Evaluating the Impact of FTAs on FDI: A Text-Based Approach

Ali Dadkhah

Ciuriak Consulting and Infinity Law

Dan Ciuriak

Ciuriak Consulting, Centre for International Governance Innovation (CIGI), C.D. Howe Institute and BKP Economic Advisors

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Abstract:

The literature on the impact of bilateral investment treaties (BITs) on foreign direct investment (FDI) has had difficulty establishing a robust effect of BITs on FDI flows. This conclusion extends to FDI chapters in free trade agreements (FTAs), which feature the same substantive content as BITs. The lack of an empirically identifiable effect may reflect econometric difficulties, a minimal role of BITs/FTAs in corporate FDI decisions, or the lack of liberalizing content in the treaties. We consider the latter issue by mapping the legal commitments in FTAs onto the OECD's Foreign Direct Investment Restrictiveness (FDIR) Index, while drawing on the Mode 3 component of the OECD's Services Trade Restrictiveness Index (STRI) to enable greater granularity of treatment of the measures in FTAs. The modified index, which we label the FDI-RI to distinguish it from the FDIR, has the same broad policy areas and the same weighting scheme as the FDIR but the measures under each horizontal policy area (i.e., policies that apply to FDI in general without distinguishing sectors) that are covered in more detail by the STRI have been disaggregated into measures that correspond to those in the STRI. The FDI-RI thus covers both goods and services on a consistent basis, but with greater detail for goods sectors than available under the FDIR. Importantly, we take into account the impact of FTA measures in improving upon each party's bindings under the General Agreement on Trade in Services (GATS). In principle, empirically quantified NTBs reflect both applied restrictions and uncertainty. We identify uncertainty with "water" in the bound commitments and construct a composite NTB that reflects applied measures and water. This approach allows a determination of whether and how much FTAs liberalize investment by either reducing applied barriers, increasing certainty, or both. Given measures of tax equivalents for non-tariff measures affecting investment, this approach also allows the calculation of a tax equivalent shock for use in quantitative models. We comment on the impact of FDI liberalization in the Comprehensive and Progressive Trans-Pacific Partnership (CPTPP) Agreement using this approach.

Keywords: foreign direct investment, FDI, STRI, GATS commitments, water, uncertainty, FTAs

JEL Codes: F13, F14, F68

1 Introduction

The empirical literature on the impact of bilateral investment treaties (BITs) on foreign direct investment (FDI) has had difficulty establishing a robust effect of BITs on FDI flows (Sachs and Sauvant, 2009). This conclusion logically extends to FDI chapters in free trade agreements (FTAs), given they generally feature the same substantive content as BITs. The lack of an empirically identifiable effect may reflect econometric difficulties in isolating the role of BITs/FTAs, a minimal role of BITs/FTAs in corporate FDI decisions, or the lack of liberalizing content in the treaties. We consider the latter issue by adopting a text-based approach to evaluate the liberalization impact of the FTAs on FDI flows for the full range of goods and services sectors.

In particular, we map the commitments in BITs/FTAs onto an index based on the OECD's Foreign Direct Investment Restrictiveness (FDIR) Index, but drawing on the Mode 3 component of the OECD's Services Trade Restrictiveness Index (STRI), and on elements of the World Bank's STRI related to licensing. This modified index, which we label the FDI-RI to distinguish it from the FDIR, enables greater granularity of treatment of the measures included in BITs/FTAs. The FDI-RI has the same broad policy areas and the same broad weighting scheme as the FDIR, but the measures under each horizontal policy area (i.e., policies that apply to FDI in general without distinguishing sectors) that are covered in more detail by the STRI Mode 3/World Bank FDI index have been disaggregated into measures that correspond to those in the STRI.

The authors of the OECD STRI anticipate this approach: "Assigning a unique weight to each measure gives the flexibility to break the STRIs down in several ways. […] The STRIs are also presented according to which mode of supply the restriction applies." (Geloso Grosso et al. 2015) The FDI-RI thus covers both goods and services on a consistent basis, but with greater detail for goods sectors than available under the FDIR.

An important feature of the approach in this study is to take account of the impact of BITs/FTAs on uncertainty. Firms make state-contingent decisions and future states are uncertain. Given uncertainty about future states and at least partial irreversibility of investment decisions, the opportunity cost of immediate investment (i.e., the option value of delaying and accumulating additional information) must accordingly be included in the cost of investment. As Dixit and Pindyck (1994) emphasize, "hurdle rates" for firm investments are substantially higher than the cost of capital. They suggest that the value of real options is thus very significant, implying uncertainty is also a very significant factor inhibiting investment. By the same token, empirically quantified NTBs must reflect both applied restrictions and uncertainty.

