

# **Data Transparency Matters: Evaluating the Effects of the Special Data Dissemination Standard (SDDS) on Foreign Portfolio Investments (FPI)**

Eighth annual meeting of the International Political Economy Society  
(October 25-26, 2013), Claremont Graduate School

**Krishna Chaitanya Vadlamannati**

NTNU (Trondheim, Norway)

**Artur Tamazian**

USC, Spain



NTNU  
Norwegian University of  
Science and Technology

# 1. Motivation

- Does data transparency matter ? Can accession to a data transparency program attract FPI and FEI inflows?
- Lot of anecdotal evidence on the importance of transparency initiatives (in general) in attracting foreign capital, *but empirical evidence on SDDS till date remains scant*, more so on transparency initiatives to do with “data standards” !
- Drabek and Pyne (2001) and Schmaljohann (2013) focus on FDI.
- When it comes to FPI: French and Poterba (1991); Tesar and Werner (1995); Brennan and Cao (1997); Hau (2001a,b) identify “informational constraints” as a key determinant of equity flows, turnover, performance (returns).
- However, accession to data transparency initiatives ensures higher inflow of FPI remains unexplored, a gap we fill in the literature.

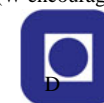


## 2. Standard Data Dissemination System (SDDS) program

- Launched by IMF in 1996 with the sole intention to help member states who want to access international capital markets seeking foreign investments.
- Goal to ensure availability of *timely and comprehensive stats based on best practices in computation and dissemination* thereby facilitate countries' pursuit of sound macroeconomic policies, improve access to and functioning of FMs.
- Four main dimensions of SDDS program is: (i) data coverage, period of coverage, timeliness; (b) access by investors and public; (c) integrity; and (d) quality of the compilation and disseminated data.
- These are applied to four key areas of economy covered by 18 indicators.
- Joining the SDDS program involves three stages: **Stage I** (entry & agreeing to the terms and conditions); **Stage II** (Dissemination Standards Bulletin Board); **Stage III** (compliance).



Category	Coverage		Periodicity	Timeliness
	Prescribed	Encouraged categories and/or components		
<b>I. REAL SECTOR</b>				
National accounts: nominal, real, and associated prices *	GDP by major expenditure category and/or by productive sector	Saving, gross national income	Q	Q
Production index/indices #	Industrial, primary commodity, or sector, as relevant	Forward-looking indicator(s), e.g., qualitative business surveys, orders, composite leading indicators index	M (or as relevant)	6W (M encouraged, or as relevant)
Labor market	Employment, unemployment, and wages/ earnings, as relevant		M or Q	M or Q
Price indices	Consumer prices and producer or wholesale prices		Q	Q
			M	M
<b>II. FISCAL SECTOR</b>				
General government or public sector operations, as relevant *	Revenue, expenditure, balance, and domestic (bank and nonbank) and foreign financing	Interest payments	A	2Q
Central government operations #	Budgetary accounts: revenue, expenditure, balance, and domestic (bank and nonbank) and foreign financing	Interest payments	M	M
Central government debt	Domestic and foreign, as relevant, with a breakdown by currency (including indexed), and a breakdown by maturity; debt guaranteed by central government, as relevant	Debt service projections: interest and amortization on medium and long-term debt (Q for next 4 quarters and then A) and amortization on short-term debt (Q)	Q	Q
<b>III. FINANCIAL SECTOR</b>				
Analytical accounts of the banking sector *	Money aggregates, domestic credit by public and private sector, external position		M	M
Analytical accounts of the central bank #	Reserve money, domestic claims on public and private sector, external position		M (W encouraged)	2W (W encouraged)
Interest rates	Short-term and long-term government security rates, policy variable rate	Range of representative deposit and lending rates		
Stock market	Share price index, as relevant		D	1/



#### IV. EXTERNAL SECTOR

Balance of payments *	Goods and services, net income flows, net current transfers, selected capital (or capital and financial) account items (including reserves)	Foreign direct investment and portfolio investment	Q	Q
International reserves and foreign currency liquidity #	Total official reserve assets (gold , foreign exchange , SDRs , and Fund position); other foreign currency assets; predetermined short-term drains on foreign currency assets; contingent short-term drains on foreign currency assets; and related items. 2/		M (W encouraged)	W for total official reserve assets; M for all other items (W encouraged)
Merchandise trade #	Exports and imports	Major commodity breakdowns with longer time lapse	M	8W (4-6W encouraged)
International investment position	See <a href="#">specifications</a>		A (Q encouraged)	3Q (Q encouraged)
Exchange rates	Spot rates and 3- and 6-month forward market rates, as relevant		D	1/
External debt	Debt of the general government, the monetary authorities, the banking sector, and other sectors. Data should also be broken down by maturity-short-term and long-term on an original maturity basis and by instrument, as set out in the BPM5.	See <a href="#">specifications</a>	Q	Q

