beta CI_{ct} + \gamma_c + \delta_t + \epsilon_{ct}, \quad (1)$$

where ϵ_{ct} is the error term. As was true in Riker (2022), the country fixed effects function as country-pair fixed effects, because the U.S. is the originating country for each observation. The year fixed effects control for any changes in the U.S. market over time.

Equation (2) examines the impact of domestic competition on a country's GDP, with country and year fixed effects (μ_c and κ_t):

$$\ln Y_{ct} = \lambda CI_{ct} + \mu_c + \kappa_t + \zeta_{ct}, \quad (2)$$

where ζ_{ct} is the error term.

Equation (3) is a reduced-form econometric model that shows how a country's stock of FDI from the U.S. ($\ln FDI_{ct}$) is impacted by its GDP ($\ln Y_{ct}$) and its competitiveness (CI_{ct}), controlling for other unobserved factors using country fixed effects (γ_c) and year fixed effects (δ_t):

$$\ln FDI_{ct} = \tilde{\beta} CI_{ct} + \tilde{\gamma}_c + \tilde{\delta}_t + \tilde{\epsilon}_{ct}, \quad (3)$$

³Analysis of the relationship between exports to the U.S. and the WEF Global Competitiveness Index returned insignificant results. These results are available upon request.

where the new coefficients are defined as follows:

$$\tilde{\beta} = \beta + \lambda \alpha, \tag{3a}$$

$$\tilde{\delta}_c = \gamma_c + \alpha \mu_c, \tag{3b}$$

$$\tilde{\epsilon}_{ct} = \epsilon_{ct} + \alpha \zeta_{ct}. \tag{3c}$$

4 Data

The basic econometric model seeks to establish the relationship between foreign direct investment (FDI) from the U.S. or a country’s GDP and the competition in its domestic market. In order to examine this in depth, I look at a panel of foreign FDI from the U.S. to 151 countries across 9 years (2009 to 2017). The time frame chosen reflects the range of years for which the World Economic Forum (WEF) has published the Global Competitiveness Index (GCI) and the years in the Bureau of Economic Analysis (BEA) FDI data.

The World Economic Forum defines competitiveness as “the set of institutions, policies, and factors that determine the level of productivity of a country” (Schwab; 2016, pg. 35). The competitiveness index is constructed using twelve categories, which they call the pillars of competitiveness. These are: (1) institutional environment, (2) infrastructure, (3) macroeconomic environment, (4) access to healthcare and primary education, (5) access to higher education and training, (6) efficiency of goods markets, (7) efficiency of the labor market, (8) efficiency of the financial sector, (9) technological readiness, (10) market size, (11) business “sophistication” (quality of a country’s overall business networks and the quality of individual firms’ operations and strategies), and (12) innovation.⁴ More details on these pillars can be found in Appendix A of their 2016 report (Schwab; 2016).⁵

⁴Note that I am using the GCI version 3.0. The Global Competitiveness Index was modified in 2018, so analysis here is limited to before 2018. The new index no longer contains the pillar 6 measure of efficiency of goods markets.

⁵The WEF Global Competitiveness Index data can be found on the World Bank site,

Each pillar is composed of several sub-measures, some of which are particularly germane to discussion of how competitiveness impacts an economy. In the rest of this section, I will decompose the index into parts in order to quantify the specific contribution of sub-measures tied to competition policy. Within domestic competitiveness there are two measures of particular interest: the measure of competition intensity and the measure of the effectiveness of anti-monopoly policy. The measure of effectiveness of anti-monopoly policy comes from the WEF Executive Opinion Survey question “In your country, how effective are anti-monopoly policies at ensuring fair competition? [1 = not effective at all; 7 = extremely effective]” (Schwab; 2016, pg. 375). The measure of competition intensity comes from the WEF Executive Opinion Survey question “In your country, how intense is competition in the local markets? [1 = not intense at all; 7 = extremely intense]” (Schwab; 2016, pg. 376).