BITs/FTAs address uncertainty introduced by government policy changes. Lucas (1990) emphasizes the role of political risk in shaping the direction of international capital flows. While direct expropriation is largely a thing of the past, "indirect expropriation" remains an issue for investors. Alfaro et al. (2005) finds protection from government repudiation of contracts and from risk of expropriation to be highly significant determinants of FDI. Azzimonti and Sarte (2007) document the many documented forms of expropriation, direct and indirect, establishing that these are not rare. Studies approaching the issue from an institutional perspective have reached mixed conclusions. Thomas Waelde argues that “it would be a sign of negligent management and counsel if political risk management and investment protection were not planned with the potential of investment-treaty based arbitration in mind” (cited in Orr, 2007). Kekic and Sauvant (2007) report that the majority of multinationals surveyed take BITs into account in making an investment decision. Yackee (2010) reports that providers of political risk insurance only inconsistently take BITs into account when making underwriting decisions and the majority of the providers he surveyed did not, in fact, view BITs as relevant to their underwriting decisions. At the same time, his results indicate that *some* underwriters take BITs into account in assessing political risk.

As regards uncertainty, the OECD has undertaken work to provide estimates of the difference between the STRI index, which measures restrictiveness in applied policy, and countries’ bindings under the GATS. This latter difference – the “water” in the GATS bindings – provides a measure of the extent to which existing market access restrictions could be increased without violating WTO commitments (Miroudot and Pertel, 2015). Accordingly, water is a measure of the degree of uncertainty faced by firms making investment decisions. Importantly, under this approach to quantifying uncertainty, both actual restrictions and uncertainty are measured by the same indicators and the same weighting scheme.

Following the OECD, we identify uncertainty with “water” in bound commitments and construct a composite NTB that reflects both applied measures and water. This approach allows a determination of whether and how much FTAs liberalize investment by either reducing applied barriers, reducing uncertainty by improving upon a country’s bindings under the General Agreement on Trade in Services (GATS), or both. Following Ciuriak and Lysenko (2016), we assume that the value of reducing water (which is measured on the same scale and using the same indicators as applied restrictions) has half the liberalizing value of reducing an equivalent amount of applied restrictions; accordingly, we assign a weight of 0.5 to the bindings in constructing the composite NTB. Notably, reduction of applied barriers to FDI without binding ***creates*** water. Accordingly, it is essential to determine whether liberalization commitments are bound by the treaty measures or whether there is no penalty for their withdrawal.

We convert percentage changes in our composite NTB to changes in trade cost equivalent by applying the percentage changes to ad valorem equivalents (AVEs) of trade costs estimated by Fontagne et al (2016), making the assumption that 50% of the measured AVEs are actionable and 25% of the actionable portion is covered by the measures itemized in the STRI/GTRI.

For the simulations, we use a dynamic version of the Global Trade Analysis Project (GTAP) computable general equilibrium (CGE) model that incorporates FDI by introducing a foreign-owned representative firm into each GTAP region-sector. For a description, see Ciuriak, Xiao and Dadkhah (2017). In this model, FDI responds in tandem with domestic investment to changes in rates of return in each region-sector based on tariff and NTB reductions; it also responds independently to reductions in NTBs facing investment, based on elements of the CPTPP text that change a country’s FDI restrictiveness. Labour supply is assumed to be fixed but we apply a closure such that the quantity of labour (interpreted as productivity) rises in tandem with increases in real wages, consistent with the understanding that trade liberalization transfers market share from lower-productivity firms that pay lower wages to higher-productivity firms that pay higher wages.

This paper's main contribution is to describe the development of the FDI-RI for both goods and services, showing how the available indexes can be integrated to increase the granularity of treatment of FTA commitments, and how the impact of an FTA on both applied restrictions and uncertainty can be integrated into impacts on a composite NTB. We illustrate the method with examples from the Trans-Pacific Partnership (CPTPP).

The rest of this paper is structured as follows. The following section describes in detail the construction of the FDI NTB in the services sector. Section 3 describes in detail the construction of the FDI NTB in the goods sectors. Section 4 concludes.

2 FDI NTB for Services Sectors

To develop an FTA policy shock for liberalization of FDI for services sectors, we code the text of the FTA against the OECD's STRI Mode 3 provisions to yield estimates of: (a) the degree of liberalization implied by the text (in our terminology, this implies changes to the FDI restrictiveness index, FDI-RI); and (b) the extent to which the text binds current practice, thus "squeezing water" out of the country's commitments under the GATS (in our terminology, this implies changes to the GATS FDI restrictiveness index or G-FDI-RI).

The STRI database covers 22 sectors. To better capture FTA commitments (especially in a positive list FTA), we expand coverage to 36 sectors. These sectors and the mapping to the GTAP sectors are listed in Table 1.

Table 1: Services sector mapping to GTAP sectors

STRI Sector	GTAP Sector	GTAP Sector
1. Construction	Construction	46
2. Distribution	Trade	47
3. Storage and warehouse	Trade	47
4. Air Transport	Air transport	50
5. Maritime Transport	Sea transport	49
6. Rail freight transport	Transport nec	48
7. Road Transport	Transport nec	48
8. Courier	Transport nec	48
9. Cargo-handling	Transport nec	48
10. Custom brokerage	Transport nec	48
11. Freight forwarding	Transport nec	48
12. Ground-handling	Transport nec	48
13. Telecommunications	Communication	51
14. Securities	Financial services nec	52
15. Commercial Banking	Financial services nec	52
16. Insurance	Insurance	53
17. Accounting	Business services nec	54
18. Architecture	Business services nec	54
19. Building-cleaning Services	Business services nec	54
20. Computer	Business services nec	54
21. Convention Services	Business services nec	54

