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The Catalytic Effect and the IMF: The Relationship between Capital Inflows and IMF Program Characteristics

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Abstract

Interventions of the International Monetary Fund (IMF) are believed to impact external capital inflows to recipient countries, which has the potential to amplify the overall effectiveness of IMF programs. However, the true extent of this catalytic effect remains debated. While previous studies have examined the catalytic effect of the IMF at the aggregate level, this research isolates specific types of IMF programs and analyzes their relationship with specific types of financial inflows for a better understanding of the heterogeneity in program effectiveness with respect to the catalytic effect. I find that program type plays a significant role in the strength of the catalytic effect. Longer-term, intense programs directed at crisis management in middle-income countries as well as programs that are directed towards growth generation and poverty alleviation in low-income countries have robust evidence of a catalytic effect while short-term, less intrusive programs do not. Within different capital flow types, there is also differing evidence of a catalytic effect. Aid provides robust evidence of a catalytic effect and foreign direct investment provides some evidence in specific circumstances, but portfolio investment provides weak evidence. Program size seems to weaken the catalytic effect in certain situations but plays a relatively minor role.

1. Introduction

The International Monetary Fund (IMF) has been a major player in managing financial and economic crises across the developing world for over 70 years. Its significant financial resources and policy expertise have given it an important role as both a lender of last resort and a driver of policy reform in crisis situations. However, its track record remains hotly debated as both researchers and policymakers question the IMF's ability to successfully address macroeconomic issues. While it is difficult to analyze the overall economic effects of an IMF intervention, isolating specific outcome variables can contribute to the overall understanding of the effectiveness of the IMF.

An indirect yet important aspect of an IMF intervention is how it influences capital flows both into and out of a recipient country. The extent of this phenomenon, dubbed the catalytic effect, has been difficult to consistently measure, and the research remains divided about it. This paper, after establishing the background of both the current research paradigm and IMF, granularizes capital flows and focuses on IMF intervention characteristics to highlight the specific factors that are most relevant for a robust catalytic effect. Concluding remarks will relate the regression results to the IMF and its credibility as well as highlight the potential channels through which the catalytic effect materializes.

The catalytic effect has implications for both the economic development of a recipient country as well as for the analysis of the effectiveness of the IMF. Furthermore, the catalytic effect also plays a role in the success of an IMF program and the larger economic stability of a recipient country. The simplest benefit of the catalytic effect is that increased levels of capital,

available either to the government or to other economic actors within the country, have positive implications for development and would provide a boost to the recipient country's economy.

Beyond this benefit, the catalytic effect would also help ease issues related to the success of policy reform and IMF intervention. Two stumbling blocks to program success that the catalytic effect helps alleviate are adjustment time and policy follow-through. IMF programs typically involve somewhat painful policy adjustments, which are often unpopular among the electorate, in order to solve macroeconomic issues. More capital inflows to a country give a government more breathing room to implement these policies without losing as much support. Going hand in hand with this idea is that sticking to new policies even after implementation can be a difficult task as governments may lose the political will to follow through on difficult and unpopular adjustment policies. More capital can help a government follow through on implemented policies by providing it with more financial resources to support the reforms and by reducing general opposition to the adjustments.

Additionally, the presence of the catalytic effect can change the cost-benefit calculation for a country deciding whether to accept an IMF intervention. Taking IMF loans is a significant decision for countries as IMF programs come with significant advantages and disadvantages for a recipient government. Countries must decide if having to make often unpopular reforms that are imposed by an outside entity is a cost worth the funds and assistance granted by the IMF. The catalytic effect provides another benefit as higher levels of capital inflows would be a distinctly positive event for countries receiving IMF interventions.

The analysis of the catalytic effect also helps understand the credibility of the IMF in the eyes of developed countries and international investors. There are a few channels through which the catalytic effect can arise (e.g., signaling, conditionality), but regardless of the specific

channel, they relate to signals sent directly or indirectly by the IMF. The catalytic effect can act as a barometer, in a sense, of how seriously investors believe that the IMF can bring about desirable changes as it requires investors to "put their money where their mouth is." In summary, the catalytic effect has implications for many facets of an IMF intervention, from overall economic development to policy reform and program success and also to a better understanding of the credibility of the organization.

Following this discussion of the relevance of the catalytic effect, an overview of the existing literature will be presented in section 2. Section 3 gives an overview of the IMF and its programs. Section 4 summarizes the data used in the analysis while section 5 gives a more detailed description of this data and trends observed over time. Section 6 provides the econometric models to be estimated and the rationale for the regression analysis while also. Section 7 presents the core regression results with section 7.1 presenting the basic OLS models and section 7.2 presenting the models with program size as an added variable. Section 8 presents the difference-in-difference models with the methodology in section 8.1 and the results in section 8.2. Finally, section 9 summarizes the findings and concludes with an interpretation of the results.

2. Literature Review

As the potential benefits of the catalytic effect have become more understood, research on this phenomenon has risen in importance. Despite the increase in research on this topic, especially over the past twenty years, a consensus on the size, direction, and even existence of the catalytic effect remains elusive. In an effort to clearly examine the literature on the catalytic

effect, the literature review will first cover theoretical papers and then move to empirical studies that analyze the catalytic effect in various situations.

Many authors have attempted to explain the theory behind the catalytic effect would. Cottarelli and Giannini (2002) argue that the IMF provides five potential channels that could incentivize additional capital flows from non-IMF agents: policy design, information, commitment, screening, and insurance[1]. However, they do not find much evidence of the catalytic effect through any of these theorized channels. They further argue that even when the effect is present it is weakened by crises of greater magnitude[2]. Corsetti et al. (2006) contend that the catalytic effect represents the tradeoff between liquidity and moral hazard[3]. They posit that the influence of the IMF helps prevent liquidity runs by setting expectations and increasing the number of investors in a country[4]. They also suggest that the IMF's influence is proportional to the size of the intervention, as more funding would support liquidity[5].

Zwart (2007) presents a bank run model where both the liquidity and signaling effects of an IMF program occur[6]. Zwart argues that the liquidity support from high levels of resources can offset the negative signals of an IMF entry. But without enough resources, the IMF does not have the firepower to offset the negative signals sent by its intervention[7]. Morris and Shin (2007) present a model of a debt crisis, a problem that the IMF often confronts, caused by creditor

[1] Cottarelli, Carlo, and Curzio Giannini (2002). "Bedfellows, Hostages, or Perfect Strangers? Global Capital Markets and the Catalytic Effect of IMF Crisis Lending." IMF Working Paper 02/193
[2] Ibid.
[3] Corsetti, G., B. Guimaraes, and N. Roubini (2006). International Lending of Last Resort and Moral Hazard: A Model of IMF's Catalytic Finance. Journal of Monetary Economics 53 (3), 441–471
[4] Ibid.
[5] Ibid.
[6] Zwart, S. (2007). "The Mixed Blessing of IMF Intervention: Signalling versus Liquidity Support". Journal of Financial Stability 3 (2), 149–174.
[7] Ibid.

coordination failure[8]. They argue that the success of the catalytic effect works through a combination of both greater adjustment efforts by the recipient country and a greater roll-over of claims by private sector creditors[9]. Chapman et al. (2001) present a model which shows that the catalytic effect is predicated on how outside investors interpret the signal of the IMF intervention[10]. If investors view the intervention as sign of weakness in a country's macroeconomic environment, then the catalytic effect will not appear. However, if the market perceives the IMF program as reducing the risk of a worsening macro situation, then the catalytic effect has a much greater chance of materializing[11].

While the theory outlining the potential channels and impacts of the catalytic effects is important as a background, the empirical research shows its real-world implications. For the past two to three decades during which the catalytic effect has come into focus as an impactful phenomenon, the empirical literature has yet to reach a consensus on the nature and extent of this effect. Chapman et al. (2017) even focus part of their research on this idea and find that IMF intervention impacts capital flows in multiple ways (e.g., revealing private information, providing liquidity and conditionality) that often have contradictory effects[12]. This can lead to inconsistency in the analysis of the catalytic effect as different perspectives and research methods may analyze different aspects of the IMF intervention impacts[13].

Much of the literature, especially that of the late 1990s and early 2000s, argues against the existence of the catalytic effect. Ghosh et al. (2002) argue unequivocally that the catalytic

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[8] Morris, S. and H. S. Shin (2006). "Catalytic Finance: When Does it Work?". Journal of International Economics 70 (1), 161–177.
[9] Ibid.
[10] Chapman, T., Fang, S., & Stone, R. (2011). The Conditional Nature of the IMF Catalytic Effect.
[11] Ibid.
[12] Chapman, Terrence, Songying Fang, Li Xin, and Randall Stone. (2017) Mixed Signals: IMF Lending and Capital Markets. British Journal of Political Science 47(2):329–349.
[13] Ibid.

effect does not exist in a positive way[14]. The authors note that the catalytic effect is an important

assumption when devising crisis programs, but it has repeatedly failed to balance out capital

outflows, which are often larger than expected[15]. This combination of higher-than-expected

outflows and lower-than-expected inflows can present significant obstacles to the success of an

IMF intervention. Al-sadiq (2015) focuses on the catalytic effect for Foreign Direct Investment

(FDI) inflows in low-income countries. He does find a positive catalytic effect and shows that

countries with IMF-sponsored programs were able to attract higher FDI flows than countries

without IMF intervention[16]. He examines the extent of this effect and finds that, on average,

countries with an IMF intervention could attract up to four times more FDI as a percentage of

their GDP than countries without one[17]. Edwards (2006) finds that countries with IMF

intervention see significant levels of portfolio investment outflows[18]. Edwards argues that this

effect occurs because the austerity policies typically put in place by IMF programs deter inflows

by reducing potential future expected returns[19]. Erce and Riera-Crichton (2015) analyze gross

capital flows, as opposed to net capital inflows[20]. They find that IMF-sponsored programs do not

have any impact on foreign capital, but they do cause residents to become more likely to

repatriate assets[21].

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[14] Ghosh, A., Lane, T., Schultze, G., Bulir, M., Hasmann, J. and A. Mourmouras (2002). "IMF Supported Programs in Capital Account Crises", IMF Occasional Paper No. 210.
[15] Ibid.
[16] Al-Sadiq, Ali (2015). "The Impact of IMF-Supported Programs on FDI in Low-income Countries." IMF Working Papers 15, no. 157.
[17] Ibid.
[18] Edwards, Martin S. (2006). "Signaling Credibility? The IMF and Catalytic Finance". Journal of International Relations and Development, Vol. 9, No. 1, pp. 27-52, March 2006.
[19] Ibid.
[20] Erce, Aitor and Riera-Crichton, Daniel (2015). "Catalytic IMF? A Gross Flows Approach". Globalization and Monetary Policy Institute Working Paper No. 254.
[21] Ibid.

Gehring and Lang (2018) show that, after accounting for endogenous selection of countries into IMF programs (i.e., how unstable countries make up a large percentage of the participants in IMF programs), the negative market reactions that may be assumed to come from IMF intervention disappear[22]. Rather, the IMF can actually send a positive signal and help prevent the creditworthiness assessments of a country from falling[23]. Diaz-Cassou et al. (2006) highlight potential situations under which the catalytic effect may occur, since they note that, in aggregate, IMF programs do not increase total private capital inflows[24]. They find that larger programs focused on crisis prevention or long-term development fare better than IMF programs with smaller access limits that are focused on different goals[25]. They also find that program conditionality and compliance is more important than the initial signaling provided by the intervention[26]. Van der Veer and de Jong (2010) find that the catalytic effect materializes in middle-income countries that avoid debt restructuring[27]. The debt restructuring appears to be a clear deterrent to lenders, and its avoidance helps provide a positive signal from IMF intervention[28]. They also note that the size of the intervention is not as significant a prerequisite for the catalytic effect as these other factors[29]. Krahnke (2020) examines the impact of IMF program size on the catalytic effect[30]. He finds evidence of a positive catalytic effect, but the

[22] Gehring, Kai and Lang, Valentin (2018). "Stigma or Cushion? IMF Programs and Sovereign Creditworthiness". CESifo Working Paper No. 7339.

[23] Ibid.

[24] Díaz-Cassou, Javier and Garcia-Herrero, Alicia and Molina, Luis (2006). "What Kind of Capital Flows Does the IMF Catalyze and When?". Banco de Espana Research Paper No. WP-0617.

[25] Ibid.

[26] Ibid.

[27] van der Veer, Koen and de Jong, Eelke (2010). "IMF-Supported Programs: Stimulating Capital to Solvent Countries". De Nederlandsche Bank Working Paper No. 244.

[28] Ibid.

[29] Ibid.

[30] Krahnke, Tobias (2020). "Doing More with Less: The Catalytic Function of IMF Lending and the Role of Program Size." Deutsche Bundesbank.

effect weakens once a certain program size is reached (IMF financing above 5% of GDP)[31].

Krahnke finds that this weakening is driven by a decrease in debt investment inflows which he

hypothesizes is due to the IMF crowding out investors since the IMF's preferred status as a

creditor increases the expected loss of investors if a default were to occur[32].

Another significant portion of the literature focuses on debt, both in terms of maturity and

interest rates, as a way to measure the catalytic effect. Mody and Saravia (2003) examine

whether IMF programs help countries improve the spreads on their bond issuances[33]. They do

not find a uniformly positive catalytic effect, but they do note that the commitment credibility of

the program is a major indicator of whether a catalytic effect will materialize. If the program

occurs before significant macroeconomic deterioration and is viewed as likely to lead to policy

reform, then there is much a higher chance the catalytic effect will present itself in the

international bond markets[34]. Arabaci and Ecer (2014) focus on both the interest rate and

maturity of debt, and they find that IMF-supported programs can lead to better access to

international bond markets, although this improvement may be somewhat biased towards

countries with more stable economies[35]. Mina and Martinez-Vazquez (2002) analyze the impact

IMF-sponsored programs have on the maturity of debt in developing countries[36]. They find that

IMF programs cause a reduction in short-term debt, relative to total debt, which indicates

creditors relaxing their loan structures because of the IMF presence[37]. Saravia (2013) analyzes

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[31] Ibid.
[32] Ibid.
[33] Mody, A., and D. Saravia (2003). "Catalyzing Private Capital Flows: Do IMF-Supported Programs Work as Commitment Devices?". IMF Working Paper 03/100
[34] Ibid.
[35] Arabaci, Mehmet C. and Ecer, Sencer (2014). The International Monetary Fund (IMF) and the Catalytic Effect: Do IMF Agreements Improve Access of Emerging Economies to International Financial Markets? (November 2014). The World Economy, Vol. 37, Issue 11, pp. 1575-1588.
[36] Mina, Wasseem & Martinez-Vazquez, Jorge. (2003). IMF Lending, Maturity of International Debt and Moral Hazard.
[37] Ibid.

debt maturity and finds that IMF-sponsored programs reduce the maturity of a country's debt, although this effect mainly arises in countries that are in more vulnerable situations[38].

Perhaps the least-studied aspect of the catalytic effect is its relationship to foreign aid. One of the original papers focused on aid and the catalytic effect is Bird and Rowlands (2007) who found that non-concessional programs did not have a significant effect on Official Development Assistance (ODA) flows, but concessional IMF programs did have a significant effect[39]. They argue this indicates that the catalytic effect does not rely on the conditionality or liquidity impacts of the IMF. Instead, it shows that the IMF plays a coordination role as it brings together aid donors and recipient countries at the opportune moment[40]. Bal Gunduz and Crystallin (2012) take a narrow approach to this question, focusing exclusively on low-income countries experiencing balance of payments issues from 1980 - 2010[41]. They find that there is evidence of a positive catalytic effect for ODA and that it is driven primarily by multilateral donors[42]. Stubbs et al. (2015) focus on specific form of aid flows (e.g., education, health, debt relief, etc.) and how the catalytic effect impacted each one of them[43]. They find that there is a positive catalytic effect for debt relief, infrastructure, production, and multisector aid, but this effect vanishes for education, general budget support, and humanitarian aid. They conclude that despite the existence of a positive catalytic effect, aid to important social policy areas is not heavily affected by the presence of IMF-supported programs[44]. Additionally, they note that

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[38] Saravia, D. (2013), "Vulnerability, Crisis and Debt Management: Do IMF Interventions Increase reliance on short term debt?". International Finance, Volume 16, Issue 3
[39] Bird, Graham & Rowlands, Dane. (2005). The IMF and the Mobilization of Foreign Aid.
[40] Ibid.
[41] Bal-Gunduz, Yasemin, and Masyita Crystallin (2014). "Do IMF-Supported Programs Catalyze Donor Assistance to Low-Income Countries?" IMF Working Papers 14, no. 202.
[42] Ibid.
[43] Stubbs, T. H., Kentikelenis, A. E., & King, L. P. (2015). "Catalyzing Aid? The IMF and Donor Behavior in Aid Allocation". World Development
[44] Ibid.

donor countries with a larger presences in the IMF (e.g., higher quota amounts) are more likely to increase aid to countries that are taking on IMF programs.