Index values for the overall global competitiveness index, institutional quality (pillar 1), effectiveness of anti-monopoly policy (sub-measure of pillar 6), and competition intensity (sub-measure of pillar 6) are in table 1 for the U.S. and 20 other countries. For each index, the maximum score is seven.

The FDI data come from the BEA’s country detail data. These data are the position of U.S. firms on a historical-cost basis, financial transactions without current-cost adjustment, and income without current-cost adjustment.⁶ The BEA data cover 2009–2019. The GDP data come from the World Bank, covering the full time window and all countries in the dataset.

https://tcddata360.worldbank.org/indicators/gci?country=BRA&indicator=631&viz=line_chart&years=2007,2017.

⁶Data are available at <https://www.bea.gov/international/di1usdbal>.

Table 1: WEF Global Competitiveness Data

Country	GCI	Institutional Environment	Anti-Monopoly Effectiveness	Competition Intensity
Australia	5.19	5.35	4.54	5.90
Brunei	4.52	4.43	3.41	4.68
Canada	5.35	5.43	4.82	5.45
Chile	4.71	4.53	4.38	5.23
China	5.00	4.42	4.48	5.46
Colombia	4.29	3.21	3.67	5.55
Ecuador	3.91	3.05	3.31	5.11
India	4.59	4.44	4.42	4.73
Indonesia	4.68	4.27	4.30	5.39
Japan	5.49	5.41	5.49	6.21
Malaysia	5.17	4.98	4.74	5.44
Mexico	4.44	3.20	3.75	5.21
New Zealand	5.37	6.07	5.34	5.36
Peru	4.22	3.22	3.40	5.14
Philippines	4.35	3.51	3.21	5.28
Russia	4.64	3.75	3.47	5.02
Singapore	5.71	6.08	5.34	5.72
South Korea	5.07	4.04	4.46	6.04
Thailand	4.72	3.80	3.86	5.37
USA	5.85	5.33	5.56	6.00
Vietnam	4.36	3.79	3.40	4.66

5 Results

This section presents the overall results for the relationship between the Global Competitiveness Index (GCI) and FDI stock from the U.S., which is strong and significant in all specifications of the model. I also include discussion of how sub-measures may be impacting FDI by using the formula for the GCI to decompose the effect into parts.⁷

Beginning with table 2, the WEF Global Competitiveness Index is significant at the five

⁷In Appendix A, I include results using some of the sub-measures of competitiveness. Table 6 shows the results when just the measure of institutional quality (pillar 1) is used, table 7 shows the results with only the measure of local competition intensity (a subcategory of the sixth pillar), and table 8 shows the results using the measure of the effectiveness of anti-monopoly policy (also a subcategory of pillar six).

Table 2: Regression Estimates for U.S. FDI Stock Abroad, GCI

	Equation (1)	Equation (2)	Equation (3)
<i>Dependent Variable</i>	$\ln(FDI_{ct})$	$\ln(Y_{ct})$	$\ln(FDI_{ct})$
$\ln(Y_{ct})$	0.341** (0.13)		
CI_{ct}	0.541** (0.17)	0.262*** (0.04)	0.663*** (0.18)
Country Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Number of Obs.	1020	1252	1023
R^2	0.984	0.996	0.984

Robust standard errors in parentheses; *** p < 0.01, ** p < 0.05, * p < 0.1.

percent level in all specifications, significant at the one percent level in the equation (2) and (3) regressions, with both GDP and FDI from the U.S. increasing in the level of a country's domestic market competition. Interestingly, the impact on FDI is almost three times that of the impact on GDP. When included in the same regression together, equation (1), the estimated impact of domestic market competition is significantly larger than the impact of GDP on U.S. FDI stocks.