22. Engineering	Business services nec	54
23. Legal	Business services nec	54
24. Interdisciplinary R&D	Business services nec	54
25. Environmental	Business services nec	54
26. Nursing, physios & paramedical	Business services nec	54
27. Packaging Services	Business services nec	54
28. Photographic Services	Business services nec	54
29. Rental & Leasing without Operators	Business services nec	54
30. Urban Planning	Business services nec	54
31. Technical testing & analysis services	Business services nec	54
32. Educational Services	PubAdmin/Defence/Health/Educat	56
33. Health Services	PubAdmin/Defence/Health/Educat	56
34. Broadcasting	Recreational and other services	55
35. Sound Recoding	Recreational and other services	55
36. Motion Pictures	Recreational and other services	55

Source: Geloso Grosso, et al. (2015); and the authors.

The STRI database contains information on Mode 3 services on market access, national treatment, relevant domestic regulation and administrative procedures. The database records policy measures applied on a most-favoured nation (MFN) basis and does not consider preferential treatment entailed in regional trade agreements. The sources of information for the database are laws and regulation in each country. Each entry is documented by reference to the source. The 34 countries included have verified their data and subsequently the database has been subject to peer review assessing their factual accuracy (Geloso Grosso, et al., 2015).

For the newly added sectors, the coverage and definition of measures follow the WTO Services Sectoral Classification List (MTN.GNS/W/120) which is based on the Provisional Central Products Classification (CPC Prov.). This classification is used by most countries to schedule specific commitments under the GATS. For instance, for educational services we have included the following sub-categories to assure relatively full coverage of this services sector:

Table 2: Expanding the coverage of the STRI Mode 3

Sectors and Sub-sectors		**Corresponding CPC**
5	EDUCATIONAL SERVICES	
A.	Primary education services	921
B.	Secondary education services	922
C.	Higher education services	923
D.	Adult education	924
E.	Other education services	929

Source: WTO Services Sectoral Classification List (MTN.GNS/W/120).

In order to provide more comprehensive coverage for the BITs/FTAs, we draw on the World Bank STRI (WB STRI) to capture restrictions related to licensing requirements. In particular, WB STRI are used to disaggregate the OECD STRI in the area of transparency requirements. This is of particular interest under some of the latest negotiated BITs/FTAs under the heading "Regulatory Framework – Domestic Regulation".

These new measures include:

- License automatic if publicly available criteria fulfilled

- Discriminatory licensing criteria for foreign and domestic firms
- License allocation: First come first served
- License allocation: Competitive tender
- License allocation: At discretion of authority
- Licensing decision within a certain period required
- Informing of reasons for license rejection required
- Licencing and qualification procedures and formalities do not restrict supply of the service
- Licencing and qualification procedures/formalities do not complicate or delay provision of the service
- Licencing fees have to be reasonable
- Decisions of the competent authorities in the licencing or authorisation process are impartial with respect to all applicants
- Authority is obliged to reach its decision in an independent manner
- Reasonable period for the submission of an application
- Establish beforehand the normal timeframe for licensing processing
- Possibility of re-submitting the application is also guaranteed.

These measures are added to the policy area "regulatory transparency and administrative requirements". To maintain the overall weight of the FDI-RI, the overall weight for this policy area remains the same and the contribution of the original measures is reduced to accommodate the new measures. Table 3 shows how we have develop the FDI-RI in construction services.

Table 3: Development of the construction services FDI-RI

Category	Measure ID	Code	Libelle	Weight	Mode
CO.1	4200	1_1_1	Maximum foreign equity share allowed (%)	0.060776541	3
CO.1	9000	1_1_3	There are limits to the proportion of shares that can be acquired by foreign investors publicly-controlled firms	0.015194135	3
CO.1	4600	1_2_1	Legal form: Joint ventures required	0.015194135	3
CO.1	4300	1_2_3	Legal form: Foreign branches are prohibited	0.015194135	3
CO.1	4203	1_2_11	Legal form: other restrictions	0.015194135	3
CO.1	4800	1_4_1	Board of directors: majority must be nationals	0.015194135	3
CO.1	4900	1_4_2	Board of directors: majority must be residents	0.015194135	3
CO.1	5000	1_4_3	Board of directors: at least one must be national	0.015194135	3
CO.1	5100	1_4_4	Board of directors: at least one must be resident	0.015194135	3
CO.1	5101	1_4_5	Manager must be national	0.015194135	3
CO.1	5102	1_4_6	Manager must be resident	0.015194135	3
CO.1	5200	1_5_1	Screening explicitly considers economic interests	0.015194135	3
CO.1	5300	1_5_2	Screening exists without exclusion of economic interests	0.015194135	3
CO.1	5400	1_5_3	Memo: thresholds for screening projects	0	3
CO.1	5500	1_7_1	Acquisition of land and real estate by foreigners is restricted	0.015194135	3
CO.1	5501	1_8_1	Restrictions on the type of shares or bonds held by foreign investors	0.015194135	3
CO.1	5700	1_9_1	Conditions on subsequent transfer of capital and investments	0.015194135	3
CO.1	5701	1_10_1	Restrictions on cross-border mergers and acquisitions	0.015194135	3
CO.1	5800	1_12_1	Performance requirements	0.015194135	3
CO.1	6000	1_13_1	Discriminatory qualification requirements for building permits to undertake construction work	0.015194135	3
CO.1	6101	1_50_1	Other restrictions on foreign entry	0.015194135	3
CO.4	8600	4_1_1	Decisions by the regulatory body can be appealed	0.012842388	3
CO.4	8700	4_2_1	Firms have redress when business practices restrict competition in a given market	0.012842388	3
CO.5	9701	5_50_2	License criteria publicly available	0.005112146	3
CO.5	9701	5_50_3	License automatic if publicly available criteria fulfilled	0.005112146	3