#### Addendum: POPULATION

Key distributions, e.g., by age and sex



**NTNU**  
Norwegian University of  
Science and Technology

### 3. Why Data Transparency is important ?

- Institutional investors' decision on investments are based on macroeconomic and financial data, but not all the investors have time and money to collect information they need.

How can SDDS initiative help?

- Access to information made easy (reduces searching time) for investors.
- Reduces information cost to access the data/information for potential investors.
- Reduces duplicity and provides authentic information to the potential investors.
- Accession to SDDS is also a 'signalling strategy' adopted by host countries, specially developing countries and other indirect effects (Sahin 2012, Fratzscher and Reynaud 2010)

## Exhibit: List of countries with SDDS accession

Country	Date of Subscription	Date when subscription met
Argentina	16-Aug-96	01-Nov-99
Armenia	07-Nov-03	07-Nov-03
Australia	19-Apr-96	23-Jul-01
Austria	04-Sep-96	05-Jul-01
Belarus, Republic of	22-Dec-04	22-Dec-04
Belgium	06-Jun-96	26-Jan-01
Brazil	14-Mar-01	14-Mar-01
Bulgaria	01-Dec-03	01-Dec-03
Canada	20-Apr-96	19-Feb-99
Chile	17-May-96	30-Mar-00
Colombia	31-May-96	09-May-00
Costa Rica	28-Nov-01	28-Nov-01
Croatia	20-May-96	30-Mar-01
Cyprus	01-Dec-09	01-Dec-09
Czech Republic	21-Apr-98	04-Jun-99
Denmark	07-Jun-96	01-Sep-00
Ecuador	27-Mar-98	14-Jul-00
Egypt	31-Jan-05	31-Jan-05
El Salvador	05-Jun-98	12-Oct-99
Estonia	30-Sep-98	30-Mar-00
Finland	03-Jun-96	02-Jun-00
France	08-Aug-96	27-Apr-01
Georgia	17-May-10	17-May-10
Germany	02-Dec-96	23-Mar-00
Greece	08-Nov-02	08-Nov-02
Hungary	24-May-96	24-Jan-00
Iceland	21-Jun-96	30-Jun-04
India	27-Dec-96	14-Dec-01
Indonesia	24-Sep-96	02-Jun-00
Ireland	26-Jul-96	17-Jul-01
Israel	23-Apr-96	05-Jun-00
Italy	13-Aug-96	14-Apr-00
Japan	03-Jul-96	09-Jun-00
Jordan	28-Jan-10	28-Jan-10
Kazakhstan	24-Mar-03	24-Mar-03
Korea, South	20-Sep-96	01-Nov-99
Kyrgyz Republic	26-Feb-04	26-Feb-04
Latvia	01-Nov-96	28-Sep-99
Lithuania	30-May-96	12-Jul-99
Macedonia, FYR	21-Nov-11	21-Nov-11

Country	Date of Subscription	Date when subscription met
Moldova, Republic of	02-May-06	02-May-06
Morocco	15-Dec-05	15-Dec-05
Netherlands	11-Jun-96	26-Apr-00
Norway	18-Jun-96	28-Apr-00
Peru	07-Aug-96	15-Jul-99
Philippines	05-Aug-96	17-Jan-01
Poland	17-Apr-96	02-Mar-00
Portugal	11-Sep-97	01-Dec-00
Romania	04-May-05	04-May-05
Russian Federation	31-Jan-05	31-Jan-05
Singapore	01-Aug-96	30-Jan-01
Slovak Republic	10-Sep-96	07-Oct-99
Slovenia	02-Aug-96	07-Jul-00
South Africa	02-Aug-96	18-Sep-00
Spain	27-Sep-96	21-Dec-00
Sweden	31-May-96	29-Jun-00
Switzerland	11-Jun-96	18-May-01
Thailand	09-Aug-96	16-May-00
Tunisia	20-Jun-01	20-Jun-01
Turkey	08-Aug-96	20-Jul-01
Ukraine	10-Jan-03	10-Jan-03
United Kingdom	16-Apr-96	06-Jul-99
United States	06-May-96	19-Feb-99
Uruguay	12-Feb-04	12-Feb-04