3. The IMF and its Programs

The literature gives perspective on the catalytic effect, but it is just as important to have a close understanding of the IMF to accurately frame the discussion on this phenomenon. According to the IMF, its mission focuses on international monetary cooperation, financial stability, facilitating international trade, promoting high employment, reducing poverty, and enabling strong economic growth[45]. When the IMF was established in 1944 at the Bretton Woods conference, its original focus was to ensure the stability of the international monetary system. That focus has since been expanded to include far broader economic goals surrounding stability and growth[46]. To accomplish these goals, the IMF has a significant number of financial resources derived from its member countries. While the amount of funds available for its operations fluctuates, it has roughly $1 trillion in assets available to lend to its 190 member countries[47]. All member countries pay a yearly quota based on their relative economic strength, and then the IMF has relatively free reign to disburse these funds. The IMF holds these funds in an asset called Special Drawing Rights (SDRs), the value of which is based on the value of a basket of major world currencies. The SDR represents a claim on the usable currencies of its member countries and is no longer used as an international reserve asset, as it was prior to the transition to floating exchange rates[48]. (One SDR is valued at roughly $1.40).

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[45]About the IMF." IMF. https://www.imf.org/en/About
[46] Ibid.
[47] Ibid.
[48] Ibid.

The IMF deploys its funds through lending programs with the caveat that recipient

countries must also implement IMF-recommended economic policies. While the IMF carries out

economic surveillance and regularly issues economic reports on countries, it cannot implement a

program without a country's consent. Due to the somewhat stringent conditions on IMF

programs, countries often look to the organization only as a last resort[49].

The IMF does not take a one-size fits all approach to lending and has various programs

that provide different lending frameworks for different situations. The main program the IMF

uses is the Stand-By Arrangement (SBA) that focuses on emerging market economies facing

external financing needs, often related to balance of payments issues. The interest rates on these

loans are non-concessional and the programs cover a length of 12-24 months[50]. Another popular

program is the Extended Fund Facility (EFF), which covers longer term programs than the SBA.

The EFF is designed to address structural economic issues, which typically take longer to

address than a one-time imbalance. These programs offer non-concessional interest rates and are

for time periods of three to four years[51]. The other common program type is the

ESAF/PRGF/ECF. Despite the different names, these are different iterations of the same

program with similar goals. The Enhanced Structural Adjustment Facility (ESAF) became the

Poverty Reduction and Growth Facility (PRGF) in 1999 which then became the Extended Credit

Facility (ECF) in 2009. This program type is designed for low-income countries, and it focuses

on sustainable growth and poverty reduction in recipient economies[52]. These programs have

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[49] About the IMF: Work: Lending. https://www.imf.org/external/about/lending.htm.
[50] "IMF Stand-By Arrangement (SBA)." IMF.
https://www.imf.org/en/About/Factsheets/Sheets/2016/08/01/20/33/Stand-By-Arrangement.
[51] "IMF Extended Fund Facility (EFF)." IMF.
https://www.imf.org/en/About/Factsheets/Sheets/2016/08/01/20/56/Extended-Fund-Facility.
[52] "IMF Extended Credit Facility (ECF)." IMF.
https://www.imf.org/en/About/Factsheets/Sheets/2016/08/02/21/04/Extended-Credit-Facility.

concessional lending terms, which make them attractive to low-income countries, and last from three to five years[53].

While these are the most popular programs the IMF offers, there are other options available for more niche situations. The Flexible Credit Line (FCL) is designed for developed countries that gives them a one-to-two-year credit line for crisis prevention. It is not conditioned on any particular policy implementation as the country is trusted to implement its own policies[54]. The Precautionary and Liquidity Line (PLL is another crisis prevention mechanism that provides liquidity to countries with already strong macroeconomic frameworks[55]. The Rapid Financing Instrument (RFI) provides assistance to countries that are experiencing unexpected shocks to their economies (e.g., natural disaster, commodity price volatility, etc.)[56]. The Rapid Credit Facility (RCF) is similar to the RFI in that it provides rapid assistance, but it is targeted at low-income countries and comes with concessional lending rates[57]. The Standby Credit Facility (SCF) provides low-cost financing for short term balance of payments issues in countries that may not require a fully-fledged SBA program[58].

The size of each IMF program varies widely, even programs of the same type, given the unique needs and characteristics of each intervention. Despite the difficulty in finding exact estimates for program sizes, it is possible to present the sizes of programs within the dataset to give a general estimate. The table below shows the average and standard deviation of lending in

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[53] Ibid.
[54] About the IMF: Work: Lending. https://www.imf.org/external/about/lending.htm.
[55] Ibid.
[56] Ibid.
[57] Ibid.
[58] Ibid.

millions of SDRs, along with the frequency of the programs with the caveat that only programs with a frequency of ten or more are included.

IMF Program Size and Prevalence			
Program Type	Average Size	Std. Dev.	Frequency
SBA	1654.26	4430.62	187
ESAF	108.10	118.58	145
PRGF	88.99	137.94	101
EFF	2509.30	5215.00	58
ECF	123.26	146.54	56
FCL	22293.54	19455.91	24

Figure 1: IMF Program Size and Prevalence

The three most popular programs are the SBA, EFF, and the ESAF/PRGF/ECF. However, between these programs, the differences in funding amounts are stark. EFF programs have by far the most access to funds at an average of 2,509 million SDRs per program. The SBA is allocated the next highest level of funds out of these three program types at 1,654 million SDRs on average. The ESAF has an average of 108 million SDRs allocated, the PRGF an average of 89 million SDRs allocated, and the ECF an average of 123 million SDRs allocated. The high standard deviations point to the significant differences in program size even among the same program type. Regardless of these standard deviations, it does seem clear that, on average, EFF programs involve the most funds, followed by SBA programs, and that the poverty reduction and low-income focused programs receive the least amount of funds. (This difference may be less extreme in reality when it is noted that the SBA and EFF programs target larger, more developed economies than the low-income focused programs that target countries with smaller economies.)

The prevalence of IMF programs over time is an interesting look at how IMF interventions have fluctuated over the past thirty years. We see that during times of crisis (e.g., the late 1990s, 2008), there is a significant rise in the number of IMF interventions, illustrating the IMF's role as a lender of last resort in times of crisis.
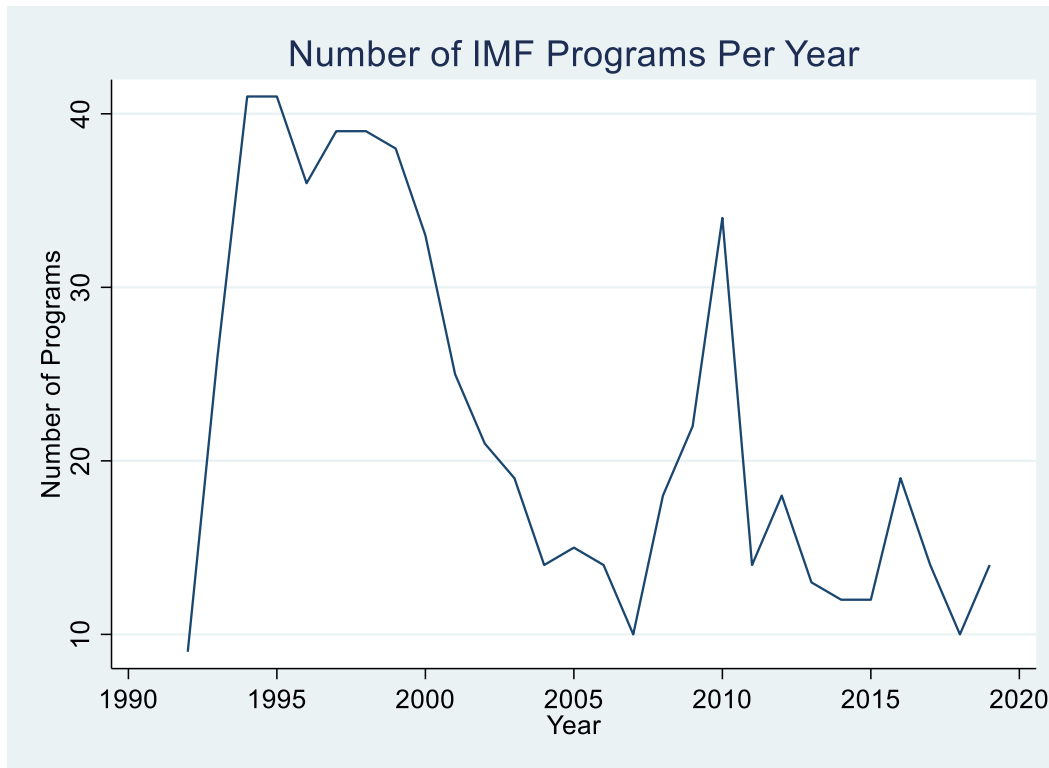
Figure 2: Number of IMF Programs per Year

The spike in IMF programs in the late 1990s corresponds to the Asian financial crisis while the spike in 2008-10 corresponds to the Great Recession following the housing market crisis in the U.S. We also see, however, that there is a distinct overall decreasing trend in the amount of IMF programs implemented per year. This decline in the IMF's lending activity from 1992 until 2020 has a few possible explanations. It could be that the general trends in economic growth have moved many countries away from needing to access the IMF. If there are fewer macroeconomic issues due to countries being in stronger economic positions today, then there is

less of a need for the IMF to act as a lender of last resort. Conversely, this trend could paint the

IMF in a negative light as it could indicate potential countries are opting for different lenders or

options in times of crises, which would indicate a downward trend in the prominence and

credibility of the IMF.

The final note about the IMF and its lending programs is the prevalence of repeat users.

Figure 3 shows the number of countries that have had repeat programs, with many countries

having used IMF programs many times over the past three decades.
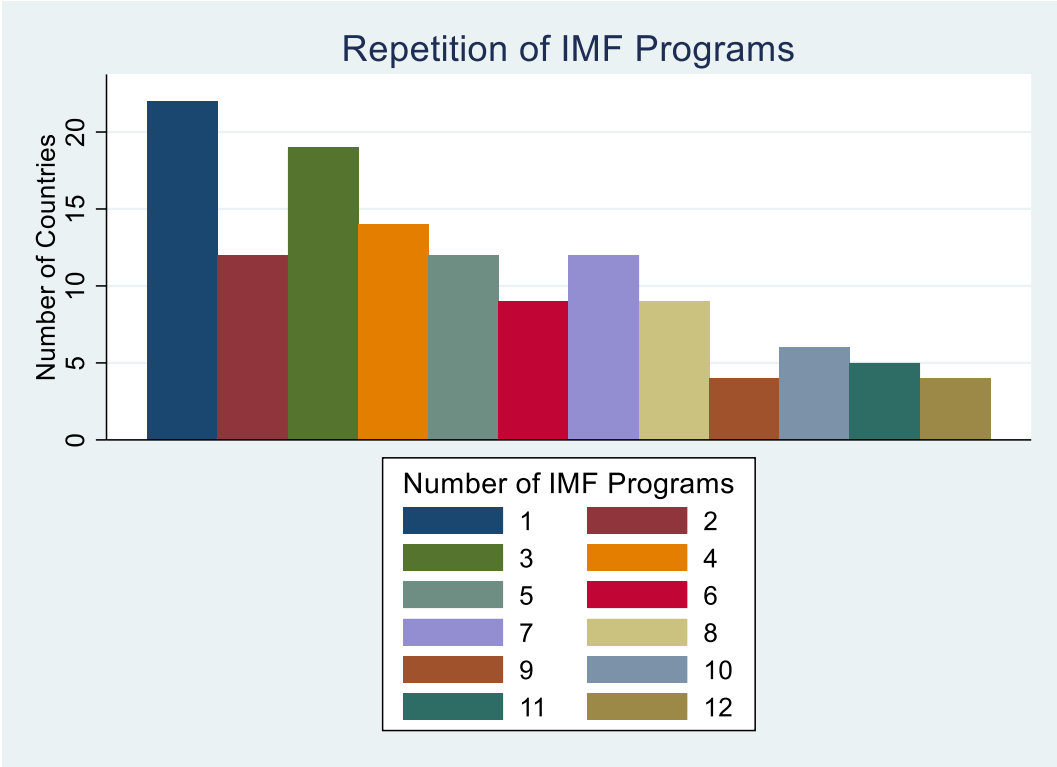
Figure 3: Repeat Users of the IMF

Being a repeat user of the IMF is not necessarily a bad thing. The IMF is designed to help

in times of crisis and many crises cannot be foreseen (e.g., natural disasters) or cannot be

forestalled without reform that would take significant time. However, figure 3 does show that

many countries have not reached a level of economic stability that would allow them to completely avoid the IMF's interventions.

4. Data

Now that a firm background of the IMF and the current research on the catalytic effect has been presented, we can begin moving towards the methods and findings of this paper, starting with a discussion of the data used. The IMF program data comes from the Monitoring of Fund Arrangements (MONA) database, published by the IMF. The data covers all IMF interventions from 1992 to 2020 and is exhaustive in its detail, including project dates, total funds allocated, and program objectives and outcomes[59]. This data leads to the creation of the IMF dummy variables used in the regressions presented in this research. The basic dummy variable used in the regression analysis takes a value of one if an IMF-sponsored program is active in that given year and a value of zero if not. Three more specific dummy variables that reference individual IMF program types are also created from this data. The three other dummies focus on the three most popular program types: SBA, EFF, and ESAF/PRGF/ECF. Total access, which refers to the level of resources allocated by the IMF to a specific intervention, is also analyzed in relation to its effect on capital inflows.

The financial flow variables, the focus of the catalytic effect, are used as dependent variables in the regression analysis. Three different categories of financial flows are looked at: Foreign Direct Investment (FDI), portfolio flows (which are further broken down into equity and bond flows), and Official Development Assistance (ODA). The data for FDI and portfolio flows

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[59] "MONA - Monitoring of Fund Arrangements." IMF. https://www.imf.org/external/np/pdr/mona/index.aspx.

comes from the World Bank, who combine data from the IMF, the UN, and their own sources. The ODA data comes from the OECD.

The control variables used in these regressions are derived from the existing literature and macroeconomic theory. These variables are log GDP per capita, inflation, broad money to GDP, exports to GDP, the Chinn-Ito index, the Federal Funds rate, and the CBOE Volatility Index (Vix). GDP per capita, inflation, the broad money index, and the exports ratio variables account for the macroeconomic strength and stability of a country. The Chinn-Ito[60] index, which is widely cited in the literature, reflects the capital openness of countries by weighing relevant factors such as exchange rate regimes, capital account restrictions, and the surrender of export proceeds. The Federal Funds rate and the Vix measure global macroeconomic volatility and instability. (The Vix is a measure of the expectation of the future 30-day volatility in the S&P 500, and the Fed Funds rate is a benchmark interest rate in the U.S.)

5. Descriptive Statistics

Prior to the regression analysis, a summary of the data is displayed to provide context for the analysis and to better understand the variables used in the regression models. We look at trends both over time and based on income classification. The differences between the group of countries that have ever had an IMF program and the group that has never had an IMF program are also analyzed. Figures 4 through 6 below illustrate the three sets of capital flow variables analyzed.