CO.5	9701	5_50_4	Different licensing criteria for foreign and domestic firms	0.005112146	3
CO.5	9701	5_50_5	License allocation: First come first served	0.005112146	3
CO.5	9701	5_50_6	License allocation: Competitive tender	0.005112146	3
CO.5	9701	5_50_7	License allocation: At discretion of authority	0.005112146	3
CO.5	9701	5_50_8	Licensing decision within a certain period required	0.005112146	3
CO.5	9701	5_50_9	Informing of reasons for license rejection required	0.005112146	3
CO.5	9701	5_50_10	Licensing and qualification procedures and formalities are not restriction for the supply of the service	0.005112146	3
CO.5	9701	5_50_11	Licensing and qualification procedures and formalities will not complicate or delay the provision of the service	0.005112146	3
CO.5	9701	5_50_12	Licensing fees have to be reasonable	0.005112146	3
CO.5	9701	5_50_13	decisions of the competent authorities in the Licensing or authorisation process are impartial with respect to all applicants	0.005112146	3
CO.5	9701	5_50_14	Authority is obliged to reach its decision in an independent manner	0.005112146	3
CO.5	9701	5_50_15	reasonable period for the submission of an application	0.005112146	3
CO.5	9701	5_50_16	establish beforehand the normal timeframe for licensing processing	0.005112146	3
CO.5	9701	5_50_17	Possibility of re-submitting the application is also guaranteed.	0.005112146	3

Source: the authors.

The evaluated reduction to barriers to FDI is based on the impact of the mandatory measures in the BITs/FTAs. Thus, "best endeavour" clauses are not included in policy shocks.

In terms of approach, we first create a template based on the BIT/FTA commitments. In developing the template, each article of the BIT/FTA is mapped to a measure in the FDI-RI. The template is applied to each country in light of its schedule of commitments for establishment.

If the FTA changes the answer to "not restrictive", the contribution of that measure to the restrictiveness of the regime, which is based on its index weight, is removed. The OECD's STRI Simulator then recalculates the final score for the specific sector. The percentage difference is taken as the degree of reduction of the existing barriers to FDI.

Below, we describe the approach to evaluating the impact of an FTA on applied measures, the impact on bindings, the combination of these two effects into impacts on a composite NTB, and the conversion of the index-based change in restrictiveness to a tax equivalent.

2.1 Measuring liberalization of applied measures

The methodology covers both horizontal and sector-specific commitments. The horizontal commitments stipulate conditions and restrictions that apply to all sectors of the economy. These measures include investment screening, limitations on board members and managers of firms, impediments on acquiring land and real estate, and so forth.

The specific commitments apply to a specific sector as indicated in the schedule. For instance, interest rate regulations pertain only to financial services. Some restrictions tend to impact some sectors more than other; for example, restrictions in public procurement have a particularly large impact on the construction sector in light of the importance of government demand for these services.

To measure the liberalization under the BITs/FTAs for FDI, we isolate those measures that affect Mode 3 (FDI). These measures constitute a sub-index that can be referred to as the FDI Restrictiveness Index (FDI-RI in our terminology). The corresponding sub-index for bindings is the GATS FDI Restrictiveness Index or G-FDI-RI. As an example, Table 4 below shows the FDI-RI shock for telecommunication services in Vietnam[1] under the CPTPP.