The equations demonstrate a direct effect of the GCI on FDI (0.541), and an indirect effect ($0.341 \times 0.262 = 0.089$) which is about six times smaller than the direct effect. Following the analysis of Riker (2022), consider how the estimate of $\tilde{\beta}$, 0.663, compares to the $\beta + \alpha \lambda$, which is equal to 0.630. The estimates are relatively close, but not exact, indicating that there is potentially some bias in the equation (1) or equation (2) regressions. Keeping that in mind, the total impact estimated by equation (3) will be more reliable.⁸

Because the overall Global Competitiveness Index is much broader than the aspects of

⁸Additional work not included here added an indicator variable for IPEF countries to see if the impact of the GCI on FDI or GDP differed for IPEF countries from the rest of the world. In those regressions, I found that the coefficient on the GCI is very robust to the addition of the IPEF variable and the GCI-IPEF interaction term. The results also showed that the positive impact of the GCI on FDI from the U.S. is not statistically significantly different for IPEF countries than it is for non-IPEF countries.

the economy on which competition policy is focused, the overall effects in table 2 can be decomposed into the specific contributions for each of the sub-elements using the formula for the GCI. The twelve pillars of the GCI that I mentioned in section 4, are listed in table 3. The pillars comprise three sub-indexes—basic requirements, efficiency enhancers, and innovation and sophistication factors—with each pillar weighted equally within its sub-index. The weight placed on each sub-index varies based on a country’s development stage, which is determined by per capita income and other factors (Schwab; 2016, pgs. 39–40). How these weights relate to per capita income is outlined in table 4.

In order to narrow in on the actual Competition Policy’s potential impact, I do additional analysis using sub-measures of competitiveness within the overall GCI. Using only the data readily available in the World Bank dataset, I can do analysis using the measure of institutions (pillar 1), intensity of local competition (a sub-part of pillar 6, goods market efficiency), and extent of effectiveness of anti-monopoly policy (also a sub-part of pillar 6).⁹ Pillar 1 represents the institutional aspects of government most likely to be impacted by changes to a country’s competition policy. Pillar 6 represents the aspects of the economy most directly related to changes in market competitiveness.

Beginning with pillar 6, goods market efficiency: table 3 and table 4 show that pillar 6 comprises between 5.8 and 8.3 percent of of the overall competitiveness index, with it accounting for 8.3 percent of the overall index for countries in the higher GDP per capita brackets, and 5.8 percent of the overall index for the lower GDP per capita brackets. Combining this with the estimates for $\tilde{\beta}$ in table 2, for higher (lower) income countries a one-unit increase in the WEF index leads to a 5.5 percent (3.9 percent) increase in FDI from the U.S.

⁹According to the 2016 report, each pillar is calculated using an arithmetic mean of it’s components. For pillar 6, however, the makeup is a bit more complex. Pillar 6 is comprised a measure of competition (2/3 of the pillar) and a measure of demand conditions (1/3 of the pillar). The competition measure is divided into domestic and foreign competition, with domestic competition containing eight components and foreign competition containing six measures. The weight assigned to domestic and foreign competition within the competition measure depends on the the size of imports relative to the rest of GDP.

Table 3: Sub-Indexes of WEF Global Competitiveness Index

<i>Category</i>	<i>Weight</i>
Basic Requirements:	20 – 60 %
Pillar 1: Institutions	25 %
Pillar 2: Infrastructure	25 %
Pillar 3: Macroeconomic environment	25 %
Pillar 4: Health and primary education	25 %
Efficiency Enhancers:	35 – 50 %
Pillar 5: Higher education and training	17 %
Pillar 6: Goods market efficiency	17 %
Pillar 7: Labor market efficiency	17 %
Pillar 8: Financial market development	17 %
Pillar 9: Technological readiness	17 %
Pillar 10: Market size	17 %
Innovation and Sophistication Factors:	5 – 30 %
Pillar 11: Business sophistication	50 %
Pillar 12: Innovation	50 %

See pages 39–40 of [Schwab \(2016\)](#) for more details. Weights are rounded to the nearest percent.