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[60] Chinn, Menzie D. and Hiro Ito (2006). "What Matters for Financial Development? Capital Controls, Institutions, and Interactions," Journal of Development Economics, Volume 81, Issue 1, Pages 163-192 (October).

ln FDI per capita Inflows
Ever/Never IMF X Income Classification
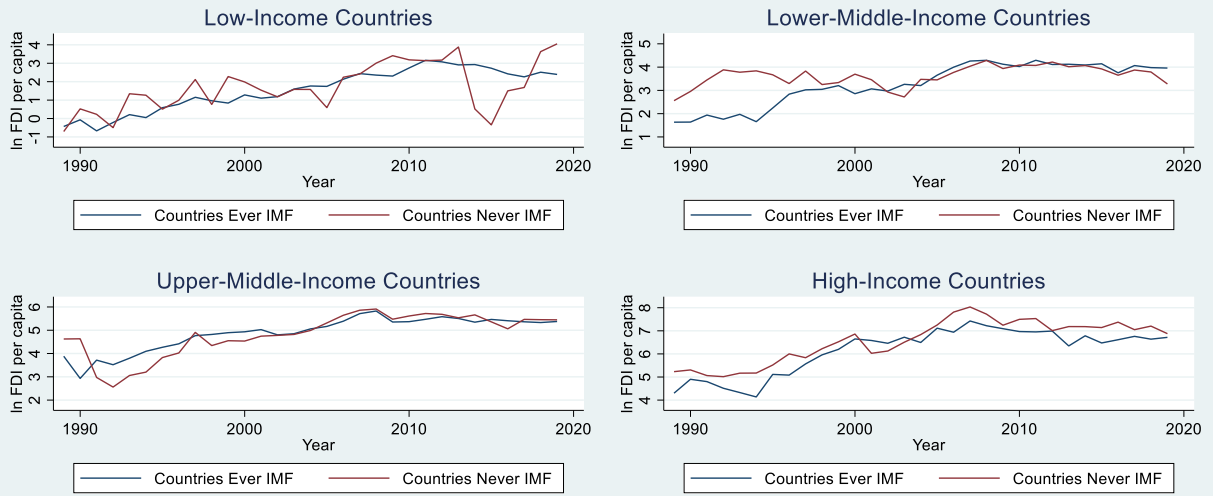
Figure 4: FDI Inflows

ln Portfolio Investment per capita Inflows
Ever/Never IMF X Income Classification
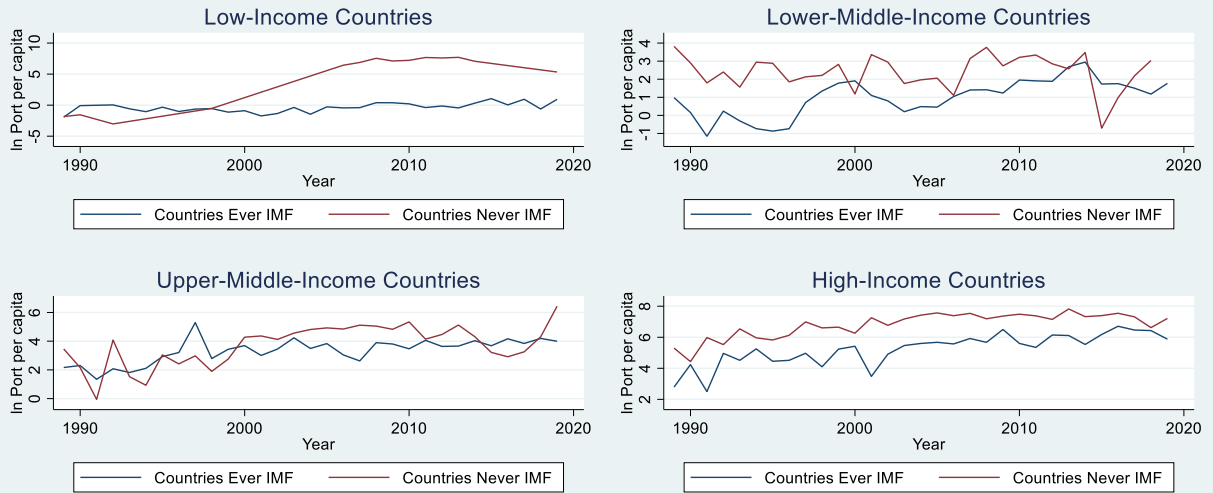
Figure 5: Portfolio Inflows

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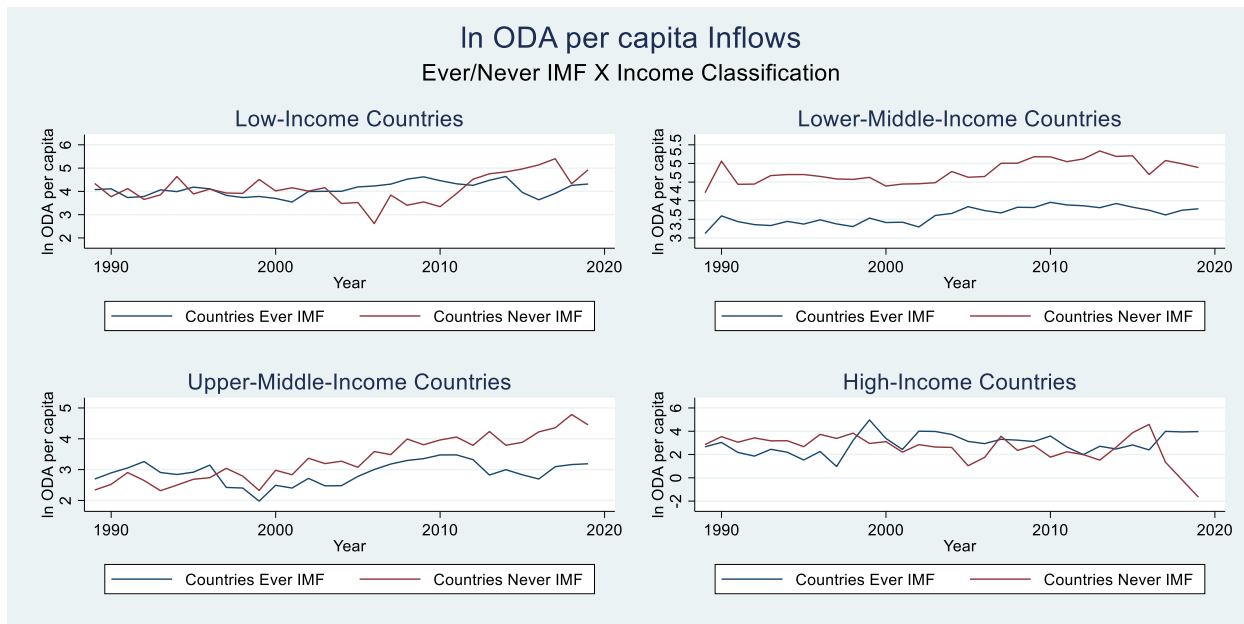
Figure 6: ODA Inflows

The capital inflow variables exhibit interesting trends. The most glaring result from these

graphs is the steady increase across all flow types, regardless of income classification or IMF

intervention characteristics, from the 1990s to the present day. Despite slight declines during

periods of global economic instability (e.g., 2008), investment has risen significantly over the

past three decades. This increase in investment corresponds to a stronger global economy and an

increasingly interconnected world. For FDI and portfolio flows, we also see higher levels of

capital flows consistently flowing to higher income countries. This is unsurprising given that

more developed countries have better investing environments (e.g., less risky opportunities,

better legal environments, etc.). ODA has the opposite trend due to the nature of aid flowing

from developed countries to lower-income ones.

The trends between countries that have ever had an IMF program and those that never

had is also interesting. Lower income countries that have never received an IMF intervention

have received more FDI, weighted by population, than countries that had IMF programs in the

past. Now, the two sets of countries seem much more in line, save for a significant difference in

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the mid-2010s. High-income countries that have never had an IMF program receive slightly higher levels of FDI inflows. For middle-income countries, whether a country has ever participated in an IMF intervention seems irrelevant to the level of FDI inflows. This lack of difference could indicate that private investors do not necessarily view the past as relevant to their current investments, regardless of the potential risks past experiences could indicate. FDI investors may also be working on such a long timeline for many of their projects that issues are naturally expected to occur at some point. They also may be far more focused on the project investment specifics than the macroeconomic picture as some of their investments are likely unconnected to the day-to-day economies of the recipient country (e.g., natural resource extraction industries).

Portfolio investment trends indicate that countries that have never received IMF intervention typically receive higher levels of inflows, although this effect is less pronounced in middle-income countries. Countries that have never received IMF intervention may have more developed equity and bond markets and thus more available opportunities for investment. These countries may also be more stable, and thus there may be lower risk for portfolio investors.

ODA flows indicate that for low- and high-income countries there is not much difference in terms of aid received, regardless of past IMF experiences. However, middle-income countries seem to receive significantly higher levels of ODA per capita if they have never had an IMF program. This may be due to donor countries viewing aid as forward-looking and unrelated to past experiences of countries. On this same idea, this could indicate that middle-income countries that have received IMF intervention are on a more sustainable growth path than those that have not, and thus do not need the same levels of ODA.

In addition to isolating the outcome variables, we also look at trends in macroeconomic factors. These graphs are located in the appendix. This analysis provides more context for understanding the countries that undergo IMF intervention. Trends over time provide some insights into broad macroeconomic development over the past thirty years. With the Vix and the Fed Funds rate, we see trends that closely mirror macroeconomic cycles. The Vix, a measure of the volatility of the U.S. stock market, spikes in times of uncertainty and crisis. The Fed Funds rate has steadily fallen since the 1990s with spikes upwards in the late 1990s and mid-2000s (prior to 2008). The exports ratio, inflation, and broad money index all tell a story of improving global macroeconomic conditions. Inflation, which was globally high in the 1980s and 1990s, has fallen to much more reasonable levels in the 2010s. The exports ratio has steadily risen, pointing to increased globalization and the sustained rise of trade around the world.

Despite the similarities in broad trends of macroeconomic factors over time, there are clear distinctions across different income classifications with higher income countries having steadily more stable and stronger macroeconomic characteristics. The macroeconomic situation in low-income countries, unsurprisingly, starts from lower levels than other income groups. However, trends of an improving macroeconomic environment are reflected in both low- and middle-incomes countries. Inflation has fallen, exports have risen, and broad money has risen in the dataset time frame; all signs point to better growth.

To see if the trends of countries that have had IMF programs is different from those based on income-characteristics or the aggregate data, the same descriptive analysis was run on this dataset. Unsurprisingly, the average starting level of most of the macroeconomic variables is lower for this data subset since countries undergoing IMF intervention are weighted towards lower-income countries. However, the growth trends of these variables follow a similar path to

that of the aggregate dataset, indicating that these countries are affected by similar economic

forces.

6. Econometric Model

Having looked at the descriptive statistics in the previous section, we now turn to a more

formal econometric analysis. We focus on running regression models where the dependent

variables are financial inflows. The main explanatory variable of interest is the indicator of

whether an IMF program is active in a given country at a given point in time. While we examine

the role of the IMF program, we also control for other potential determinants of financial flows.

The first model specification is as follows:

$$y_{it} = \alpha + \beta_1 Vix_i + \beta_2 FedFunds_i + \beta_3 Chinn - Ito_i + \beta_4 ln(GDP - pc)_{it}$$

$$+ \delta IMF_{it} + \theta TotalAccess_{it} + \tau_t + \mu_{it} \ (1)$$

Where y represents the outcome variable (i.e., FDI, portfolio flows, ODA), α is the

intercept of the regression, IMF represents the IMF dummy variable, and TotalAccess is an

optional inclusion as it represents the resources allocated interaction variable, which is only

included when that specific relationship is being investigated. The variables with β coefficients

are the control variables used: the Vix, the Federal Funds rate, the Chinn-Ito index, and log GDP

per capita. τ represents time fixed effects, which control for unobserved global economic shocks

that affect capital inflows equally across all sample countries. The last term, μ, is the error term.

β, δ, and θ are the estimated coefficients.

There are two more specifications of this model that are used as robustness checks. The

differences between these models comes in the control variables and fixed effects used. The first

model specification uses the form shown in Equation 1. The second specification adds broad

money to GDP, exports to GDP, and inflation to more fully account for the macroeconomic

characteristics of a recipient country. It has the following form:

$$y_{it} = \alpha + \beta_1 Vix_i + \beta_2 FedFunds_i + \beta_3 Chinn - Ito_i + \beta_4 ln(GDP - pc)_{it} + \beta_5 Inflation_{it}$$
$$+ \beta_6 BroadMoney/GDP_{it} + \beta_7 Exports/GDP_{it} + \delta IMF_{it} + \theta TotalAccess_{it}$$
$$+ \tau_t + \mu_{it} \qquad\qquad (2)$$

Finally, the third specification adds country fixed effects to the second specification. In

this model, λ represents country fixed effects which accounts for unobserved country specific

factors that do not change over time but may affect capital inflows. This addition gives the model

the following form:

$$y_{it} = \alpha + \beta_1 Vix_i + \beta_2 FedFunds_i + \beta_3 Chinn - Ito_i + \beta_4 ln(GDP - pc)_{it} + \beta_5 Inflation_{it}$$
$$+ \beta_6 BroadMoney/GDP_{it} + \beta_7 Exports/GDP_{it} + \delta IMF_{it} + \theta TotalAccess_{it}$$
$$+ \lambda_i + \tau_t + \mu_{it} \qquad\qquad (3)$$

The same models are run with and without a resources allocated interaction variable (i.e.,

the size of the IMF program interacted with the IMF dummy variable which is represented in the

models with the term $\theta TotalAccess_{it}$). Beyond the different model specifications, subsets of

data are also used to further analyze the catalytic effect and perhaps control for unobservable

factors that would otherwise impact the results. The two subsets used are the group of countries

that have ever had an IMF program and only low- and middle-income countries. In addition to

the OLS regression, two sets of lagged models are also analyzed. Lags are included since either it

may take time for investors to act on the signal of IMF intervention or the signals could only

arise later in the lifetime of an IMF intervention. The two sets of lagged models use three-year

and five-year lags, in order to account for the different time frames of different IMF program types.

7. Regression Results

Now that the regression models and econometric approach has been explained, we can present the results of the models and begin our discussion of them. However, before beginning the results analysis, a few notes are in order. The lagged regressions were analyzed but were qualitatively similar to the contemporaneous program and are thus not reported. Additionally, the regressions run on the two subsets of data described earlier had similar results to the regressions run on the entire dataset, so only the results with the complete dataset have been included. The equity and bond portfolio disaggregated flows did not provide much information either, so they have also been excluded in favor of the aggregate portfolio inflow variable.

Given the significant number of regressions that were analyzed, it was necessary to pare down which results were included in the main body of this paper. To that end, the coefficients and standard errors of the variable of interest (IMF dummy or resources allocated variable) are reported for each model specification. The full regression results for each model are located in the appendix. For the sake of completeness, the full results (both those located in the main body of the paper and those in the appendix) are discussed below.

Before diving into the results, a few notes about the limitations of this study are in order. While the methodology follows in similar steps to the literature and is defensible, there are still constraints to the analysis. The first is that the counterfactual is not analyzed. In other words, there is no analysis of what the financial flows would have been in countries that did have IMF interventions if the interventions did not take place. Secondly, there is a possibility that some

financial flows result from the IMF coordinating with other donors rather than these donors being influenced by an IMF signaling mechanism. This coordination effect, however, is not analyzed in this research. While these limitations do not completely negate the results of this research, they must be accounted for when considering the conclusions presented below. Further research is likely necessary to address these issues and gain a more complete understanding of all the factors relating to the IMF catalytic effect. Despite these limitations, though, the results and conclusions of this research do provide an interesting perspective that gives insights into the relationship between the IMF and the catalytic effect.

7.1 Regression Results: OLS

Table 1 presents the OLS regression results based on equations 1, 2, and 3. The table illustrates the coefficients and standard errors of the variable of interest (i.e., the IMF dummy variable) for these models. The table includes all three model specifications as well as all four dummy variable specifications. (For more detailed results for each regression see section 2A of the appendix.)

Table 1: OLS Models

Panel A:	Aggregate IMF Programs			SBA Programs		
	1	2	3	4	5	6
FDI/GDP	0.808*	0.954***	0.435	-1.419***	-0.0883	-0.195
	(0.449)	(0.253)	(0.324)	(0.356)	(0.338)	(0.349)
Ln(FDI-pc)	0.224***	0.231***	0.0376	0.0806	0.177**	-0.00175
	(0.0524)	(0.0581)	(0.0655)	(0.0649)	(0.0707)	(0.0665)

Ln(Portfolio-pc)	0.0690	0.122	0.0176	0.0951	0.152	0.109
	(0.125)	(0.144)	(0.146)	(0.163)	(0.194)	(0.190)
ODA/GDP	0.724**	1.408***	1.462***	-1.949***	-1.750***	-0.0594
	(0.289)	(0.316)	(0.302)	(0.297)	(0.322)	(0.218)
Ln(ODA-pc)	0.226***	0.403***	0.268***	-0.480***	-0.272***	0.000159
	(0.0477)	(0.0521)	(0.0323)	(0.0876)	(0.0918)	(0.0550)

Panel B:	EFF Programs			ESAF/PRGF/ECF Programs		
FDI/GDP	4.589**	0.691	0.786	0.551	0.292	-0.0960
	(2.124)	(0.678)	(0.605)	(0.383)	(0.409)	(0.476)
Ln(FDI-pc)	0.505***	0.369***	0.0229	0.0677	-0.0682	-0.0221
	(0.101)	(0.104)	(0.0971)	(0.0799)	(0.0931)	(0.106)
Ln(Portfolio-pc)	0.573***	0.480**	0.630**	0.0673	0.159	-0.158
	(0.194)	(0.206)	(0.262)	(0.182)	(0.194)	(0.218)
ODA/GDP	-2.293***	-1.808***	-0.324	2.239***	2.955***	1.905***
	(0.354)	(0.377)	(0.257)	(0.414)	(0.506)	(0.451)
Ln(ODA-pc)	-0.0489	0.204*	0.0855	0.542***	0.600***	0.281***
	(0.121)	(0.123)	(0.0858)	(0.0465)	(0.0545)	(0.0281)

Note: Each row represents a regression model with the variable in the first column corresponding to the dependent variable in that regression. Each column represents a different model specification with the column headings indicating which specification it is (first column for each dummy represents equation 1, the second column equation 2, and the third column equation 3). The entries in the tables are the coefficient and standard error of the main explanatory variable (i.e., the IMF and program specific dummy variables) for each combination of model specification and dependent variable. Robust standard errors in parentheses, *** $p<0.01$, ** $p<0.05$, * $p<0.1$. Observations range from 1,235-4,686, R-squared values range from 0.028-0.841.

Looking at the OLS regression results in Panel A of Table 1, the existence of an IMF program in a given country seems to have a positive and statistically significant catalytic effect across all types of capital inflows with the exception of portfolio investment. The catalytic

effects are strongest when it comes to Official Development Assistance (ODA), both as a percent of GDP and in per capita terms. This shows that donor countries respond positively by providing additional aid money to countries that are implementing IMF reform programs. The flow of FDI is also positively impacted by the IMF presence as seen in columns 1 and 2. However, the coefficient on the IMF dummy becomes statistically insignificant once we control for country fixed effects. The results for FDI correspond to parts of the literature like Al-Sadiq (2015) who identified a strong catalytic effect for FDI in his research, although it does go against some research that points to the nonexistence of an FDI effect such as Erce and Riera-Crichton (2015). In fact, this discrepancy adds support to the points made by Chapman et al. (2017) who note that the effects of IMF interventions are complex and often contradictory which can lead to different interpretations of the catalytic effect. The results for ODA support the findings of Bal Gunduz and Crystallin (2012) and Stubbs et al. (2015), who all found evidence of a positive catalytic effect for ODA.