Table 4: FDI-RI shock for telecommunication services in Vietnam

					Before CPTPP		After CPTPP	
Code	Libelle	Weight	Mode	CPTPP	FDI-RI	G-FDI-RI	FDI-RI	G-FDI-RI
1_1_1	Maximum foreign equity share allowed (%) (fixed)	0.0378	3	Chapter 8, Article 2	0.0095	0.0189	0.0095	0.0095
1_1_1	Maximum foreign equity share allowed (%) (mobile)	0.0378	3	Chapter 8, Section 3, Article 2	0	0.0095	0	0
1_1_1	Maximum foreign equity share allowed (%) (internet)	0.0378	3	Chapter 8, Article 2	0	0.0189	0	0
1_1_3	There are limits to the proportion of shares that can be acquired by foreign investors publicly-controlled firms	0.0095	3		0.0095	0.0095	0.0095	0.0095
1_2_1	Legal form: Joint ventures required (fixed)	0.0095	3	Chapter 8, Article 2	0.0095	0.0095	0.0095	0.0095
1_2_1	Legal form: Joint ventures required (mobile)	0.0095	3	Chapter 8, Article 2	0.0095	0.0095	0.0095	0.0095
1_2_1	Legal form: Joint ventures required (internet)	0.0095	3	Chapter 8, Article 2	0	0.0095	0	0
1_2_11	Legal form: other restrictions	0.0095	3	Chapter 8, Article 2	0.0095	0.0095	0.0095	0.0095
1_4_1	Board of directors: majority must be nationals	0.0095	3	Chapter 8, Article 2	0	0	0	0
1_4_2	Board of directors: majority must be residents	0.0095	3	Chapter 8, Article 2	0	0	0	0
1_4_3	Board of directors: at least one must be national	0.0095	3	Chapter 8, Article 2	0	0	0	0
1_4_4	Board of directors: at least one must be resident	0.0095	3	Chapter 8, Article 2	0	0	0	0
1_4_5	Manager must be national	0.0095	3	Chapter 8, Article 2	0	0.0095	0	0.0095
1_4_6	Manager must be resident	0.0095	3	Chapter 8, Article 2	0	0	0	0
1_5_1	Screening explicitly considers economic interests (fixed)	0.0095	3		0.0095	0.0095	0.0095	0.0095
1_5_1	Screening explicitly considers economic interests (mobile)	0.0095	3		0.0095	0.0095	0.0095	0.0095
1_5_1	Screening explicitly considers economic interests (internet)	0.0095	3		0.0095	0.0095	0.0095	0.0095
1_5_2	Screening exists without exclusion of economic interests (fixed)	0.0095	3		0	0	0	0
1_5_2	Screening exists without exclusion of economic interests (mobile)	0.0095	3		0	0	0	0
1_5_2	Screening exists without exclusion of economic interests (internet)	0.0095	3		0	0	0	0
1_5_3	Memo: thresholds for screening projects (fixed)	0	3		0	0	0	0
1_5_3	Memo: thresholds for screening projects (mobile)	0	3		0	0	0	0
1_5_3	Memo: thresholds for screening projects (internet)	0	3		0	0	0	0
1_7_1	Acquisition and use of land and real estate by foreigners is prohibited or restricted	0.0095	3		0.0095	0.0095	0.0095	0.0095
1_8_1	Restrictions on the type of shares or bonds held by foreign investors (fixed)	0.0095	3	Chapter 8, Article 2	0	0	0	0
1_8_1	Restrictions on the type of shares or bonds held by foreign investors (mobile)	0.0095	3	Chapter 8, Article 2	0	0	0	0

[1] Vietnam's STRI was developed by the study team for the analysis of Vietnam's FDI-RI in a CPTPP/RCEP context

1_8_1	Restrictions on the type of shares or bonds held by foreign investors (internet)	0.0095	3	Chapter 8, Article 2	0.0095	0.0095	0.0095	0.0095
1_9_1	Conditions on subsequent transfer of capital and investments	0.0095	3	Chapter 8, Article 2	0.0095	0.0095	0.0095	0.0095
1_10_1	Restrictions on cross-border mergers and acquisitions (fixed)	0.0095	3		0	0	0	0
1_10_1	Restrictions on cross-border mergers and acquisitions (mobile)	0.0095	3		0	0	0	0
1_10_1	Restrictions on cross-border mergers and acquisitions (internet)	0.0095	3		0	0	0	0
1_12_1	Performance requirements (fixed)	0.0095	3	Chapter 8, Article 2	0	0	0	0
1_12_1	Performance requirements (mobile)	0.0095	3	Chapter 8, Article 2	0	0	0	0
1_12_1	Performance requirements (internet)	0.0095	3	Chapter 8, Article 2	0	0	0	0
2_50_1	Other restrictions to movement of people	0.0050	3		0	0	0	0
3_1_1	Foreign suppliers are treated less favourably regarding taxes and eligibility to subsidies	0.0059	3		0	0	0	0
4_1_2	Decisions by the regulatory body can be appealed	0.0100	3	Chapter 18, Article 6	0	0	0	0
4_2_1	Firms have redress when business practices restrict competition in a given market	0.0100	3	Chapter 18, Article 6	0	0	0	0
4_3_1	The government controls at least one major firm in the sector	0.0100	3		0.0100	0.0100	0.0100	0.0100
4_4_1	Publicly-controlled firms are exempted from the application of the general competition law	0.0100	3		0	0	0	0
4_3_2	The government has special voting rights (e.g. golden shares) in any firms	0.0100	3		0	0	0	0
4_6_1	Minimum capital requirements	0.0100	3		0	0	0	0
4_7_1	Restrictions on advertising	0.0100	3		0	0	0	0
4_14_1	Unbundling is required	0.0100	3	Chapter 18: Unbundled Network Elements	0.0100	0.0100	0	0
4_23_1	Vertical separation is required (fixed)	0.0100	3	Chapter 18: Regulatory authority	0	0.0100	0	0
4_23_1	Vertical separation is required (mobile)	0.0100	3	Chapter 18: Regulatory authority	0	0.0100	0	0
4_23_1	Vertical separation is required (internet)	0.0100	3	Chapter 18: Regulatory authority	0	0.0100	0	0
5_4_1	Time to complete all official procedures required to register a company (in calendar days)	0.0031	3		0.0031	0.0031	0.0031	0.0031
5_5_1	Total cost to complete all official procedures required to register a company (in % of income per capita)	0.0031	3		0.0031	0.0031	0.0031	0.0031
5_6_1	Number of official procedures required to register a company	0.0031	3		0.0031	0.0031	0.0031	0.0031
5_6_2	License automatic if publicly available criteria fulfilled	0.0031	3	Chapter 5: Conditions for licencing and qualification	0	0	0	0
5_6_3	Different licensing criteria for foreign and domestic firms	0.0031	3	Chapter 5: Licencing and qualification procedures	0	0	0	0
5_6_4	License allocation: First come first served	0.0031	3	Chapter 5: Licencing and qualification procedures	0	0	0	0
5_6_5	License allocation: Competitive tender	0.0031	3	Chapter 5: Licencing and qualification procedures	0	0	0	0