Table 4: Weights of Sub-Indexes in GCI

Development stage	GDP per capita range	Sub-Index Categories:		
		Basic require- ments	Efficiency enhancers	Innovation and sophisti- cation factors
Stage 1: Factor-driven	<2,000	60 %	35 %	5 %
Transition from stage 1 to stage 2	2,000–2,999	40–60%	35 %	5–10%
Stage 2: Efficiency-driven	3,000–8,999	40%	35 %	10%
Transition from stage 2 to stage 3	9,000–17,000	20–40%	50%	10–30%
Stage 3: Innovation-driven	> 17,000	20%	50%	30%

These estimates, however lack context. Suppose instead that we look at how much bringing the measure of anti-monopoly effectiveness or the measure of local market competition in line with the U.S. would effect FDI.

For the countries in table 1, suppose that through adjustments to domestic policy the intensity of competition in each country’s markets are brought into line with the U.S. for certain WEF measures. For example, consider the two sub-measures of pillar 6 in that table, effectiveness of anti-monopoly policy and competition intensity. These measures make up one-eighth each of the overall domestic competition measure. Using this and the weights placed on its parent measures, we have an upper bound of the weight on each of these question in the overall GCI equal to 0.69 percent for countries in higher development stages and 0.49 percent for countries in lower development stages.

The results for each of the Pacific Rim countries are given in table 5. The impact of improving key aspects of competition in domestic markets is significant for the majority of the Pacific Rim countries, excluding two cases where the U.S.’s measure of competition is lower than a trading partner. The potential benefits of improving market competition are especially pronounced in the category of Anti-Monopoly Effectiveness. For over half of the countries in the sample, bringing their effectiveness of anti-monopoly policy measure in line with the U.S. would produce over a 0.5 percent increase in total FDI from the United States. The largest potential being with the Philippines, Brunei, and Vietnam, each with potential increases in FDI from the U.S. over three-quarters of a percent.¹⁰

¹⁰The potential gains from bringing a measure of competition in line with the U.S. are calculated as follows, where “Measure” is the lowest level disaggregated input to the index (Competition Intensity or Anti-Monopoly Effectiveness) for country c :

$$\begin{aligned} \% \Delta FDI_c = & \textit{weight}_{\textit{Efficiency Enhancers}} \times \textit{weight}_{\textit{Pillar 6}} \times \textit{weight}_{\textit{Competition}} \\ & \times \textit{weight}_{\textit{Domestic Competition}} \times \textit{weight}_{\textit{Measure}} \times \tilde{\beta} \times (\textit{Measure}_{U.S.} - \textit{Measure}_c) \times 100, \end{aligned} \quad (4)$$

where this is an upper bound because the value of $\textit{weight}_{\textit{Domestic Competition}}$ is variable, equal to $(C + I + G + X)/(C + I + G + X + M)$. Because WEF did not publish the values of this weight in their report, I assume it is equal to one, which would be true if country c ’s imports were equal to zero. The change in value is then equal to the percent change in FDI times the country’s existing FDI.

Table 5: Upper bound for FDI change from bringing measure of effectiveness of anti-monopoly policy or competition intensity in line with the U.S., 2017 data