EFF programs show a far more wide-ranging catalytic effect than SBA programs. Models one and two give positive and significant coefficients for FDI per capita and model one gives a significant coefficient for FDI/GDP. All three models give positive and significant coefficients for portfolio investment per capita. Additionally, models one and two give negative and significant coefficients for ODA/GDP, but model two gives a positive and significant coefficient for ODA per capita. It seems the catalytic effect for EFF interventions is strong for private investors, but public investors may not be influenced. This difference in extent of the catalytic effect between EFF and SBA programs reinforces the research of Diaz Cassou et al. (2006) who found that more expansive programs correspond to a stronger catalytic effect.

EFF programs show a robust catalytic effect across FDI and portfolio flows but do not show a robust effect for ODA. This robust catalytic effect could occur because investors view the IMF intervention as a positive signal due to the IMF's resources and policy expertise. Private investors may view the new policies pushed by the IMF as likely to have a positive effect on the economic growth and investment environment of a recipient country. Additionally, IMF intervention may provide a positive and credible signal about the nature of the government in the recipient country. Foreign investors want stable leadership that is open to the global economy and will not impose constraints (e.g., tariffs) on their investments. Governments that accept IMF intervention provide the signal that they are willing to follow IMF style policies, which are typically directed towards more market liberalization. Not only that, but this is a credible signal as it forces recipient governments to accept IMF policies for a significant amount of time.

Programs targeted at low-income countries (ESAF/PRGF/ECF) have a strong ODA-related catalytic effect. This supports the findings of both Diaz-Cassou et al. (2006) who, as noted above, find longer-term programs show more evidence of a catalytic effect and also the findings of Birds and Rowlands (2007) who found that aid was most impacted in concessional IMF programs. Technically, ODA is likely the smoothest of financial flows as donor countries can easily and relatively quickly modify their aid contributions. Donor countries do not allocate a large part of their budget to aid, so increasing it is neither a major strain on their resources nor a major policy decision that would encounter legislative roadblocks. This also holds for multilateral agencies which often have considerable latitude in determining where their funds are channeled. Beyond the relative ease of modifying aid flows, there are various reasons why donor countries or aid agencies would decide to increase their aid flows to countries undergoing an IMF intervention. They may view IMF intervention as a signal for a worsening crisis, the extent

of which they were unaware. They may also increase aid, even if there is no immediate crisis, from the signal that the development situation is worse than previously thought and higher levels of aid are needed for generating growth. They also may increase aid out of strategic considerations, a desire to ensure stability in the global economy, or due to humanitarian leanings (i.e., worse growth leads to worse social outcomes). Donor countries in the West may also want to send more funds to boost the probability of success of the IMF intervention. They may view the intervention of the IMF as a credible signal that the recipient country is going to follow policies more in line with the economic goals of the Western world (e.g., globalization, liberalizing trade, strengthening property rights) due to the significant connections between the IMF and major donor countries in the West. Donor countries, who often give for strategic reasons as much as anything, may appreciate this signal and subsequently increase their ODA.

The final set of financial flows analyzed, portfolio investment, has the least evidence of a catalytic effect. The only evidence, robust or not, was present in the EFF dummy variable models. This may occur for similar reasons as to why EFF programs signal other private investors (more impactful policies, longer-term program, stronger commitment etc.). Otherwise, there are potential factors that could lead to the otherwise consistent nonexistence of a meaningful portfolio investment catalytic effect. Portfolio investors rotate assets quickly, so an IMF intervention may move too slowly to impact their decision-making. Also, in many developing countries, equity and bond markets are relatively small and dominated by only the largest firms. Thus, many of these portfolio assets may be insulated from day-to-day macroeconomic issues, which would further lower the chance of the catalytic effect materializing.

7.2 Regression Results: Resources Allocated

The next set of models look at the intersection between program size and the catalytic effect. As the IMF descriptive statistics show, there are wide discrepancies in allocated funds even within the same program type. Additionally, the financial resources available to a government could theoretically play a role in determining the success or failure of overcoming an economic crisis. To account for this potential impact that increased financial resources may have on the signaling mechanisms of an IMF intervention, it is reasonable to examine the size of the program in conjunction with the type of program. The table below gives the coefficient on the interaction term between the resource allocated (TotalAccess) variable and the IMF dummy. The model specifications are the same to the prior regressions, save for the inclusion of the resources allocated interaction term. The same dummy variables are also used. (For more detailed results for each regression see section 2B of the appendix.)

Table 2: Resources Allocated Models

Panel A:	Aggregate IMF Programs			SBA Programs		
	1	2	3	4	5	6
FDI/GDP	-0.202	-0.203*	-0.0159	-0.575***	-0.185	0.0160
	(0.139)	(0.116)	(0.120)	(0.176)	(0.237)	(0.252)
Ln(FDI-pc)	-0.0354**	0.00141	0.00155	-0.104***	-0.000401	0.0466
	(0.0155)	(0.0160)	(0.0208)	(0.0328)	(0.0395)	(0.0331)
Ln(Portfolio-pc)	0.0592	0.0215	0.0445	0.181**	0.161	0.108
	(0.0406)	(0.0498)	(0.0548)	(0.0814)	(0.113)	(0.109)
ODA/GDP	-0.755***	-0.726***	-0.0276	-0.190	-0.149	-0.137
	(0.123)	(0.143)	(0.114)	(0.167)	(0.208)	(0.142)
Ln(ODA-pc)	-0.256***	-0.209***	-0.00504	-0.327***	-0.257***	-0.0175
	(0.0170)	(0.0169)	(0.0150)	(0.0354)	(0.0430)	(0.0323)

Panel B:	EFF Programs			ESAF/PRGF/ECF Programs		
FDI/GDP	-0.740	-1.283*	-0.791	0.215	0.325**	0.690***
	(0.512)	(0.657)	(0.614)	(0.276)	(0.156)	(0.172)
Ln(FDI-pc)	-0.175***	-0.0780	0.0301	0.0960*	0.144***	0.186***
	(0.0540)	(0.0694)	(0.0668)	(0.0496)	(0.0492)	(0.0501)
Ln(Portfolio-pc)	-0.0176	-0.0668	-0.362**	-0.120	-0.138	-0.0684
	(0.0884)	(0.120)	(0.146)	(0.143)	(0.156)	(0.151)
ODA/GDP	-0.769***	-0.666***	0.212	-2.131***	-2.447***	-0.0205
	(0.163)	(0.159)	(0.143)	(0.388)	(0.514)	(0.380)
Ln(ODA-pc)	-0.432***	-0.328***	0.0928	-0.275***	-0.296***	0.000240
	(0.0712)	(0.0698)	(0.0764)	(0.0299)	(0.0340)	(0.0199)

Note: Each row represents a regression model with the variable in the first column corresponding to the dependent variable in that regression. Each column represents a different model specification with the column headings indicating which specification it is (first column for each dummy represents equation 1, the second column equation 2, and the third column equation 3). The entries in the tables are the coefficient and standard error of the main explanatory variable (i.e., the interaction term between resources allocated and the IMF dummy) for each combination of model specification and dependent variable. Robust standard errors in parentheses, *** $p<0.01$, ** $p<0.05$, * $p<0.1$. Observations range from 1,235-4,686, R-squared values range from 0.028-0.841.

Starting with the aggregate IMF dummy in Table 2, we see evidence of a negative relationship between program size and ODA. However, the significance evaporates when country fixed effects are added in model specification three. Similarly to the previous set of regressions, the evidence surrounding SBA programs is underwhelming. Models one and two do give negative and significant coefficients for ODA per capita, but otherwise there are limited significant results from the regressions. Moving into panel B, we see that the EFF program analysis tells a similar story to that of the SBA programs as models one and two do give negative and significant coefficients for ODA per capita, but otherwise there are limited significant results. The effect program size has on capital flows for ESAF/PRGF/ECF programs seems the

most expansive, showing robust evidence for an impact on FDI and ODA flows. Models one and two again give negative and significant coefficients for ODA/GDP and ODA per capita. All three models give positive and significant coefficients for FDI per capita and models two and three give positive and significant coefficients for FDI/GDP.

Before analyzing these results in-depth, it is important to make a few notes due to the relatively superficial analysis conducted here on the interaction between program size and the catalytic effect. The lack of detailed analysis means that there are some unobservable factors that may play a role in biasing the results. For example, the negative effect of larger programs may be due to how larger programs typically address problems of a greater magnitude. Thus, the negative effect on capital inflows that is purportedly shown to be due to program size may be arising from the deeper macroeconomic issues present in countries that receive larger resource allocations. Furthermore, the negative relationship with aid may be partially explained by larger programs being weighted towards more developed countries whose larger economies necessitate larger resource allocations. These countries likely are already receiving lower levels of aid and have less of a reliance on it. Additionally, since many of these results give a positive coefficient for the IMF dummy variable, it is likely that the negative effect from the program size does not completely outweigh the original positive effect. In many cases, the negative effect on program size may weaken the catalytic effect but not make it vanish or turn negative. As a final note, these results do echo aspects of the literature such as Krahnke (2020) who found that larger program sizes are associated with weaker catalytic effects and Van der Veer and de Jong (2020) who found that the size of the intervention is not a significant factor in the extent of the catalytic effect.

Moving into the analysis of these results, we start with the trend in SBA programs not

showing much relationship between intervention characteristics and capital inflows. This seems to reinforce the idea that SBA programs are not viewed as having much signaling power, either about positive trends in policy reform or about the commitment credibility of a recipient government as the same trend is seen in the prior regression analysis.

The lack of a relationship between program size and FDI or portfolio investment for EFF programs is especially interesting when contrasted with the robustly significant catalytic effect seen in the first set of regressions between EFF programs and these capital flows. The size of an EFF program seems to not send any meaningful signal to private investors about the extent of a crisis, the intensity of the IMF's efforts to solve it, or the commitment of the recipient country. Investors may also view the success of an EFF programs as based far more on policy reform and policy commitment than the amount of capital the IMF injects into the economy, especially since more developed countries may have less of a need for marginally more financial resources and more of a need for better economic policies.

ESAF/PRGF/ECF programs see a relatively robust positive catalytic effect for FDI and a negative effect for ODA. It seems that for ESAF/PRGF/ECF programs, the program size does send a signal to private investors. This could occur because these programs are more similar than other program types and thus the main differentiating factor may be the size of the program. Larger programs could indicate a stronger will from the IMF to solve the issue they are intervening for which would send a positive signal to investors. It also could be that for these program types, focused on poverty alleviation and growth rather than crisis mitigation, capital is a more important factor in reaching positive outcomes. Thus, it would follow that the size of the programs would send a stronger signal to private investors if it played a more important role in determining the success of an intervention.

The evidence for the impact IMF program size has on the catalytic effect for ODA is worth exploring outside of individual program types as the negative relationship appears regardless of program type. This could be due to donors viewing the IMF's resources as fungible with their own aid. Thus, they may view the intervention of the IMF as a signal that they can reduce their own aid contributions since the recipient country will be buttressed by the IMF's financial resources. Donors may also view their aid as less helpful in times of crisis since the original goals of the aid may be superseded or ignored as the recipient country has more pressing matters on which to focus. Since donor countries and multilateral donors often give with specific goals or programs in mind, they may not want their funds diverted to something that is not high on their priority list. This diversion of funds may have a higher chance of occurring in worse crises which may be signaled to investors from the size of the program.

8. Difference-in-Difference Model

8.1 Methodology

To add to the strength of our results, another perspective is used beyond the models already analyzed. A difference-in-difference model is a good additional approach to analyze the catalytic effect and it will provide further evidence surrounding IMF intervention characteristics and the catalytic effect. In this model, the IMF intervention is deemed the treatment. The control group is the group of countries that have never had an IMF program while the treatment group is the group of countries that have had an IMF intervention at some point within the dataset. The issue within this approach is determining the treatment time. In a classic difference-in-difference model, there would be one treatment time and all time periods after would be considered "treated." This is not the right approach to take for IMF programs, however. IMF programs likely do not have a lasting effect, so after a certain amount of time has passed, the IMF program

may no longer have any discernible impact. Also, some IMF countries have had multiple IMF interventions, so there is a need to account for this trend as well. The best available solution seems to be that a set of time in a certain range post-start of a program is classified as treated.

Therefore, the main difference between this model and a more traditional difference-in-difference model is the presence of multiple treatment time periods. This occurs both within countries, where some countries have multiple IMF interventions over the course of the dataset, and across countries, where IMF intervention occurs in different years for each country. Thus, a slightly altered model is necessary. This paper follows the recent econometrics literature and uses a modified approach that accounts for differences in treatment time across the dataset.

A traditional difference-in-difference model has the following form:

$$Y_{it} = \alpha + \beta(Treated) + \varphi d_t + \delta(Treated * d_t) \ \tau X_{it} + \varepsilon_{it} \tag{4}$$

In this case, Treated indicates the group of countries that have undergone the treatment at any point, d_t equals one if the year is after the occurrence of the treatment, and X represents the control variables included in the model. Excluding the control variables, we find that α is the value for the control group before the treatment, $\alpha + \varphi$ is the value of the control group after the treatment time has occurred, $\alpha + \beta$ is the value for the treated group before treatment, and $\alpha + \beta + \varphi + \delta$ is the value for the treated group after treatment. Thus, the coefficient of interest and the difference-in-difference estimator is δ.

The main issue that arises due to this model specification with respect to multiple, and different, treatment times is that the φd_t now becomes a problematic term. It becomes an issue with specifying exactly which years are pre- and post-treatment since the timing of the treatment is different for each country. Thus, the following form is used:

$$Y_{it} = \alpha + \beta(Treated) + YearDummy + \delta(Treated * d_t) + \tau X_{it} + \varepsilon_{it} \qquad (5)$$

The only difference between these two model specifications is that instead of the term

indicating whether a year is pre- or post-treatment, there is simply a year dummy variable,

represented by $YearDummy$. Thus, the d_t remains in the difference-in-difference term and

continues to equal one if that given year is post-treatment for the given country. Therefore, δ

remains the coefficient of interest and the term $\delta * (Treated * d_t)$ remains the difference-in-

difference variable of interest.

A final methodology question is how to specify treatment time under this modified

approach. Given the uncertainty surrounding when an IMF program stops making an impact on a

recipient country, multiple treatment time frames could be valid. Thus, three different treatment

time frames are used to account for potential discrepancies. The first of these treatment time

frames defines active treatment as when the IMF intervention is active in a country. The second

defines it from the commencement of the IMF intervention to three years post-end of a program.

The third defines it from the commencement of the IMF intervention to five-years post-end of a

program. Additionally, the three model specifications from the OLS models will carry over the

control variables to be used in these models. Thus, for each given treatment time frame and

outcome variable, three different specifications will be run with the expanding specifications

acting as robustness checks.

8.2 Results: Difference-In-Difference

The table below gives the results for the coefficient of the difference-in-difference term

using the regressions modeled by equation 5. All three different treatment time definitions are

included, as well as the three model specification results for each iteration of treatment time. In

order to ensure there was an adequate number of observations and degrees of freedom for the

models, it was only possible to run the models using the aggregate IMF dummy. (For more

detailed results for each regression see section 2C of the appendix.)

Table 3: Difference-In-Difference Models

A. Contemporaneous Treatment			
Contemporaneous Treatment	1	2	3
FDI/GDP	0.642	0.797***	0.435
	(0.465)	(0.273)	(0.324)
Ln(FDI-pc)	0.173***	0.174***	0.0376
	(0.0548)	(0.0592)	(0.0655)
Ln(Portfolio-pc)	0.194	0.235	0.0176
	(0.125)	(0.145)	(0.146)
ODA/GDP	1.343***	1.730***	1.462***
	(0.295)	(0.328)	(0.302)
Ln(ODA-pc)	0.329***	0.432***	0.268***
	(0.0477)	(0.0527)	(0.0323)
B. Three-Years Post-Intervention Treatment			
Three-Years Post-Intervention Treatment	1	2	3
FDI/GDP	0.769*	0.982***	0.893***
	(0.467)	(0.262)	(0.340)
Ln(FDI-pc)	0.198***	0.208***	0.104
	(0.0558)	(0.0595)	(0.0686)

Ln(Portfolio-pc)	0.208*	0.241	-0.0661
	(0.125)	(0.149)	(0.150)
ODA/GDP	0.485	0.573	0.920***
	(0.325)	(0.369)	(0.332)
Ln(ODA-pc)	0.271***	0.357***	0.255***
	(0.0558)	(0.0631)	(0.0373)

C. Five-Years Post-Intervention Treatment

Five-Years Post-Intervention Treatment	1	2	3
FDI/GDP	0.446	0.841***	0.826**
	(0.496)	(0.275)	(0.377)
Ln(FDI-pc)	0.206***	0.220***	0.115
	(0.0584)	(0.0625)	(0.0711)
Ln(Portfolio-pc)	0.322**	0.357**	0.0151
	(0.128)	(0.156)	(0.156)
ODA/GDP	-0.0702	-0.0665	0.605*
	(0.355)	(0.416)	(0.354)
Ln(ODA-pc)	0.192***	0.275***	0.222***
	(0.0608)	(0.0705)	(0.0416)

Note: Each row represents a regression model with the variable in the first column corresponding to the dependent variable in that regression. Each column represents a different model specification with the column headings indicating which specification it is (first column for each dummy represents equation 1, the second column equation 2, and the third column equation 3). The entries in the tables are the coefficient and standard error of the main explanatory variable (i.e., treatment variable) for each combination of model specification and dependent variable. The IMF dummy variable is defined as the aggregate IMF dummy. Robust standard errors in parentheses, *** $p<0.01$, ** $p<0.05$, * $p<0.1$. Observations range from 1,235-4,686, R-squared values range from 0.029-0.841.