5_6_6	License allocation: At discretion of authority	0.0031	3	Chapter 5: Licencing and qualification procedures	0	0	0	0
5_6_7	Licensing decision within a certain period required	0.0031	3	Chapter 5: Conditions for licencing and qualification	0	0	0	0
5_6_8	Informing of reasons for license rejection required	0.0031	3	Chapter 5: Conditions for licencing and qualification	0	0	0	0
5_6_9	Licencing and qualification procedures and formalities are not restriction for the supply of the service	0.0031	3		0	0	0	0
5_6_10	Licencing and qualification procedures and formalities will not complicate or delay the provision of the service	0.0031	3		0	0	0	0
5_6_11	licencing fees have to be reasonable	0.0031	3		0	0	0	0
5_6_12	decisions of the competent authorities in the licencing or authorisation process are impartial with respect to all applicants	0.0031	3	Chapter 5: Conditions for licencing and qualification	0	0	0	0
5_6_13	Authority is obliged to reach its decision in an independent manner	0.0031	3	Chapter 18: Regulatory authority	0	0	0	0
5_6_14	reasonable period for the submission of an application	0.0031	3	Chapter 5: Conditions for licencing and qualification	0	0	0	0
5_6_15	establish beforehand the normal timeframe for licensing processing	0.0031	3		0	0	0	0
5_6_16	Possibility of re-submitting the application is also guaranteed.	0.0031	3	Chapter 5: Conditions for licencing and qualification	0	0	0	0
	Total				0.1335	0.2203	0.1235	0.1329

Source: the authors.

To illustrate how the coding method works, we consider an example from the above table. According to Article 13.10 “Unbundling of Network Elements by Major Suppliers” of the CPTPP under the chapter on Telecommunications Networks and Services:

> Each Party shall provide its telecommunications regulatory body or another appropriate body with the authority to require a major supplier in its territory to offer to public telecommunications service suppliers access to network elements on an unbundled basis on terms and conditions, and at cost-oriented rates, that are reasonable, non-discriminatory and transparent for the supply of public telecommunications services. Each Party may determine the network elements required to be made available in its territory, and the suppliers that may obtain those elements, in accordance with its laws and regulations.

Article 43 of the Ordinance 43-2002-PL-UBTVQH10, issued in May 2002, (the “Ordinance”) stipulates that all telecommunications enterprises have the right to “link their own network to those of other telecommunications enterprises and shall be obliged to allow those other telecommunications enterprises to link and access their own networks or services subject to fair and reasonable conditions”. Access and interconnection at every technically and economically feasible point is mandatory for service providers that hold ‘essential equipment and facilities’.

However, the Ordinance does not define the meaning of essential equipment and facilities, and unbundling of interconnection services is not required.

Following the CPTPP, Vietnam has made commitments to provide unbundled network elements to meet reasonable requests for access and use of specific network elements on an unbundled basis subject to a set of principles (such as non-discrimination, transparency, reasonableness of the terms and conditions). Therefore, the CPTPP removes the restriction reflected under the measure "4_14_1: Unbundling is required" for the applied level of practice in Vietnam.

2.2 Calculating the Impact on Water

To evaluate the impact of improved bindings under a BIT/FTA, we compare the G-FDI-RI and the FDI-RI as bound under the BIT/FTA under examination. The calculation of the binding shock is straightforward: the difference between the G-FDI-RI and the FDI-RI represents "water" in the bindings. The difference between water pre- and post-FTA constitutes the binding shock.

Note that water can increase under the FTA if applied measures are liberalized but only on an unbound basis. A good example of this is provided by the CPTPP, which contains for some parties a general reservation through a clause in the Non-Conforming Measures' Annex to assure there is no binding beyond the previously GATS negotiated commitments.

> The [Party] reserves the right to adopt or maintain any measure that is not inconsistent with the [Party's] obligations under Article XVI of the General Agreement on Trade in Services as set but in the [Party's] Schedule of Specific Commitments under the GATS.

By allowing the party to revert from the level committed under the CPTPP to as low as the GATS level, the clause creates a level of uncertainty for foreign firms.

2.3 Combining the measures impacting applied restrictions and changing binding

To combine the reduction in actual barriers and the reduction of "water" (the difference between bound and applied market access) into changes to a composite NTB, we follow Ciuriak and Lysenko (2016), who assign reductions in water half the weight of reductions in applied measures.