Figure 1: Average FPI and FPE inflows and SDDS initiative (All countries)

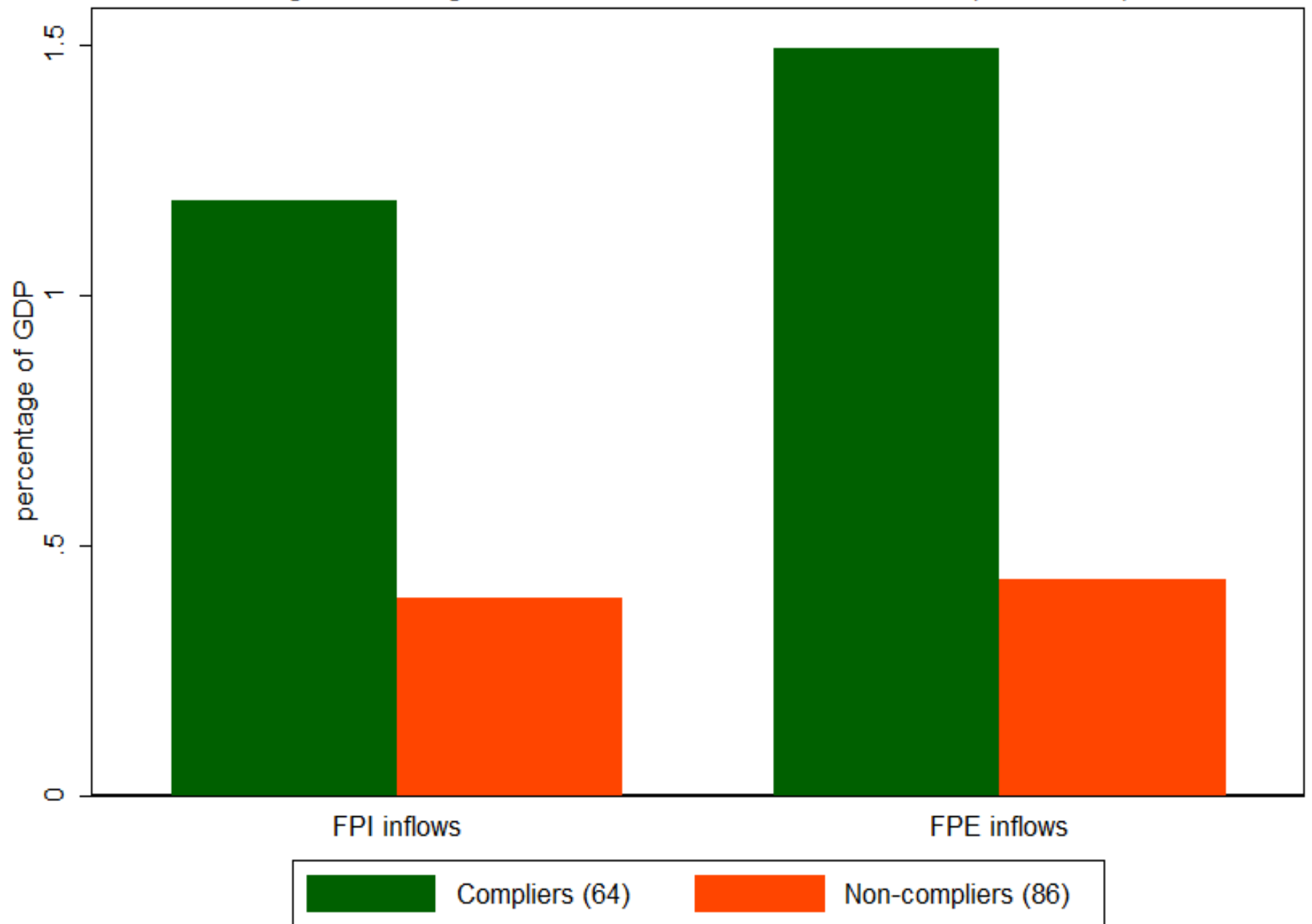
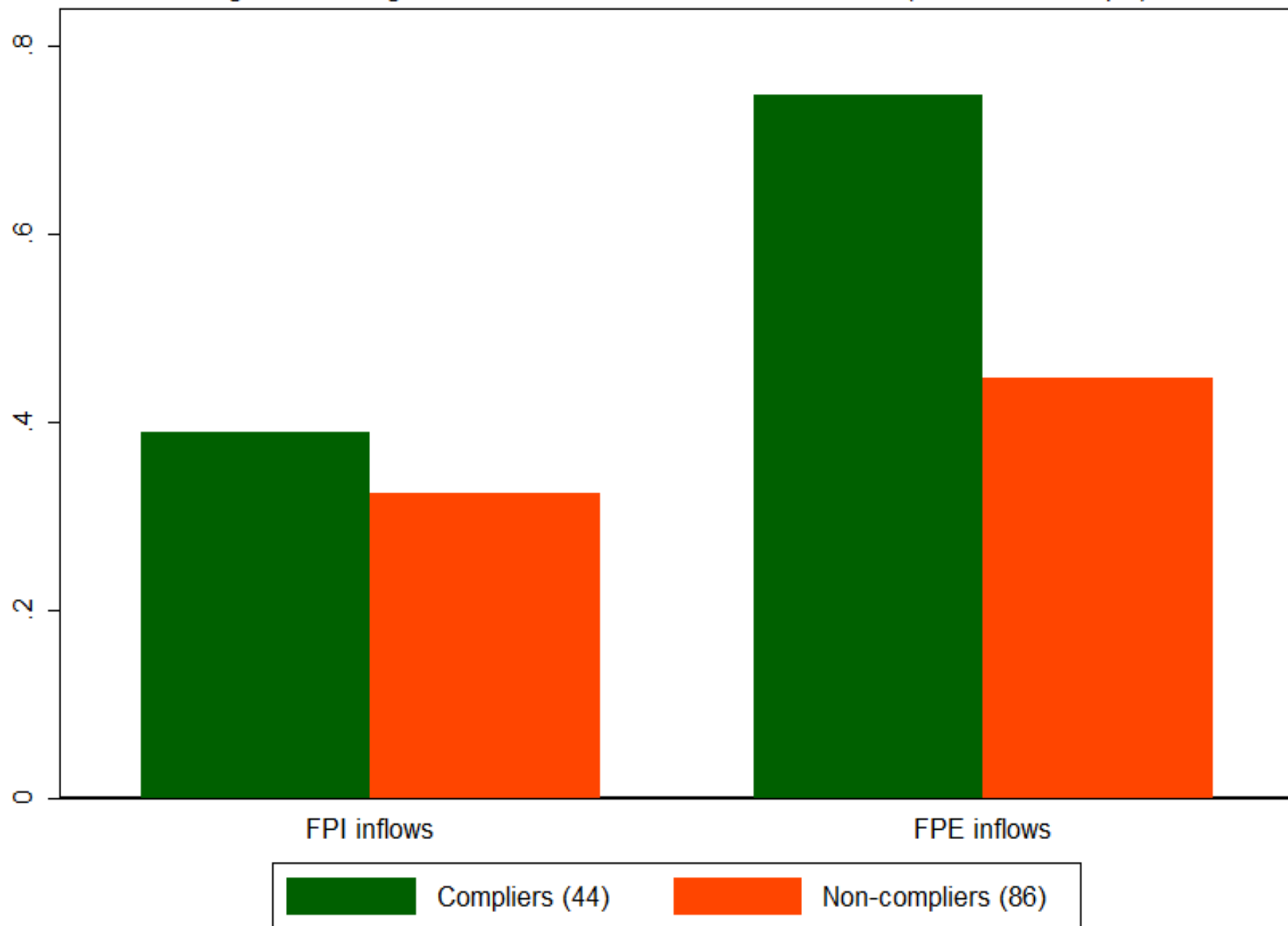