The first set of difference-in-difference models uses the treatment time definition as only the years in which an IMF program was active within a recipient country. This means that the term d_t only equals one for a given country when they have an active IMF program. The three

model specifications give positive and significant coefficients for both ODA/GDP and ODA per capita. Models one and two give positive and significant coefficients for FDI per capita and model two gives a positive and significant coefficient for FDI/GDP.

The second set of models, which set the treatment time from the start of the program up to and including the third year after the end of the program, show similar results to the first set of difference-in-difference models, although the level of robustness differs across capital flow types. All three models still give a positive and significant coefficient for ODA per capita, but only model three gives a positive, significant result for ODA/GDP. All three models give positive and significant results for FDI/GDP, and models one and two give positive and significant results for FDI per capita.

The third and final set of difference-in-difference models defines the treatment time from the start of IMF intervention up to and including the fifth year after the end of the program. These models exhibit the same trends as the other two difference-in-difference sets of regressions and show a robustly significant catalytic effect for ODA and FDI. Models one through three give positive and significant coefficients for ODA per capita, and model three gives a positive and significant coefficient for the ODA/GDP model. Models two and three give positive and significant coefficients for FDI/GDP, and models one and two do the same for FDI per capita. Additionally, models one and two give positive and significant coefficients for portfolio investment per capita.

An encouraging result from these difference-in-difference models is that, despite the difference in treatment time definitions, the broad results are similar in terms of significance, robustness, direction, and magnitude. Additionally, it is reassuring that the results from the difference-in-difference models echo the results from the OLS models conducted previously.

Conclusions

This paper has examined the catalytic effects of IMF programs. Based on OLS and Diff-in-Diff analysis, it seems that the main signal that the IMF sends to donor countries and private investors does not seem to work through the size of the program, but rather through the presence of an IMF program itself. This signal also may be affected by the specific form of intervention. EFF programs have the most robust catalytic effect for private investors while ESAF/PRGF/ECF programs give the most evidence of a positive catalytic effect for public investors. In terms of responsiveness, ODA seems to be the most flexible and robust catalytic effect, followed by FDI, while portfolio investment shows the least catalytic effect. Program size seems negatively associated with aid inflows regardless of program type but is positively associated with FDI for ESAF/PRGF/ECF programs. Overall, the different nature of IMF programs plays a major role in determining the existence and strength of the catalytic effect. These results lead us to several conclusions about the effectiveness of the IMF, its credibility in the eyes of public and private investors, and how the catalytic effect is channeled through different signaling mechanisms.

This paper shows catalytic effects that point to the consistent credibility of signals associated with the IMF. However, the IMF's multiple signaling mechanisms are not able to overcome all obstacles. Rather, these signals materialize when a baseline is already established. For example, FDI investors seem mainly influenced by the IMF's catalytic effect in middle- or high-income countries. This indicates that the IMF cannot provide a signal that supersedes structural difficulties and goes against the interests of investors, but as long as the investors are given an environment that somewhat lines up with their objectives, then the IMF can provide a robust signal. This indicates that the IMF agenda is viewed as beneficial but not as a complete cure. Investors may also want to see the credibility of a government post-intervention and

whether the government will have the commitment to maintain the IMF-sponsored policies and continue on that policy path in the future (and will not backtrack to the policies that led to the original economic issue). Investors may also be waiting for reforms to take effect and want to see concrete evidence of reform success.

More aggressive programs seem to give stronger signals, with EFF and ESAF/PRGF/ECF programs (both the longest types of IMF interventions) showing the most robust evidence of a catalytic effect. Longer-term projects give the IMF more chance to implement sweeping reforms and give them more time to play a large role in guiding the economic future of a country. This points to a potential signaling mechanism where the potential for more intense, longer lasting policy reform has a positive impact on capital inflows in a country. This also points to how the IMF signals arise more from their policy agenda than from their committed financial resources. Longer-lasting programs may also have more evidence of a catalytic effect due to longer-term projects giving a recipient country more credibility in committing to policy reform as they must coordinate with the IMF over a longer time frame.

Private investors are signaled by the IMF, but this signal does not overcome the need for a return on investment. The IMF signal is only robustly present in countries where there is already a baseline of past economic performance. (For example, the FDI catalytic effect is most robust for EFF programs, which target middle-income countries). In other words, private investors view IMF intervention as a positive signal, but they also believe that the IMF cannot make something out of nothing. Longer-term projects with more aggressive mandates give a stronger signal as well (e.g., EFF programs give a more robust effect than SBA programs) which indicates that private investors may view the IMF as a favorable decision-maker. Longer-term programs, as mentioned above, give the IMF more time to implement policies that can have

broad economic effects. Additionally, longer term projects give more credibility to a recipient country's decision to implement policy reforms since they are "stuck" with the IMF for longer and cannot backtrack on policy as easily or as quickly. Thus, the IMF intervention gives a stronger signal that the recipient government is committed to structural change in the economy. The IMF signal is stronger for FDI than portfolio investments which is likely related to the technical nature of each capital flow. FDI is likely more connected than portfolio investment to the macroeconomic performance of a country since it is far more difficult to retrieve FDI once it has been invested while it is fairly easy to rotate out of portfolio assets. This would make FDI investors more aware of and responsive to economic changes, so they are more impacted by the IMF signals.

Public investors are signaled by the IMF, but only under a certain paradigm. Donor countries and multilateral aid institutions do not seem to focus as much on developed countries, which they may view as strong enough to deal with most economic issues. Rather, donors are focused more on low-income countries who likely need more help and are already more reliant on ODA flows. The catalytic effect signal could come from an information or a credibility channel. The IMF almost certainly has an information advantage over many donors, especially bilateral ones, on the economic performance of recipient countries. The IMF deciding to intervene then signals donors that the macroeconomic environment is worse than previously thought. To remedy this, donors may go through the existing aid channels and raise their aid disbursements to assist a country that needs increased assistance to mitigate a crisis or generate economic growth. From a credibility standpoint, the IMF intervention may send a signal about the recipient country's government to donors. Aid comes overwhelmingly from Western countries (who also contribute significantly to multilateral agencies) who support the IMF and its

policy agenda. A recipient country deciding to undergo IMF intervention sends a positive and credible signal to these donors that the recipient government will follow the IMF economic paradigm. To support this decision, donors may increase their aid to boost the chance the recipient country commits to this decision.

In summary, the robust nature of the catalytic effect shows that the IMF is able to send credible and positive signals to both public and private investors. Understandably, though, these signaling mechanisms cannot overcome the base interests of either set of investors. (For example, donor countries maintain their focus on low-income countries, FDI investors still need a baseline of economic performance for them to invest, etc.) The evidence points to the catalytic effect arising from the signals sent by the type of intervention and the intervention itself. This signal can come through multiple channels: providing information to investors, promising a strong economic reform agenda due to the IMF's expertise, or allowing recipient countries to send their own signal that they are committed to structural economic reform. Determining which of these signals (e.g., IMF policy reform vs. commitment of recipient country) plays the more important role in the extent of the catalytic effect is an important next step for the research.

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Appendix

1. Descriptive Statistics

1A. Global Controls

Graph 1: Vix over Time
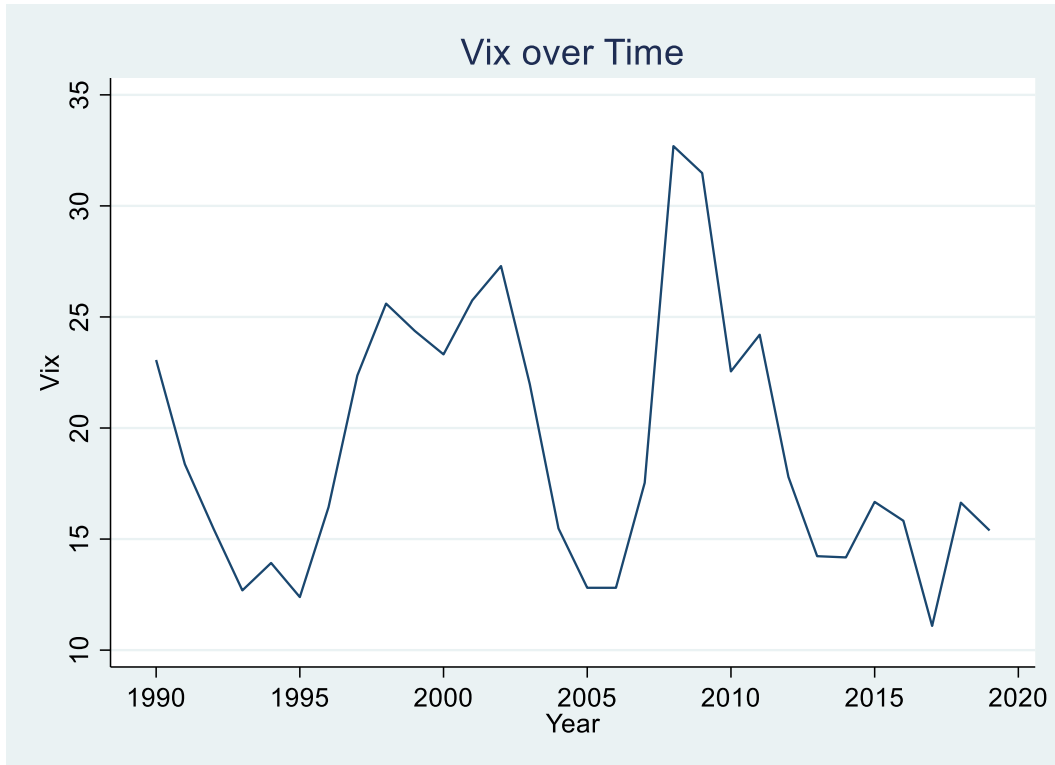
Graph 2: Fed Funds rate over Time

Fed Funds Rate over Time
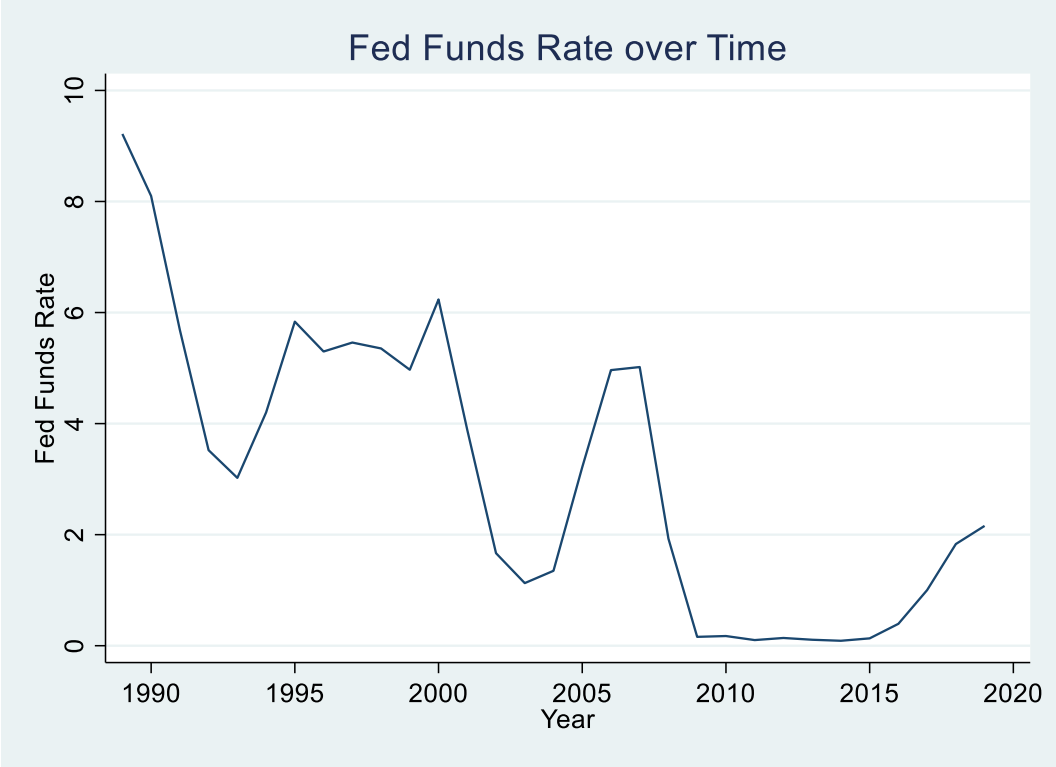
1B. Country-Specific Factors

Graph 3: Broad Money to GDP over Time
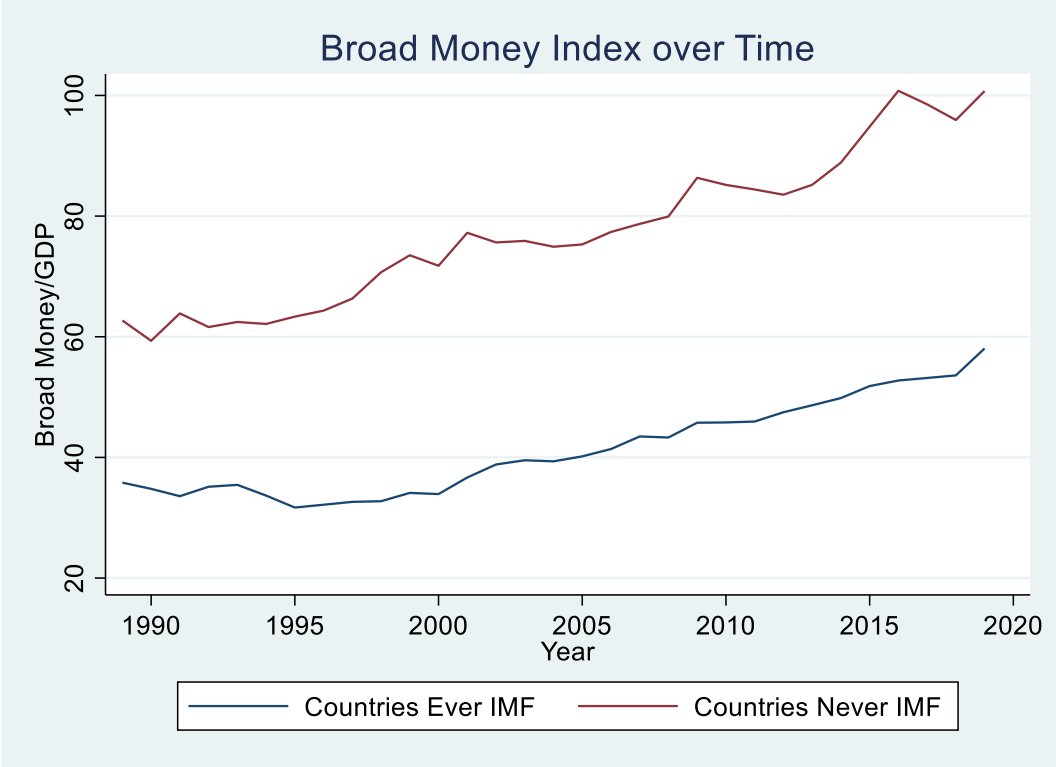
Graph 4: Inflation over Time
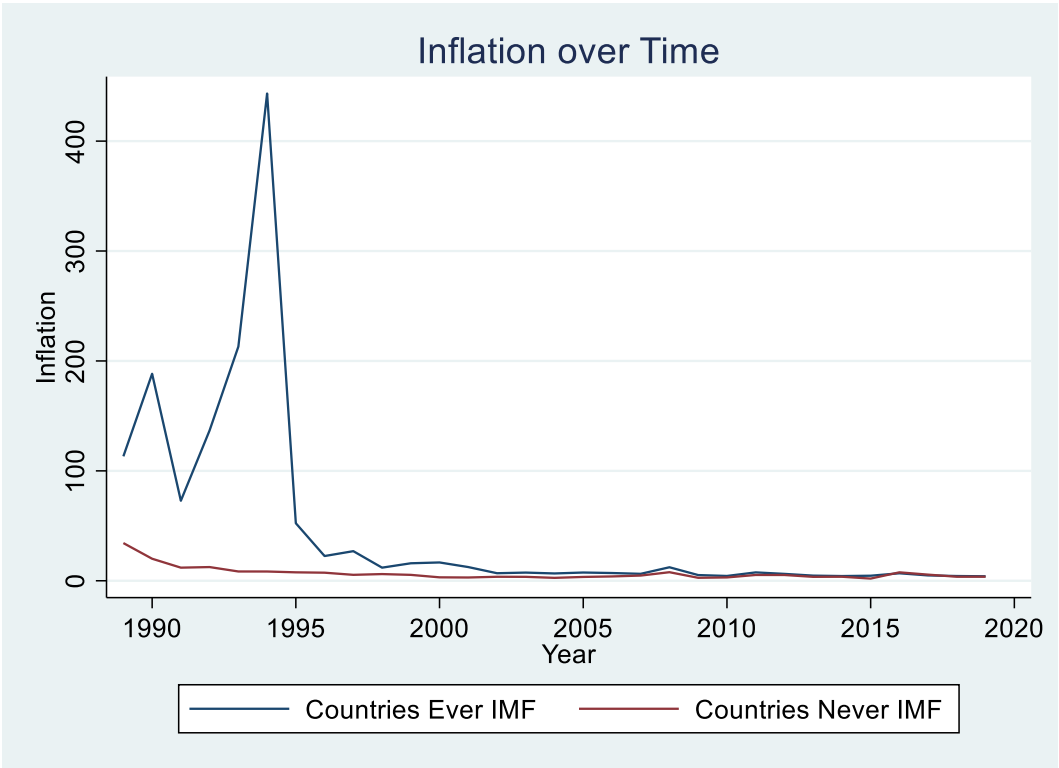
Graph 5: Exports to GDP over Time
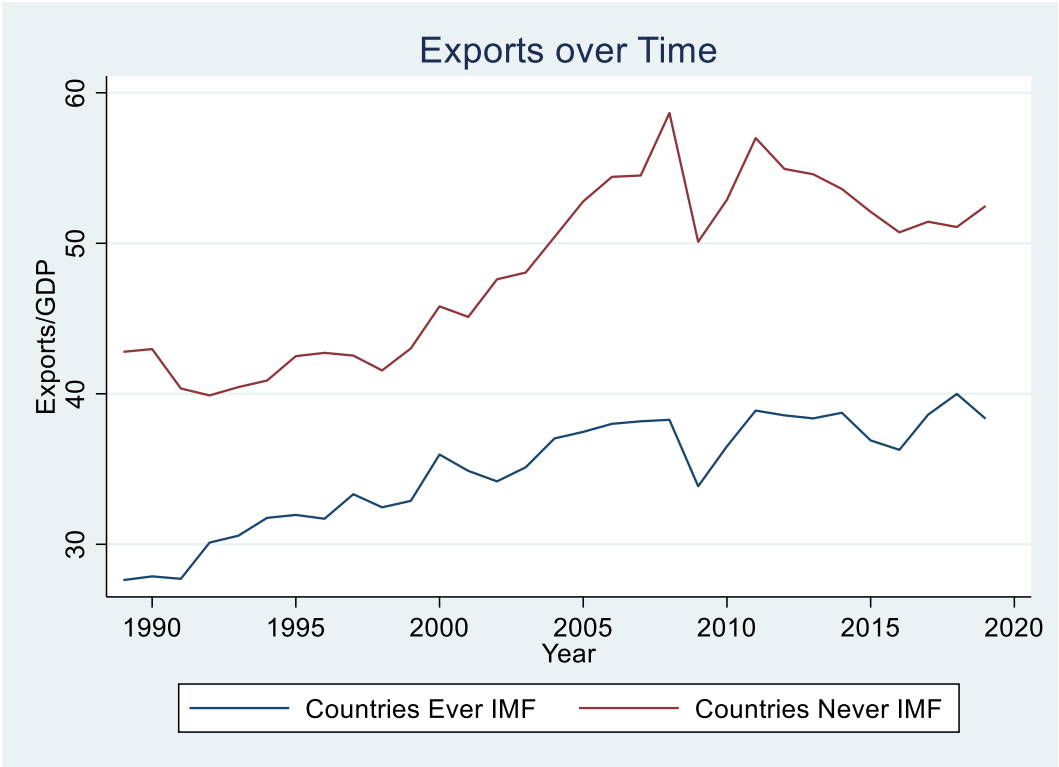
1C. Country-Specific Controls by Income Classification