The weighting scheme can be illustrated as follows. Suppose that the initial FDI-RI is 0.4 and the initial G-FDI-RI is 0.8, implying that initial water is 0.4. If both the FDI-RI and water are eliminated by an FTA, the combined effect would be the same as eliminating an NTB index of 0.6 = 0.4 +0.5*0.4 (the value of the FDI-RI plus half the value of water).

To illustrate the effect of creating water by liberalizing on an unbound basis, in the above example, if the FDI-RI goes to zero through unbound liberalization, water would rise from 0.4 to 0.8. The unbound nature of the liberalization would thus result in a remaining NTB valued at half the value of resulting value of water, or equal to 0.4. The effective liberalization in this case would be from the initial aggregate NTB index level of 0.6 to one of 0.4.

2.4 Calibrating the impact on tax equivalents for FDI

The level of observed NTBs on FDI varies widely across sectors and countries. Changes in applied restrictions and the reduction of uncertainty through improved bindings, as measured by percentage changes in the FDI-RI and G-FDI-RI described above, must accordingly be applied to different tax equivalents in different region/sectors.

To implement this final step in the calculation of a liberalization shock, the percentage change in the aggregate NTB for FDI into a given region-services sector is applied to tax equivalent. In applications in the GTAP-FDI model (Ciuriak and Xiao, 2014), the tax equivalent is the "phantom tax" developed as part of that model's framework.

Table 5: Sample Calculation

	FDI-RI	G-FDI-RI	Water	NTB
Current	0.4	0.8	0.4	0.6
Post-BIT/FTA	0.2	0.2	0	0.2
Liberalization % change				-66.67%
Tax equivalent				5%
Tax Equivalent Reduction				-3.33%

Source: the authors.

3 FDI NTB for Goods Sectors

As noted, we construct an elaborated FDI-RI for goods sectors by drawing on the horizontal components of the OECD STRI's Mode 3 components and on the World Bank's STRI. We label this elaborated index the FDI-RI to distinguish it from the FDIR. We then consider how the FTA impacts on this index and calculate the percentage change in the index implied by imposing CPTPP restrictions. This percentage change is then applied to the NTB impacting FDI in goods sectors.

3.1 The FDIR Index

The FDIR measures statutory restrictions on foreign direct investment in 58 countries, including all OECD and G20 countries, and covers 22 sectors. The FDIR gauges the restrictiveness of a country's FDI rules by looking at the four main types of restrictions on FDI:

- Foreign equity limitations
- Screening or approval mechanisms
- Restrictions on the employment of foreigners as key personnel
- Operational restrictions, e.g. restrictions on branching and on capital repatriation or on land ownership

Good sector FDI restrictions tend to arise mostly in primary sectors such as mining, fishing and agriculture.

In contrast to the STRI, where the weight assigned to specific policies varies across different services sector based on expert opinion, the FDIR applies an equal weights scheme (e.g., the presence of a restriction on foreign personnel has the same weight in mining as in manufacturing, etc.)

In STRI, the contribution of each policy area to the score in every individual sector is identified; however, in the published FDIR, the contribution of the individual policies within the four broad policy areas within each sector is not identified, in part it would appear because judgement is used in constructing the scores.[2]

Table 6 below describes the weighting scheme of the FDIR. As noted, this same scheme applies to each sector.

[2] Currently, the OECD is compiling FDI statistics based on some new standards, which will result in significant changes in FDI statistics, including new measures of FDI at the global level. The OECD FDI Statistics database featuring the new statistics will be available in Q2 2015. In the new database the aggregate statistics are reported based on what is called the asset/liability instead of the current practice which is the directional basis. According to the OECD, "this change currently makes it difficult to interpret the statistics due to breaks in series and to different measures being used by different countries during the transition." The extent to which the change in the measurement of FDI will impact on the construction of measures of restriction (at least in terms of expert opinion on the appropriate weights to assign to specific measures) remains to be seen.

Table 6: OECD FDIR Weighting Scheme

I: Foreign equity limits	**Weight**
Start-ups and acquisitions	
No foreign equity allowed	1
Foreign equity < 50% of total equity	0.5
Foreign equity > 50% but < 100% of total equity	0.25
Acquisitions	
No foreign equity allowed	0.5
Foreign equity < 50% of total equity	0.25
Foreign equity > 50% but < 100% of total equity	0.125
II: Screening and approval	
Approval required for new FDI/acquisitions of < USD 100mn or < 50% of total equity	0.2
Approval required for new FDI/acquisitions above USD100mn or > 50% of total equity	0.1
Notification with discretionary element	0.025
III: Restrictions on key foreign personnel/directors	
Foreign key personnel not permitted	0.1
Economic needs test for employment of foreign key personnel	0.05
Time bound limit on employment of foreign key personnel	0.025
Nationality/residence requirements for board of directors	
Majority must be nationals	0.075
At least one must be national	0.02
IV: Other restrictions	
Establishment of branches not allowed/local incorporation required	0.05
Reciprocity requirement	0.1
Restrictions on profit/capital repatriation	1 - 0.1
Access to local finance	0.05
Acquisition of land for business purposes 3/	0.1
Land ownership not permitted but leases possible	0.05 - 0.01
TOTAL	Up to 1

Source: OECD.