Figure 2: Average FPI and FPE inflows and SDDS initiative (non-OECD sample)



## 4. Data and Methods

- We use panel data covering 150 countries during 1996-2011 period.
- Estimating the effects of SDDS initiative on FPI is not straight forward:
  - Joining and complying with SDDS program is NOT a random event, so self-selection bias
  - Estimating such models with OLS is fraught with serious selection bias
- We therefore use *Treatment regression estimator* which:
  - Takes into account the determinants of why countries join and comply with SDDS.
  - Better than Heckman (1979) because it models non-random treatment in a non-linear specification and then allows to estimate the effects of SDDS on FPI using a linear estimator.
  - Heckman (1979) observes ONLY outcome of interest, while *Treatment regression* observes both outcomes.

$$SDDS \quad join_{it} = \phi_i + \beta Z_{it} + \lambda_t + \omega_{it} \quad (1)$$

$$DV_{it} = \phi_i + \beta_1 SDDS \quad join_{it} + \beta_2 Z_{it} + v_i + \lambda_t + \omega_{it} \quad (2)$$

$$SDDS \quad comp_{it} = \phi_i + \beta Z_{it} + \lambda_t + \omega_{it} \quad (3)$$

$$DV_{it} = \phi_i + \beta_1 SDDS \quad comp_{it} + \beta_2 Z_{it} + v_i + \lambda_t + \omega_{it} \quad (4)$$



## Exhibit: List of control variables used

<b>List of variables in FPI /FEI equation</b>	<b>Proxy</b>
Per capita GDP (log)	Income levels
GDP Growth Rate	Economic performance
Democracy (Polity rescaled on 1-21)	Political regime
Economic Crisis dummy	Crisis
Exchange Rate Growth Rate	Volatility in Real Exchange rate
Inflation $[(p/100)/(1+(p/100))]$	Macroeconomic vulnerability
Government Consumption/GDP	Deficit
Regulatory Quality	Ability to form policies & implement
<b>List of variables in SDDS equation</b>	<b>Proxy</b>
Per capita GDP (log)	Level of Development
GDP Growth Rate	Economic performance
Democracy (Polity rescaled on 1-21)	Political regime
Economic Crisis dummy	Crisis
IMF program dummy	External pressures
UNSC membership	External pressures
UNGA voting index	External pressures



## Methodological issues

- Controlling for two-way fixed effects ?
- Controlling for a Lagged dependent variable ?
- Endogeneity (& LDV) issue ?



**Table 1:** Impact of entry and compliance with SDDS on FPI (Baseline models)

	(1)	(2)	(3)	(4)	(5)
	Portfolio/GDP	Portfolio/GDP	Portfolio/GDP	Portfolio/GDP	Portfolio/GDP
Constant	0.0124 (0.308)	0.273 (0.362)	-12.54** (5.083)	-7.756 (4.785)	-0.399 (0.282)
Lagged Dependent Variable					0.789*** (0.00247)
<b>SDDS Signed</b>	<b>-0.572</b> <b>(0.736)</b>		<b>-0.628</b> <b>(0.719)</b>		
<b>SDDS Complied</b>		<b>4.334***</b> <b>(1.498)</b>		<b>4.196***</b> <b>(1.483)</b>	<b>0.971***</b> <b>(0.338)</b>
Per capita GDP (log)			1.702** (0.664)	1.142* (0.626)	0.0433* (0.0250)
GDP Growth Rate			0.0116 (0.0227)	0.0204 (0.0208)	0.00515 (0.00869)
Democracy			-0.197 (0.253)	-0.503 (0.343)	-0.0262 (0.0671)
Economic Crisis Dummy			-0.769 (0.679)	-1.521 (1.316)	-0.195 (0.316)
Exchange Rate Growth Rate			-0.000225 (0.00100)	0.00100 (0.00120)	0.000393 (0.000942)
Regulatory Quality			1.043** (0.498)	0.981* (0.565)	0.0193 (0.0661)
Inflation			2.065** (0.885)	2.080* (1.158)	-0.427 (0.534)
Government Consumption/GDP			-0.0312 (0.0200)	-0.0544** (0.0264)	-0.00411 (0.00578)

	SDDS: sign	SDDS: comply	SDDS: sign	SDDS: comply	
Constant	-2.170*** (0.368)	-2.826*** (0.544)	-2.171*** (0.368)	-2.805*** (0.544)	
Per capita GDP (log)	0.161*** (0.0448)	0.150*** (0.0510)	0.161*** (0.0448)	0.146*** (0.0517)	
GDP Growth Rate	0.0395*** (0.0140)	0.0368** (0.0154)	0.0396*** (0.0140)	0.0357** (0.0154)	
Democracy	0.200 (0.169)	0.207 (0.178)	0.200 (0.169)	0.213 (0.178)	
Economic Crisis Dummy	0.135 (0.376)	-0.0531 (0.416)	0.127 (0.376)	0.110 (0.469)	
IMF Program Participation	-0.0255 (0.229)	0.183 (0.176)	-0.0249 (0.229)	0.172 (0.178)	
UNSC Member	0.307* (0.166)	0.330* (0.171)	0.307* (0.166)	0.321* (0.172)	
Arellano-Bond test for AR(2): p-value					0.784
Hansen Statistic (p-value)					0.399
Number of Instruments					63
Estimation technique	<i>Treatreg</i>	<i>Treatreg</i>	<i>Treatreg</i>	<i>Treatreg</i>	SGMM
Number of Countries	131	131	130	130	132
Total Observations	2001	1653	1935	1603	1638