Graph 6: Broad Money to GDP over Time by Income Classification
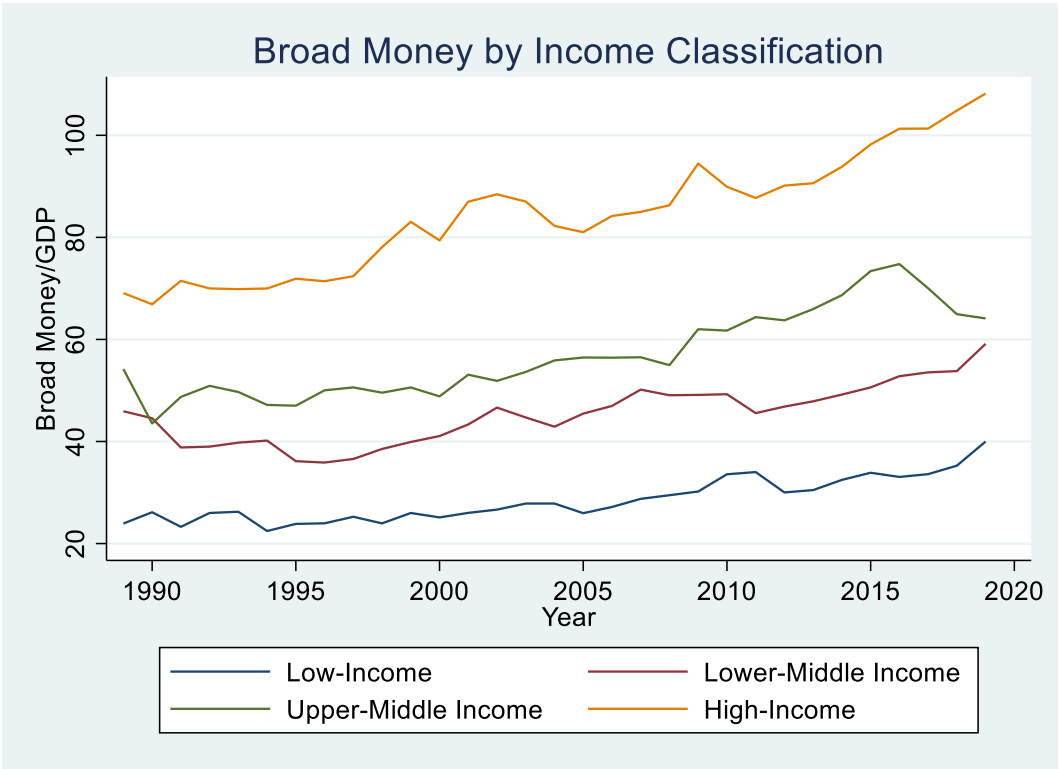
Graph 7: Inflation over Time by Income Classification
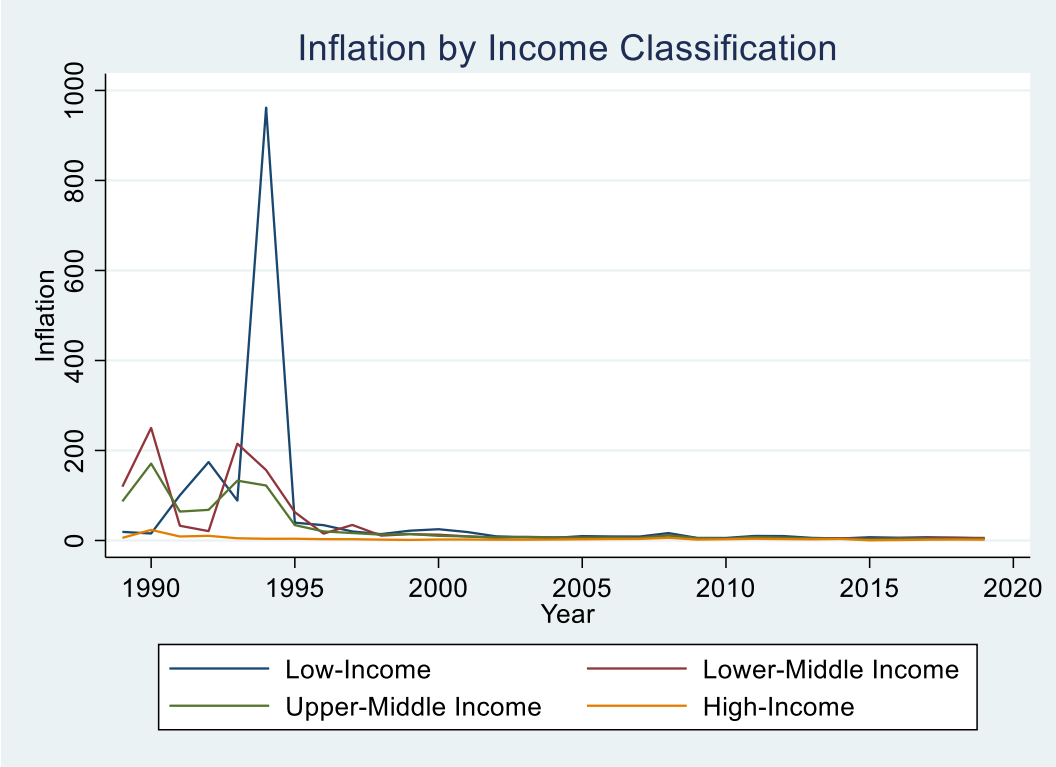
Graph 8: Exports to GDP over Time by Income Classification
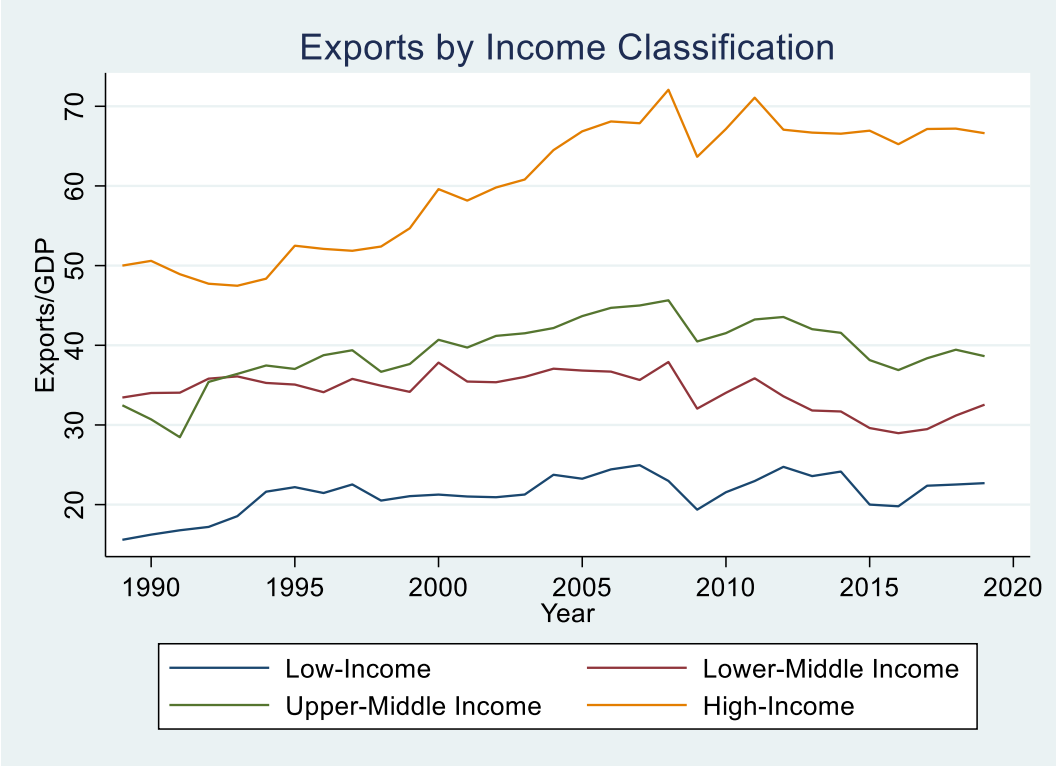
2. Regression Results

Note: The year and country fixed-effects results have been omitted in the regression tables below.

2A: OLS Models

Table 1: Aggregate IMF Dummy, Model Specification One

Model specification 1, Aggregate IMF Dummy	(1) FDI/GDP	(2) Ln(FDI-pc)	(3) Ln(Portfolio-pc)	(4) ODA/GDP	(5) Ln(ODA-pc)
imf_var	0.808*	0.224***	0.0690	0.724**	0.226***
	(0.449)	(0.0524)	(0.125)	(0.289)	(0.0477)
Chinn_Ito	0.530***	0.0591***	0.234***	0.550***	0.144***
	(0.118)	(0.0150)	(0.0349)	(0.104)	(0.0166)
Vix	-0.242	0.0273	-0.0843	-0.0662	0.0287
	(0.211)	(0.0291)	(0.0713)	(0.146)	(0.0402)
Fed_Funds	0.175	-0.198***	0.123	0.458	-0.0750
	(0.302)	(0.0525)	(0.117)	(0.285)	(0.0623)
logGDPcurrent	0.584***	1.147***	1.682***	-4.260***	-0.227***
	(0.151)	(0.0192)	(0.0426)	(0.147)	(0.0242)
Constant	1.579	-5.044***	-10.15***	38.28***	5.150***
	(2.898)	(0.396)	(0.973)	(2.127)	(0.524)
Observations	4,686	4,393	1,691	3,350	3,337
R-squared	0.029	0.660	0.669	0.321	0.074

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

Table 2: Aggregate IMF Dummy, Model Specification Two

Model specification 2, Aggregate IMF Dummy	(1) FDI/GDP	(2) Ln(FDI-pc)	(3) Ln(Portfolio-pc)	(4) ODA/GDP	(5) Ln(ODA-pc)
imf_var	0.954***	0.231***	0.122	1.408***	0.403***
	(0.253)	(0.0581)	(0.144)	(0.316)	(0.0521)
Chinn_Ito	0.514***	0.102***	0.192***	0.482***	0.120***
	(0.123)	(0.0172)	(0.0374)	(0.132)	(0.0194)
Vix	-0.0567	0.0160	-0.0247	-0.143	0.0108
	(0.190)	(0.0320)	(0.0815)	(0.131)	(0.0431)
Fed_Funds	-0.0883	-0.179***	0.0436	0.466*	-0.0325
	(0.284)	(0.0572)	(0.126)	(0.256)	(0.0677)
logGDPcurrent	-0.760***	1.014***	1.597***	-4.142***	-0.364***
	(0.122)	(0.0227)	(0.0482)	(0.180)	(0.0321)

	(1)	(2)	(3)	(4)	(5)
Broad_Money	0.0166***	-0.00277***	0.00197*	-0.00890**	0.00103
	(0.00419)	(0.000764)	(0.00113)	(0.00429)	(0.00119)
Inflation	-3.10e-05	-0.000155***	5.67e-05	-0.000549***	-0.000101***
	(4.30e-05)	(3.96e-05)	(4.99e-05)	(7.90e-05)	(3.07e-05)
Exports_Ratio	0.0818***	0.0185***	0.00966***	0.0279***	0.0131***
	(0.00531)	(0.000904)	(0.00146)	(0.00676)	(0.00162)
Constant	6.013**	-4.449***	-10.61***	36.83***	5.687***
	(2.371)	(0.439)	(1.147)	(2.128)	(0.573)
Observations	3,199	3,015	1,235	2,455	2,435
R-squared	0.187	0.692	0.702	0.340	0.146

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

Table 3: Aggregate IMF Dummy, Model Specification Three

Model specification 3, Aggregate IMF Dummy	(1) FDI/GDP	(2) Ln(FDI-pc)	(3) Ln(Portfolio-pc)	(4) ODA/GDP	(5) Ln(ODA-pc)
imf_var	0.435	0.0376	0.0176	1.462***	0.268***
	(0.324)	(0.0655)	(0.146)	(0.302)	(0.0323)
Chinn_Ito	0.315***	0.0516**	0.103	-0.0827	0.00963
	(0.114)	(0.0258)	(0.0670)	(0.175)	(0.0200)
Vix	-0.0703	0.0163	0.0271	-0.0705	0.00607
	(0.189)	(0.0259)	(0.0728)	(0.104)	(0.0215)
Fed_Funds	-0.0260	-0.205***	-0.220	0.383*	0.0704**
	(0.313)	(0.0529)	(0.139)	(0.221)	(0.0334)
logGDPcurrent	-1.374***	0.876***	0.830***	-4.206***	0.126*
	(0.462)	(0.0890)	(0.254)	(0.436)	(0.0671)
Broad_Money	0.0534***	-0.00139	-0.00140	0.0526***	0.00343**
	(0.0110)	(0.00136)	(0.00293)	(0.00975)	(0.00172)
Inflation	-0.000152***	-0.000349***	-8.25e-06	-0.000666***	-6.41e-05***
	(4.76e-05)	(7.49e-05)	(7.57e-05)	(0.000154)	(1.05e-05)
Exports_Ratio	0.0163	0.00859***	0.00296	-0.0176	0.00134
	(0.0184)	(0.00203)	(0.00543)	(0.0167)	(0.00158)
Constant	12.09***	-1.985**	-3.696	33.75***	2.996***
	(4.473)	(0.785)	(2.348)	(3.689)	(0.597)
Observations	3,199	3,015	1,235	2,455	2,435
R-squared	0.421	0.818	0.834	0.715	0.841