3.2 Constructing the FDI-RI and the FTA FDI Liberalization Shock

In order to construct the shock file for FDI in goods sectors, we construct a general FDI-RI template and apply it to each country in light of its reservations. Table 7 below provides an example based on the CPTPP. The first column shows these measures under each policy area which they correspond to the similar ones in the OECD index. The next column shows how the CPTPP applies to this template. If CPTPP imposes restrictions, we code this as "no" (e.g., "no" for maximum foreign equity shares means no such limits may be applied).

Table 7: CPTPP Impact on FDI-RI

	Weight	**CPTPP Chapter**	**CPTPP**
Foreign equity limits			
Maximum foreign equity share (%)	0.5	Chap. 10, Art. 10.5	No
Maximum foreign ownership in local investment companies (%)	0.025	Chap. 10, Art. 10.5	No
Equity restrictions apply to non-locally licensed professionals/firms	0.015	Chap. 10, Art. 10.5	No
Restrictions on cross-border mergers and acquisitions	0.015		
There are restrictions on establishing foreign subsidiaries	0.015	Chap. 10, Art. 10.5	No

Foreign companies are prohibited from establishing subsidiaries	0.015	Chap. 10, Art. 10.5	No
Restrictions on the type of shares or bonds held by foreign investors	0.015	Chap. 10, Art. 10.5	No
Screening and approval			
Approval required for new FDI/acquisitions of < USD 100mn or if corresponding to < 50% of total equity	0.2	Chap. 10, Art. 10.5	No
Approval required for new FDI/acquisitions above USD100mn or if corresponding to > 50% of total equity	0.1	Chap. 10, Art. 10.5	No
Notification with discretionary element	0.025	Chap. 10, Art. 10.5	No
Restrictions on key foreign personnel/directors			
Board of directors: majority must be nationals	0.025	Chap. 10, Art. 10.5	No
Board of directors: majority must be residents	0.006	Chap. 10, Art. 10.5	No
Board of directors: at least one must be national	0.025	Chap. 10, Art. 10.5	No
Board of directors: at least one must be resident	0.006	Chap. 10, Art. 10.5	No
Manager must be national	0.025	Chap. 10, Art. 10.5	No
Manager must be resident	0.006	Chap. 10, Art. 10.5	No
Other restrictions			
Local incorporation required	0.05		
Restrictions on legal form	0.025	Chap. 10, Art. 10.5	No
Number of firms restricted by quotas	0.025	Chap. 10, Art. 10.5	No
Establishment of foreign firms restricted by economic needs tests	0.025	Chap. 10, Art. 10.5	No
Acquisition of land and real estate by foreigners is prohibited	0.1		
Land ownership not permitted but leases possible	0.01		
Performance Requirements (Local content requirements)	0.025	Chap. 9, Art. 10	No
National Treatment: Foreign suppliers are treated less favourably regarding taxes and subsidies	0.05		
National Treatment: Non-discriminatory treatment required (other than subsidies)	0.05	Chap. 10, Art. 10.5	No

Source: the authors.

This is a two- step analysis. In the first step, we look at the text of the CPTPP to see if there are any commitments which could be mapped to the FDI-RI. If this is the case, the answer to the measure in accordance with the text of the CPTPP is added to the column “CPTPP”. If CPTPP does not affect that measure, the answer is left blank. In the second step, we look at the schedule of reservations to see whether there is any reservation or exclusions in place. If there is a reservation, then we will not remove the previous restrictions in place and keep them the same way.

4 Summary and Conclusions

This paper develops an elaborated version of the OECD's FDIR, namely the FDI-RI and shows how this index can be used to evaluate the liberalization of FDI under an FTA, taking into account the impact of the FTA on applied restrictions and on uncertainty, where the latter is measured as "water" in WTO commitments.

To translate the text of BITs or FTAs into changes in the FDI-RI, we proceed as follows. First, a general template for the BIT/FTA is created. Second, we apply the template to each individual party in light of the reservations in its schedule of commitments.

The percentage change in the FDI-RI implied by an FTA can then be applied to empirical estimates of NTBs facing FDI in goods and services sectors in a given economy, including in aggregations employed in a computable general equilibrium (CGE) modelling context in the Global Trade Analysis Project (GTAP) database, or as independent variables in gravity equations developed to establish the empirical link between the constructed NTB and FDI flows.

The major assumption underlying this approach is that BITs/FTAs actually do have a positive impact on FDI inflows. While the empirical literature remains inconclusive on this point, as noted, it seems unlikely that improved legal protections for FDI would not be taken into account when multinational firms make investment decisions and survey evidence discussed above indicates that at least some do. The weak relationship identified in the quantitative impact assessments may reflect econometric issues – e.g. the use of dummy variables which fail to distinguish whether individual BITs or FTA investment chapters actually liberalize or introduce significant reductions of uncertainty through improved bindings. This remains an area where further research is required.

Other issues that require urgent attention include the development of (a) tax equivalents consistent with the constructed NTBs; and (b) elasticities empirically related to the tax and NTB estimates to mediate the impact of changes in the NTB occasioned by a BIT or FTA.

Overall, however, this appears to be a promising direction for the quantitative assessment of BITs or FTA investment chapters on FDI flows.

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