Country	Devel. Stage	FDI Stock (Millions)	Anti-Monopoly Effectiveness		Competition Intensity	
			% Δ FDI	Δ Value (Millions)	% Δ FDI	Δ Value (Millions)
Australia	3	170,000	0.47 %	797	0.05 %	81
Brunei	1.5	19	0.83 %	0.2	0.51 %	0.1
Canada	3	371,000	0.34 %	1260	0.25 %	941
Chile	2.5	25,800	0.54 %	139	0.36 %	92
China	2	105,000	0.35 %	364	0.17 %	183
Colombia	2	7,670	0.61 %	47	0.15 %	11
Ecuador	2	715	0.72 %	5	0.29 %	2
India	1	45,200	0.37 %	166	0.41 %	185
Indonesia	2	13,900	0.40 %	56	0.20 %	27
Japan	3	117,000	0.03 %	39	-0.09 %	-110
Malaysia	2.5	11,800	0.38 %	45	0.26 %	31
Mexico	2	100,000	0.58 %	585	0.26 %	256
New Zeal.	3	12,400	0.10 %	12	0.29 %	36
Peru	2	5,700	0.70 %	40	0.28 %	16
Philippines	1.5	6,930	1.06 %	73	0.32 %	23
Russia	2	13,800	0.67 %	93	0.32 %	44
Singapore	3	293,000	0.10 %	297	0.13 %	380
S. Korea	3	40,200	0.51 %	204	-0.02 %	-7
Thailand	2	15,600	0.55 %	85	0.20 %	32
Vietnam	1.5	2,460	0.75 %	18	0.46 %	11

6 Conclusion

In this paper, I demonstrate that various aspects of market competition as measured by the World Economic Forum (WEF) have a positive and significant impact on FDI from the U.S. Specifically, the WEF’s overall measure of competition, the global competitiveness index (GCI), is strongly positively associated with both a country’s GDP and the stock of FDI from the U.S. I also demonstrate a positive relationship between FDI from the U.S. and the intensity of local competition in a country’s domestic market. In the analysis, I do not find a strongly significant relationship between how competitive a market is and trade. Decomposing the effect of the overall GCI into component parts, I demonstrate the potential for large inflows of FDI to key U.S. trading partners if those partners were to improve competition in their domestic markets.

This work is useful in supporting partial equilibrium modeling of domestic market competition, specifically by establishing the relationship between FDI and competition and the lack of relationship between trade and competition. This paper suggests models of competition should focus on the potential for firm entry through FDI and not expanded trade with U.S. partner countries.

For future work, a few things immediately jump out as possible additions to the analysis on this topic. First, expanding the set of controls used in the regressions would help to better isolate the impact of improving market competitiveness on stock of FDI. For example, [Mariotti and Marzano \(2021\)](#) uses a measure of openness to trade, a variable capturing the passage of pro-enforcement regulations, variables controlling for Ricardian technology, among other things. Additionally, the [Mariotti and Marzano \(2021\)](#) and [Dasgupta and Žaldokas \(2019\)](#) use of leniency law passage is an interesting possible addition to the model, but it would require expanding the time frame of the analysis since only a small sample of countries passed leniency laws in the 2009–2018 window. Second, instrumental variables analysis of

the model would also be a helpful expansion of the analysis, following the example of [Daude and Stein \(2007\)](#).

Finally, the [Clougherty and Zhang \(2021\)](#) measures of policy risk and policy uncertainty would be interesting to use in the context of competition policy in trade agreements, seeing if the policy uncertainty and risk play a smaller role once countries commit to a common competition policy. The data-gathering cost to perform this analysis, however, would be great when looking at how committing to a common competition policy impacts U.S. partner countries, since data on each country's policy risk and uncertainty would be needed for the analysis.

Slightly more of a departure from the current analysis but still on the topic of competition policy, [Buccirosi et al. \(2013\)](#) looks at the impact competition policy has on total factor productivity (TFP). The authors find a causal link between competition policy and TFP growth. When thinking more broadly about the impact of competition policy on an economy, this would be an additional avenue to consider.

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Table 6: Regression Estimates for U.S. FDI Stock Abroad, Pillar 1

	Equation (1)	Equation (2)	Equation (3)
<i>Dependent Variable</i>	$\ln(FDI_{ct})$	$\ln(Y_{ct})$	$\ln(FDI_{ct})$
$\ln(Y_{ct})$	0.408** (0.13)		
$Pillar1_{ct}$	0.067 (0.08)	0.106*** (0.02)	0.114 (0.09)
Country Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Number of Obs.	1020	1252	1023
R^2	0.984	0.996	0.984

Robust standard errors in parentheses; *** p < 0.01, ** p < 0.05, * p < 0.1.