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

Table 4: SBA Dummy, Model Specification One

Model specification 1, SBA Dummy	(1) FDI/GDP	(2) Ln(FDI-pc)	(3) Ln(Portfolio-pc)	(4) ODA/GDP	(5) Ln(ODA-pc)
imf_var	-1.419***	0.0806	0.0951	-1.949***	-0.480***
	(0.356)	(0.0649)	(0.163)	(0.297)	(0.0876)
Chinn_Ito	0.560***	0.0654***	0.235***	0.596***	0.158***
	(0.119)	(0.0148)	(0.0350)	(0.102)	(0.0166)
Vix	-0.235	0.0277	-0.0842	-0.0591	0.0298
	(0.212)	(0.0295)	(0.0713)	(0.145)	(0.0401)
Fed_Funds	0.119	-0.211***	0.120	0.403	-0.0908
	(0.301)	(0.0528)	(0.117)	(0.284)	(0.0619)
logGDPcurrent	0.474***	1.117***	1.673***	-4.305***	-0.245***
	(0.143)	(0.0174)	(0.0380)	(0.138)	(0.0233)
Constant	2.710	-4.730***	-10.05***	38.91***	5.389***
	(2.844)	(0.389)	(0.943)	(2.043)	(0.518)
Observations	4,686	4,393	1,691	3,350	3,337
R-squared	0.029	0.659	0.669	0.323	0.077

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

Table 5: SBA Dummy, Model Specification Two

Model specification 2, SBA Dummy	(1) FDI/GDP	(2) Ln(FDI-pc)	(3) Ln(Portfolio-pc)	(4) ODA/GDP	(5) Ln(ODA-pc)
imf_var	-0.0883	0.177**	0.152	-1.750***	-0.272***
	(0.338)	(0.0707)	(0.194)	(0.322)	(0.0918)
Chinn_Ito	0.552***	0.110***	0.195***	0.581***	0.145***
	(0.126)	(0.0169)	(0.0373)	(0.130)	(0.0197)
Vix	-0.0475	0.0167	-0.0238	-0.127	0.0130
	(0.190)	(0.0327)	(0.0815)	(0.128)	(0.0435)
Fed_Funds	-0.161	-0.194***	0.0359	0.351	-0.0631
	(0.284)	(0.0580)	(0.125)	(0.252)	(0.0682)
logGDPcurrent	-0.879***	0.984***	1.579***	-4.237***	-0.403***
	(0.127)	(0.0210)	(0.0426)	(0.175)	(0.0327)
Broad_Money	0.0154***	-0.00297***	0.00195*	-0.0121***	0.000226
	(0.00422)	(0.000753)	(0.00112)	(0.00429)	(0.00120)
Inflation	-5.30e-05	-0.000158***	5.37e-05	-0.000586***	-0.000111***
	(4.55e-05)	(4.02e-05)	(4.97e-05)	(7.75e-05)	(3.02e-05)
Exports_Ratio	0.0815***	0.0185***	0.00967***	0.0250***	0.0125***
	(0.00535)	(0.000905)	(0.00146)	(0.00682)	(0.00163)
Constant	7.347***	-4.107***	-10.43***	38.34***	6.225***
	(2.394)	(0.433)	(1.108)	(2.042)	(0.576)

	Observations	3,199	3,015	1,235	2,455	2,435
	R-squared	0.183	0.691	0.701	0.337	0.132

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

Table 6: SBA Dummy, Model Specification Three

Model specification 3, SBA Dummy	(1) FDI/GDP	(2) Ln(FDI-pc)	(3) Ln(Portfolio-pc)	(4) ODA/GDP	(5) Ln(ODA-pc)
imf_var	-0.195	-0.00175	0.109	-0.0594	0.000159
	(0.349)	(0.0665)	(0.190)	(0.218)	(0.0550)
Chinn_Ito	0.309***	0.0509**	0.103	-0.0830	0.00931
	(0.113)	(0.0257)	(0.0667)	(0.176)	(0.0204)
Vix	-0.0636	0.0167	0.0276	-0.0464	0.00921
	(0.190)	(0.0260)	(0.0727)	(0.105)	(0.0215)
Fed_Funds	-0.0750	-0.209***	-0.220	0.183	0.0361
	(0.312)	(0.0532)	(0.139)	(0.222)	(0.0332)
logGDPcurrent	-1.490***	0.867***	0.836***	-4.676***	0.0412
	(0.473)	(0.0882)	(0.256)	(0.436)	(0.0670)
Broad_Money	0.0528***	-0.00145	-0.00149	0.0488***	0.00272
	(0.0109)	(0.00136)	(0.00293)	(0.00961)	(0.00171)
Inflation	-0.000160***	-0.000351***	-4.87e-06	-0.000686***	-6.79e-05***
	(4.82e-05)	(7.46e-05)	(7.50e-05)	(0.000160)	(1.08e-05)
Exports_Ratio	0.0157	0.00854***	0.00304	-0.0179	0.00124
	(0.0185)	(0.00203)	(0.00546)	(0.0168)	(0.00157)
Constant	13.35***	-1.881**	-3.721	38.82***	3.929***
	(4.536)	(0.768)	(2.339)	(3.658)	(0.599)
Observations	3,199	3,015	1,235	2,455	2,435
R-squared	0.420	0.818	0.834	0.711	0.836

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

Table 7: EFF Dummy, Model Specification One

Model specification 1, EFF Dummy	(1) FDI/GDP	(2) Ln(FDI-pc)	(3) Ln(Portfolio-pc)	(4) ODA/GDP	(5) Ln(ODA-pc)
imf_var	4.589**	0.505***	0.573***	-2.293***	-0.0489
	(2.124)	(0.101)	(0.194)	(0.354)	(0.121)
Chinn_Ito	0.542***	0.0644***	0.232***	0.585***	0.152***
	(0.118)	(0.0148)	(0.0351)	(0.102)	(0.0166)
Vix	-0.239	0.0281	-0.0856	-0.0665	0.0285
	(0.212)	(0.0293)	(0.0716)	(0.146)	(0.0402)

	FDI/GDP	Ln(FDI-pc)	Ln(Portfolio-pc)	ODA/GDP	Ln(ODA-pc)
Fed_Funds	0.172	-0.206***	0.127	0.384	-0.0897
	(0.304)	(0.0526)	(0.117)	(0.285)	(0.0622)
logGDPcurrent	0.487***	1.118***	1.677***	-4.332***	-0.256***
	(0.144)	(0.0174)	(0.0380)	(0.138)	(0.0232)
Constant	2.278	-4.778***	-10.11***	39.41***	5.481***
	(2.873)	(0.387)	(0.948)	(2.055)	(0.518)
Observations	4,686	4,393	1,691	3,350	3,337
R-squared	0.031	0.660	0.670	0.322	0.069

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

Table 8: EFF Dummy, Model Specification Two

Model specification 2, EFF Dummy	(1) FDI/GDP	(2) Ln(FDI-pc)	(3) Ln(Portfolio-pc)	(4) ODA/GDP	(5) Ln(ODA-pc)
imf_var	0.691	0.369***	0.480**	-1.808***	0.204*
	(0.678)	(0.104)	(0.206)	(0.377)	(0.123)
Chinn_Ito	0.549***	0.110***	0.193***	0.565***	0.138***
	(0.125)	(0.0168)	(0.0375)	(0.129)	(0.0196)
Vix	-0.0490	0.0175	-0.0258	-0.134	0.0128
	(0.190)	(0.0324)	(0.0818)	(0.130)	(0.0433)
Fed_Funds	-0.151	-0.191***	0.0442	0.333	-0.0611
	(0.284)	(0.0578)	(0.126)	(0.253)	(0.0679)
logGDPcurrent	-0.875***	0.988***	1.583***	-4.306***	-0.414***
	(0.127)	(0.0210)	(0.0427)	(0.175)	(0.0319)
Broad_Money	0.0154***	-0.00306***	0.00195*	-0.0108**	0.000238
	(0.00421)	(0.000757)	(0.00112)	(0.00427)	(0.00120)
Inflation	-5.09e-05	-0.000153***	5.51e-05	-0.000584***	-0.000110***
	(4.52e-05)	(3.98e-05)	(4.97e-05)	(7.67e-05)	(3.02e-05)
Exports_Ratio	0.0814***	0.0184***	0.00957***	0.0271***	0.0129***
	(0.00532)	(0.000900)	(0.00144)	(0.00680)	(0.00162)
Constant	7.266***	-4.168***	-10.48***	39.00***	6.274***
	(2.398)	(0.431)	(1.115)	(2.069)	(0.570)
Observations	3,199	3,015	1,235	2,455	2,435
R-squared	0.184	0.692	0.702	0.336	0.130

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

Table 9: EFF Dummy, Model Specification Three

Model specification 3, EFF Dummy	(1) FDI/GDP	(2) Ln(FDI-pc)	(3) Ln(Portfolio-pc)	(4) ODA/GDP	(5) Ln(ODA-pc)

	(1)	(2)	(3)	(4)	(5)
imf_var	0.786	0.0229	0.630**	-0.324	0.0855
	(0.605)	(0.0971)	(0.262)	(0.257)	(0.0858)
Chinn_Ito	0.317***	0.0512**	0.110	-0.0864	0.00990
	(0.114)	(0.0257)	(0.0668)	(0.176)	(0.0202)
Vix	-0.0663	0.0167	0.0240	-0.0465	0.00948
	(0.190)	(0.0260)	(0.0726)	(0.105)	(0.0215)
Fed_Funds	-0.0542	-0.209***	-0.198	0.177	0.0377
	(0.311)	(0.0533)	(0.139)	(0.222)	(0.0335)
logGDPcurrent	-1.457***	0.867***	0.861***	-4.683***	0.0439
	(0.466)	(0.0879)	(0.252)	(0.436)	(0.0664)
Broad_Money	0.0534***	-0.00143	-0.000829	0.0485***	0.00280
	(0.0108)	(0.00137)	(0.00291)	(0.00962)	(0.00171)
Inflation	-0.000155***	-0.000350***	1.35e-05	-0.000687***	-6.74e-05***
	(4.70e-05)	(7.46e-05)	(7.55e-05)	(0.000160)	(1.08e-05)
Exports_Ratio	0.0148	0.00851***	0.00209	-0.0173	0.00108
	(0.0183)	(0.00203)	(0.00537)	(0.0169)	(0.00158)
Constant	12.91***	-1.892**	-4.098*	38.98***	3.877***
	(4.463)	(0.768)	(2.307)	(3.660)	(0.586)
Observations	3,199	3,015	1,235	2,455	2,435
R-squared	0.421	0.818	0.835	0.711	0.836

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 10: ESAF/PRGF/ECF Dummy, Model Specification One

	(1) FDI/GDP	(2) Ln(FDI-pc)	(3) Ln(Portfolio-pc)	(4) ODA/GDP	(5) Ln(ODA-pc)
Model specification 1, ESAF/PRGF/ECF Dummy					
imf_var	0.551	0.0677	0.0673	2.239***	0.542***
	(0.383)	(0.0799)	(0.182)	(0.414)	(0.0465)
Chinn_Ito	0.543***	0.0646***	0.235***	0.553***	0.147***
	(0.119)	(0.0150)	(0.0350)	(0.103)	(0.0165)
Vix	-0.242	0.0274	-0.0845	-0.0846	0.0236
	(0.212)	(0.0294)	(0.0713)	(0.147)	(0.0404)
Fed_Funds	0.148	-0.208***	0.122	0.523*	-0.0614
	(0.302)	(0.0528)	(0.117)	(0.285)	(0.0625)
logGDPcurrent	0.538***	1.124***	1.679***	-4.030***	-0.177***
	(0.152)	(0.0201)	(0.0416)	(0.163)	(0.0253)
Constant	2.139	-4.796***	-10.11***	36.56***	4.809***
	(2.873)	(0.400)	(0.960)	(2.191)	(0.528)
Observations	4,686	4,393	1,691	3,350	3,337

| R-squared | 0.028 | 0.659 | 0.669 | 0.328 | 0.088 |

Table 11: ESAF/PRGF/ECF Dummy, Model Specification Two

Model specification 2, ESAF/PRGF/ECF Dummy	(1) FDI/GDP	(2) Ln(FDI-pc)	(3) Ln(Portfolio-pc)	(4) ODA/GDP	(5) Ln(ODA-pc)
imf_var	0.292	-0.0682	0.159	2.955***	0.600***
	(0.409)	(0.0931)	(0.194)	(0.506)	(0.0545)
Chinn_Ito	0.545***	0.113***	0.194***	0.511***	0.132***
	(0.127)	(0.0173)	(0.0374)	(0.131)	(0.0193)
Vix	-0.0508	0.0179	-0.0249	-0.170	0.00468
	(0.190)	(0.0328)	(0.0814)	(0.133)	(0.0436)
Fed_Funds	-0.147	-0.199***	0.0416	0.531**	-0.0269
	(0.285)	(0.0583)	(0.125)	(0.259)	(0.0684)
logGDPcurrent	-0.847***	0.978***	1.597***	-3.859***	-0.320***
	(0.139)	(0.0241)	(0.0472)	(0.205)	(0.0340)
Broad_Money	0.0156***	-0.00308***	0.00194*	-0.00730*	0.00117
	(0.00421)	(0.000759)	(0.00113)	(0.00431)	(0.00118)
Inflation	-4.80e-05	-0.000155***	5.85e-05	-0.000529***	-9.96e-05***
	(4.57e-05)	(3.99e-05)	(4.99e-05)	(8.16e-05)	(3.11e-05)
Exports_Ratio	0.0814***	0.0184***	0.00959***	0.0231***	0.0121***
	(0.00532)	(0.000905)	(0.00145)	(0.00687)	(0.00162)
Constant	7.060***	-4.046***	-10.59***	35.05***	5.509***
	(2.445)	(0.449)	(1.127)	(2.263)	(0.585)
Observations	3,199	3,015	1,235	2,455	2,435
R-squared	0.184	0.691	0.702	0.349	0.152

Table 12: ESAF/PRGF/ECF Dummy, Model Specification Three

Model specification 3, ESAF/PRGF/ECF Dummy	(1) FDI/GDP	(2) Ln(FDI-pc)	(3) Ln(Portfolio-pc)	(4) ODA/GDP	(5) Ln(ODA-pc)
imf_var	-0.0960	-0.0221	-0.158	1.905***	0.281***
	(0.476)	(0.106)	(0.218)	(0.451)	(0.0281)
Chinn_Ito	0.308***	0.0507**	0.102	-0.0524	0.0144
	(0.114)	(0.0257)	(0.0669)	(0.180)	(0.0203)

Vix	-0.0630	0.0170	0.0280	-0.0793	0.00458
	(0.190)	(0.0259)	(0.0727)	(0.102)	(0.0214)
Fed_Funds	-0.0781	-0.210***	-0.226	0.345	0.0590*
	(0.312)	(0.0528)	(0.139)	(0.222)	(0.0331)
logGDPcurrent	-1.495***	0.863***	0.803***	-4.263***	0.100
	(0.472)	(0.0877)	(0.246)	(0.446)	(0.0670)
Broad_Money	0.0527***	-0.00146	-0.00131	0.0522***	0.00321*
	(0.0109)	(0.00136)	(0.00292)	(0.00960)	(0.00172)
Inflation	-0.000160***	-0.000351***	-1.08e-05	-0.000673***	-6.61e-05***
	(4.79e-05)	(7.46e-05)	(7.46e-05)	(0.000156)	(1.04e-05)
Exports_Ratio	0.0158	0.00851***	0.00285	-0.0140	0.00180
	(0.0186)	(0.00202)	(0.00541)	(0.0168)	(0.00157)
Constant	13.43***	-1.846**	-3.383	34.79***	3.349***
	(4.562)	(0.768)	(2.257)	(3.720)	(0.595)
Observations	3,199	3,015	1,235	2,455	2,435
R-squared	0.420	0.818	0.834	0.715	0.839

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

2B: Resources Allocated (Total Access) Models

Table 13: Aggregate IMF Dummy, Model Specification One, Resources Allocated

Model specification 1, Aggregate IMF Dummy, Total Access	(1) FDI/GDP	(2) Ln(FDI-pc)	(3) Ln(Portfolio-pc)	(4) ODA/GDP	(5) Ln(ODA-pc)
imf_var	1.829***	0.402***	-0.235	4.356***	1.447***
	(0.656)	(0.105)	(0.262)	(0.729)	(0.0888)
imf_var_level	-0.202	-0.0354**	0.0592	-0.755***	-0.256***
	(0.139)	(0.0155)	(0.0406)	(0.123)	(0.0170)
Chinn_Ito	0.519***	0.0570***	0.235***	0.522***	0.137***
	(0.119)	(0.0151)	(0.0349)	(0.106)	(0.0166)
Vix	-0.240	0.0277	-0.0865	-0.0379	0.0368
	(0.211)	(0.0291)	(0.0714)	(0.146)	(0.0393)
Fed_Funds	0.173	-0.198***	0.126	0.410	-0.0899
	(0.302)	(0.0525)	(0.117)	(0.285)	(0.0611)
logGDPcurrent	0.622***	1.154***	1.672***	-4.063***	-0.162***
	(0.149)	(0.0201)	(0.0437)	(0.160)	(0.0242)
Constant	1.254	-5.105***	-10.04***	36.61***	4.623***
	(2.882)	(0.400)	(0.981)	(2.195)	(0.515)
Observations	4,686	4,393	1,691	3,350	3,337
R-squared	0.029	0.660	0.670	0.330	0.116