**Notes:** Country fixed effects (for the treatment regression only for the linear estimation) and year dummies are included and robust standard errors in parenthesis. \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

**Table 2:** Impact of entry and compliance with SDDS on FEI inflows

	(1)	(2)	(3)	(4)	(5)
	Equity/GDP	Equity/GDP	Equity/GDP	Equity/GDP	Equity/GDP
Constant	-0.184 (0.262)	-0.153 (0.296)	-7.973 (5.011)	-3.047 (4.306)	0.300 (0.186)
Lagged Dependent Variable					0.791*** (0.00117)
<b>SDDS Signed</b>	<b>-0.787</b> <b>(0.708)</b>		<b>-0.822</b> <b>(0.694)</b>		
<b>SDDS Complied</b>		<b>4.126***</b> <b>(1.525)</b>		<b>3.994***</b> <b>(1.530)</b>	<b>1.731***</b> <b>(0.156)</b>
Per capita GDP (log)			1.071 (0.653)	0.442 (0.562)	-0.00712 (0.0185)
GDP Growth Rate			0.0209 (0.0224)	0.0384* (0.0202)	-0.00297 (0.00606)
Democracy			-0.0462 (0.185)	0.0412 (0.182)	0.104* (0.0543)
Economic Crisis Dummy			-0.770 (0.674)	-1.281 (1.304)	-0.586*** (0.176)
Exchange Rate Growth Rate			0.000255 (0.000975)	0.00163 (0.00126)	0.000208 (0.000771)
Regulatory Quality			0.999** (0.486)	1.142** (0.561)	0.155*** (0.0476)
Inflation			2.462*** (0.859)	2.237** (1.131)	-0.0535 (0.365)
Government Consumption/GDP			-0.0506*** (0.0189)	-0.0770*** (0.0262)	-0.0112** (0.00513)



	SDDS: sign	SDDS: comply	SDDS: sign	SDDS: comply	
Constant	-2.143*** (0.368)	-2.899*** (0.525)	-2.144*** (0.368)	-2.867*** (0.531)	
Per capita GDP (log)	0.166*** (0.0450)	0.160*** (0.0502)	0.166*** (0.0450)	0.158*** (0.0507)	
GDP Growth Rate	0.0399*** (0.0142)	0.0431*** (0.0144)	0.0401*** (0.0142)	0.0394*** (0.0147)	
Democracy	0.168 (0.172)	0.182 (0.184)	0.168 (0.172)	0.172 (0.186)	
Economic Crisis Dummy	0.113 (0.380)	0.0230 (0.424)	0.105 (0.380)	0.148 (0.487)	
IMF Program Participation	-0.0457 (0.235)	0.192 (0.171)	-0.0448 (0.234)	0.181 (0.173)	
UNSC Member	0.281* (0.167)	0.298* (0.172)	0.281* (0.166)	0.287* (0.174)	
Arellano-Bond test for AR(2): p-value					0.762
Hansen Statistic (p-value)					0.135
Number of Instruments					63
Estimation technique	<i>Treatreg</i>	<i>Treatreg</i>	<i>Treatreg</i>	<i>Treatreg</i>	SGMM
Number of Countries	128	128	128	128	129
Total Observations	1935	1603	1935	1603	1585

**Notes:** Country fixed effects (for the treatment regression only for the linear estimation) and year dummies are included and robust standard errors in parenthesis. \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$



## Checks on Robustness:

- We lag the SDDS compliance by one, two and three years respectively.
- We also drop 20 developed countries with well developed capital markets.
- We also control for UN General Assembly voting alignment in first step of *treatment regression* (along with UNSC membership).
- We estimate 2SLS-IV (FE) specification in which we use UNGA voting alignment index and UNSC membership as ‘instruments.’
- We also drop countries which are ‘outliers’ in FPI and FEI inflows, to examine if our results are driven by these outliers in the sample.
- We close other potential transmission channels viz., *economic reforms, investors’ perception* and *governance transparency*.



## 6. Take away points

- Evidence in favour of accession to data transparency program is strong predictor of FPI inflows (controlling for other relevant factors).
- These effects remain robust to various alternative sample, estimation techniques, operationalization of SDDS compliance variable.
- Transparency matters ! So, countries, specially developing countries which are often short of capital in balancing their books can embark on data transparency initiatives like SDDS.
- IMF, whose role is only voluntary, might want to play an active role in convincing member countries about the benefits of accession.