A Regression Estimates Using Sub-Indexes

The results in this appendix use the sub-measures of competition from the World Economic Forum’s (WEF) Global Competitiveness Report to break down the effect of competition on FDI. This is an alternative to the methodology used in section 3. These sub-measures come from the Global Competitiveness Index (GCI) dataset available from the World Bank TCdata360 site. First, table 6 presents the results just for pillar 1, institutional environment, of the GCI. This pillar includes measures of both private and public institutional quality, including property rights, ethics, performance of the government in spending and dispute settlement, and accountability of corporations, among other things. This measure is not statistically significant in the regressions on FDI (regressions of equations (1) and (3)). The regression of equation (2) finds pillar 1 has a strongly significant positive effect on GDP. Interestingly, GCI and Pillar 1 are strongly correlated (0.84 correlation coefficient).

Pillar 6, goods market efficiency, contains the factors directly related to how competitive a country’s domestic market is. Unfortunately, the World Bank GCI dataset does not contain the pillar 6 values. It does, however, include some of the sub-measures contained within pillar

Table 7: Regression Estimates for U.S. FDI Stock Abroad, Competition Intensity

	Equation (1)	Equation (2)	Equation (3)
<i>Dependent Variable</i>	$\ln(FDI_{ct})$	$\ln(Y_{ct})$	$\ln(FDI_{ct})$
$\ln(Y_{ct})$	0.417** (0.14)		
$CompIntsty_{ct}$	0.306*** (0.07)	0.007 (0.02)	0.323*** (0.07)
Country Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Number of Obs.	1020	1252	1023
R^2	0.984	0.996	0.984

Robust standard errors in parentheses; *** p < 0.01, ** p < 0.05, * p < 0.1.

6, so I use the measure of effectiveness of anti-monopoly policy and competition intensity (discussed earlier in section 4) for analysis here. The results of these regressions are in tables 7 and 8. First, table 7 shows the model results using the measure of competition intensity. The measure of competition intensity comes from the WEF Executive Opinion Survey question “In your country, how intense is competition in the local markets? [1 = not intense at all; 7 = extremely intense]” (Schwab; 2016, pg. 376). The intensity of local competition is strongly positively related to FDI, but there is no significant impact on GDP. The coefficient on FDI is about half of the size of the impact of GCI on FDI (comparing the results to table 2), suggesting the intensity of local competition is potentially a very important aspect of why GCI has a positive effect on trade. The intensity of local competition does not, however, have a statistically significant impact on GDP.

Turning to table 8, consider how the measure of the effectiveness of anti-monopoly policy influences FDI. The measure of effectiveness of anti-monopoly policy comes from the WEF Executive Opinion Survey question “In your country, how effective are anti-monopoly policies at ensuring fair competition? [1 = not effective at all; 7 = extremely effective]” (Schwab; 2016, pg. 375). In these regressions, effectiveness of anti-monopoly policy is not a statistically

Table 8: Regression Estimates for U.S. FDI Stock Abroad, Effectiveness of Anti-Monopoly Policy

	Equation (1)	Equation (2)	Equation (3)
<i>Dependent Variable</i>	$\ln(FDI_{ct})$	$\ln(Y_{ct})$	$\ln(FDI_{ct})$
$\ln(Y_{ct})$	0.416** (0.14)		
<i>AntiMonop_{ct}</i>	0.120 (0.07)	0.042** (0.02)	0.127 (0.07)
Country Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Number of Obs.	1020	1252	1023
R^2	0.984	0.996	0.984

Robust standard errors in parentheses; *** p < 0.01, ** p < 0.05, * p < 0.1.

significant factor in determining FDI, though it does play a statistically significant role in determining GDP, with the effect being positive.

While these results are interesting, it is important to take tables 7 and 8 with a grain of salt given they are each based on a single survey question with an arbitrary scale (1–7) for the response choices.