Table 14: Aggregate IMF Dummy, Model Specification Two, Resources Allocated

Model specification 2, Aggregate IMF Dummy, Total Access	(1) FDI/GDP	(2) Ln(FDI-pc)	(3) Ln(Portfolio-pc)	(4) ODA/GDP	(5) Ln(ODA-pc)
imf_var	1.981***	0.223**	0.0162	4.970***	1.421***
	(0.652)	(0.114)	(0.305)	(0.857)	(0.0931)
imf_var_level	-0.203*	0.00141	0.0215	-0.726***	-0.209***
	(0.116)	(0.0160)	(0.0498)	(0.143)	(0.0169)
Chinn_Ito	0.501***	0.103***	0.193***	0.449***	0.112***
	(0.126)	(0.0175)	(0.0376)	(0.136)	(0.0194)
Vix	-0.0551	0.0160	-0.0259	-0.116	0.0182
	(0.189)	(0.0320)	(0.0816)	(0.130)	(0.0423)
Fed_Funds	-0.0905	-0.179***	0.0455	0.428*	-0.0442
	(0.284)	(0.0572)	(0.126)	(0.255)	(0.0668)
logGDPcurrent	-0.716***	1.014***	1.594***	-3.903***	-0.298***
	(0.130)	(0.0238)	(0.0495)	(0.201)	(0.0325)
Broad_Money	0.0168***	-0.00277***	0.00196*	-0.00653	0.00175
	(0.00419)	(0.000765)	(0.00113)	(0.00431)	(0.00115)
Inflation	-2.46e-05	-0.000155***	5.59e-05	-0.000525***	-9.40e-05***
	(4.33e-05)	(3.96e-05)	(5.00e-05)	(8.18e-05)	(3.14e-05)
Exports_Ratio	0.0815***	0.0185***	0.00969***	0.0233***	0.0119***
	(0.00529)	(0.000906)	(0.00146)	(0.00689)	(0.00160)
Constant	5.662**	-4.447***	-10.58***	34.86***	5.151***
	(2.402)	(0.444)	(1.155)	(2.253)	(0.566)
Observations	3,199	3,015	1,235	2,455	2,435
R-squared	0.188	0.692	0.702	0.351	0.179

Table 15: Aggregate IMF Dummy, Model Specification Three, Resources Allocated

Model specification 3, Aggregate IMF Dummy, Total Access	(1) FDI/GDP	(2) Ln(FDI-pc)	(3) Ln(Portfolio-pc)	(4) ODA/GDP	(5) Ln(ODA-pc)
imf_var	0.518	0.0295	-0.214	1.601**	0.294***
	(0.692)	(0.152)	(0.325)	(0.732)	(0.0758)

imf_var_level	-0.0159	0.00155	0.0445	-0.0276	-0.00504
	(0.120)	(0.0208)	(0.0548)	(0.114)	(0.0150)
Chinn_Ito	0.315***	0.0515**	0.101	-0.0820	0.00981
	(0.114)	(0.0258)	(0.0672)	(0.175)	(0.0200)
Vix	-0.0702	0.0163	0.0245	-0.0695	0.00623
	(0.190)	(0.0259)	(0.0728)	(0.104)	(0.0216)
Fed_Funds	-0.0262	-0.205***	-0.212	0.380*	0.0699**
	(0.313)	(0.0529)	(0.140)	(0.222)	(0.0336)
logGDPcurrent	-1.374***	0.876***	0.838***	-4.210***	0.125*
	(0.462)	(0.0891)	(0.255)	(0.436)	(0.0670)
Broad_Money	0.0534***	-0.00139	-0.00135	0.0528***	0.00346**
	(0.0109)	(0.00135)	(0.00294)	(0.00972)	(0.00172)
Inflation	-0.000153***	-0.000349***	-9.00e-06	-0.000667***	-6.43e-05***
	(4.78e-05)	(7.46e-05)	(7.56e-05)	(0.000154)	(1.06e-05)
Exports_Ratio	0.0163	0.00859***	0.00313	-0.0177	0.00133
	(0.0184)	(0.00203)	(0.00544)	(0.0167)	(0.00158)
Constant	12.08***	-1.984**	-3.705	33.75***	2.998***
	(4.468)	(0.787)	(2.346)	(3.689)	(0.595)
Observations	3,199	3,015	1,235	2,455	2,435
R-squared	0.421	0.818	0.834	0.715	0.841

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

Table 16: SBA Dummy, Model Specification One, Resources Allocated

Model specification 1, SBA Dummy, Total Access	(1) FDI/GDP	(2) Ln(FDI-pc)	(3) Ln(Portfolio-pc)	(4) ODA/GDP	(5) Ln(ODA-pc)
imf_var	1.950*	0.690***	-0.983*	-0.843	1.407***
	(0.996)	(0.217)	(0.551)	(1.128)	(0.217)
imf_var_level	-0.575***	-0.104***	0.181**	-0.190	-0.327***
	(0.176)	(0.0328)	(0.0814)	(0.167)	(0.0354)
Chinn_Ito	0.543***	0.0619***	0.240***	0.590***	0.148***
	(0.119)	(0.0149)	(0.0351)	(0.103)	(0.0166)
Vix	-0.229	0.0288	-0.0841	-0.0564	0.0347
	(0.212)	(0.0295)	(0.0714)	(0.145)	(0.0399)
Fed_Funds	0.110	-0.212***	0.120	0.398	-0.0986
	(0.302)	(0.0528)	(0.117)	(0.284)	(0.0614)
logGDPcurrent	0.491***	1.121***	1.668***	-4.297***	-0.233***
	(0.144)	(0.0175)	(0.0380)	(0.139)	(0.0233)
Constant	2.519	-4.768***	-10.01***	38.82***	5.247***
	(2.850)	(0.390)	(0.943)	(2.052)	(0.516)
Observations	4,686	4,393	1,691	3,350	3,337

| R-squared | 0.029 | 0.659 | 0.670 | 0.323 | 0.091 |

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

Table 17: SBA Dummy, Model Specification Two, Resources Allocated

Model specification 2, SBA Dummy, Total Access	(1) FDI/GDP	(2) Ln(FDI-pc)	(3) Ln(Portfolio-pc)	(4) ODA/GDP	(5) Ln(ODA-pc)
imf_var	1.044	0.179	-0.817	-0.861	1.248***
	(1.376)	(0.275)	(0.761)	(1.408)	(0.278)
imf_var_level	-0.185	-0.000401	0.161	-0.149	-0.257***
	(0.237)	(0.0395)	(0.113)	(0.208)	(0.0430)
Chinn_Ito	0.546***	0.110***	0.199***	0.574***	0.134***
	(0.127)	(0.0169)	(0.0375)	(0.132)	(0.0200)
Vix	-0.0467	0.0167	-0.0238	-0.126	0.0149
	(0.190)	(0.0327)	(0.0815)	(0.128)	(0.0437)
Fed_Funds	-0.162	-0.194***	0.0355	0.350	-0.0662
	(0.284)	(0.0580)	(0.125)	(0.252)	(0.0684)
logGDPcurrent	-0.873***	0.984***	1.575***	-4.230***	-0.393***
	(0.127)	(0.0211)	(0.0427)	(0.177)	(0.0327)
Broad_Money	0.0155***	-0.00297***	0.00194*	-0.0120***	0.000409
	(0.00423)	(0.000753)	(0.00113)	(0.00430)	(0.00119)
Inflation	-5.08e-05	-0.000158***	5.41e-05	-0.000584***	-0.000108***
	(4.52e-05)	(4.02e-05)	(4.98e-05)	(7.77e-05)	(3.04e-05)
Exports_Ratio	0.0814***	0.0185***	0.00971***	0.0247***	0.0122***
	(0.00537)	(0.000905)	(0.00145)	(0.00684)	(0.00162)
Constant	7.294***	-4.107***	-10.40***	38.28***	6.134***
	(2.397)	(0.433)	(1.108)	(2.050)	(0.577)
Observations	3,199	3,015	1,235	2,455	2,435
R-squared	0.184	0.691	0.702	0.338	0.141

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

Table 18: SBA Dummy, Model Specification Three, Resources Allocated

Model specification 3, SBA Dummy, Total Access	(1) FDI/GDP	(2) Ln(FDI-pc)	(3) Ln(Portfolio-pc)	(4) ODA/GDP	(5) Ln(ODA-pc)
imf_var	-0.292	-0.282	-0.529	0.750	0.102
	(1.399)	(0.233)	(0.709)	(0.987)	(0.192)
imf_var_level	0.0160	0.0466	0.108	-0.137	-0.0175
	(0.252)	(0.0331)	(0.109)	(0.142)	(0.0323)

	(1)	(2)	(3)	(4)	(5)
Chinn_Ito	0.309***	0.0511**	0.102	-0.0859	0.00900
	(0.113)	(0.0257)	(0.0669)	(0.176)	(0.0204)
Vix	-0.0636	0.0165	0.0269	-0.0453	0.00938
	(0.190)	(0.0260)	(0.0727)	(0.105)	(0.0215)
Fed_Funds	-0.0750	-0.209***	-0.219	0.180	0.0356
	(0.312)	(0.0532)	(0.139)	(0.222)	(0.0332)
logGDPcurrent	-1.491***	0.864***	0.835***	-4.678***	0.0406
	(0.473)	(0.0883)	(0.256)	(0.436)	(0.0671)
Broad_Money	0.0528***	-0.00137	-0.00147	0.0487***	0.00270
	(0.0110)	(0.00136)	(0.00295)	(0.00960)	(0.00171)
Inflation	-0.000160***	-0.000349***	-9.31e-06	-0.000685***	-6.78e-05***
	(4.81e-05)	(7.21e-05)	(7.53e-05)	(0.000160)	(1.08e-05)
Exports_Ratio	0.0157	0.00857***	0.00317	-0.0181	0.00121
	(0.0185)	(0.00203)	(0.00542)	(0.0168)	(0.00157)
Constant	13.36***	-1.864**	-3.705	38.84***	3.933***
	(4.534)	(0.768)	(2.342)	(3.661)	(0.599)
Observations	3,199	3,015	1,235	2,455	2,435
R-squared	0.420	0.818	0.834	0.711	0.836

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 19: EFF Dummy, Model Specification One, Resources Allocated

Model specification 1, EFF Dummy, Total Access	(1) FDI/GDP	(2) Ln(FDI-pc)	(3) Ln(Portfolio-pc)	(4) ODA/GDP	(5) Ln(ODA-pc)
imf_var	9.484**	1.654***	0.691	2.436**	2.607***
	(3.832)	(0.364)	(0.624)	(1.073)	(0.428)
imf_var_level	-0.740	-0.175***	-0.0176	-0.769***	-0.432***
	(0.512)	(0.0540)	(0.0884)	(0.163)	(0.0712)
Chinn_Ito	0.537***	0.0630***	0.232***	0.573***	0.145***
	(0.118)	(0.0148)	(0.0351)	(0.103)	(0.0167)
Vix	-0.239	0.0278	-0.0854	-0.0642	0.0290
	(0.212)	(0.0292)	(0.0717)	(0.146)	(0.0397)
Fed_Funds	0.172	-0.206***	0.127	0.375	-0.0939
	(0.303)	(0.0525)	(0.117)	(0.285)	(0.0618)
logGDPcurrent	0.493***	1.120***	1.677***	-4.333***	-0.257***
	(0.144)	(0.0174)	(0.0380)	(0.138)	(0.0232)
Constant	2.227	-4.790***	-10.11***	39.43***	5.505***
	(2.871)	(0.387)	(0.949)	(2.055)	(0.509)
Observations	4,686	4,393	1,691	3,350	3,337
R-squared	0.031	0.660	0.670	0.323	0.077

Robust standard errors in parentheses

Table 20: EFF Dummy, Model Specification Two, Resources Allocated

Model specification 2, EFF Dummy, Total Access	(1) FDI/GDP	(2) Ln(FDI-pc)	(3) Ln(Portfolio-pc)	(4) ODA/GDP	(5) Ln(ODA-pc)
imf_var	8.597*	0.840*	0.877	2.269**	2.210***
	(4.574)	(0.438)	(0.790)	(1.048)	(0.419)
imf_var_level	-1.283*	-0.0780	-0.0668	-0.666***	-0.328***
	(0.657)	(0.0694)	(0.120)	(0.159)	(0.0698)
Chinn_Ito	0.525***	0.109***	0.192***	0.548***	0.130***
	(0.126)	(0.0171)	(0.0378)	(0.131)	(0.0198)
Vix	-0.0455	0.0173	-0.0243	-0.130	0.0141
	(0.190)	(0.0325)	(0.0819)	(0.130)	(0.0427)
Fed_Funds	-0.167	-0.192***	0.0416	0.319	-0.0672
	(0.283)	(0.0578)	(0.126)	(0.254)	(0.0674)
logGDPcurrent	-0.869***	0.988***	1.583***	-4.305***	-0.413***
	(0.128)	(0.0210)	(0.0427)	(0.176)	(0.0318)
Broad_Money	0.0157***	-0.00305***	0.00197*	-0.0105**	0.000356
	(0.00421)	(0.000758)	(0.00112)	(0.00427)	(0.00119)
Inflation	-5.11e-05	-0.000153***	5.48e-05	-0.000585***	-0.000111***
	(4.47e-05)	(3.98e-05)	(4.98e-05)	(7.71e-05)	(3.04e-05)
Exports_Ratio	0.0806***	0.0183***	0.00953***	0.0262***	0.0124***
	(0.00525)	(0.000902)	(0.00145)	(0.00686)	(0.00161)
Constant	7.285***	-4.163***	-10.49***	39.02***	6.293***
	(2.398)	(0.431)	(1.115)	(2.071)	(0.559)
Observations	3,199	3,015	1,235	2,455	2,435
R-squared	0.187	0.692	0.702	0.337	0.135

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

Table 21: EFF Dummy, Model Specification Three, Resources Allocated

Model specification 3, EFF Dummy, Total Access	(1) FDI/GDP	(2) Ln(FDI-pc)	(3) Ln(Portfolio-pc)	(4) ODA/GDP	(5) Ln(ODA-pc)
imf_var	5.677	-0.160	2.785***	-1.629	-0.486
	(4.282)	(0.415)	(0.933)	(0.997)	(0.435)
imf_var_level	-0.791	0.0301	-0.362**	0.212	0.0928

	(0.614)	(0.0668)	(0.146)	(0.143)	(0.0764)
Chinn_Ito	0.303***	0.0518**	0.0995	-0.0809	0.0125
	(0.113)	(0.0259)	(0.0667)	(0.176)	(0.0202)
Vix	-0.0632	0.0167	0.0334	-0.0474	0.00920
	(0.190)	(0.0260)	(0.0727)	(0.106)	(0.0220)
Fed_Funds	-0.0675	-0.208***	-0.223	0.181	0.0394
	(0.311)	(0.0533)	(0.141)	(0.222)	(0.0342)
logGDPcurrent	-1.470***	0.867***	0.836***	-4.678***	0.0461
	(0.467)	(0.0880)	(0.253)	(0.436)	(0.0664)
Broad_Money	0.0540***	-0.00145	-0.000815	0.0481***	0.00266
	(0.0107)	(0.00137)	(0.00290)	(0.00966)	(0.00171)
Inflation	-0.000154***	-0.000350***	1.14e-05	-0.000687***	-6.74e-05***
	(4.72e-05)	(7.46e-05)	(7.61e-05)	(0.000160)	(1.08e-05)
Exports_Ratio	0.0124	0.00861***	0.000798	-0.0163	0.00150
	(0.0179)	(0.00205)	(0.00540)	(0.0173)	(0.00158)
Constant	12.97***	-1.894**	-3.953*	38.96***	3.864***
	(4.459)	(0.769)	(2.315)	(3.658)	(0.587)
Observations	3,199	3,015	1,235	2,455	2,435
R-squared	0.421	0.818	0.836	0.711	0.836

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

Table 22: ESAF/PRGF/ECF Dummy, Model Specification One, Resources Allocated

Model specification 1, ESAF/PRGF/ECF Dummy, Total Access	(1) FDI/GDP	(2) Ln(FDI-pc)	(3) Ln(Portfolio-pc)	(4) ODA/GDP	(5) Ln(ODA-pc)
imf_var	-0.309	-0.316	0.538	10.78***	1.639***
	(1.258)	(0.219)	(0.570)	(1.690)	(0.131)
imf_var_level	0.215	0.0960*	-0.120	-2.131***	-0.275***
	(0.276)	(0.0496)	(0.143)	(0.388)	(0.0299)
Chinn_Ito	0.542***	0.0639***	0.238***	0.568***	0.150***
	(0.118)	(0.0150)	(0.0350)	(0.103)	(0.0165)
Vix	-0.243	0.0270	-0.0835	-0.0669	0.0258
	(0.212)	(0.0294)	(0.0714)	(0.144)	(0.0403)
Fed_Funds	0.152	-0.207***	0.120	0.461	-0.0696
	(0.302)	(0.0527)	(0.117)	(0.282)	(0.0624)
logGDPcurrent	0.541***	1.125***	1.675***	-4.067***	-0.182***
	(0.152)	(0.0201)	(0.0415)	(0.163)	(0.0251)
Constant	2.115	-4.808***	-10.09***	36.92***	4.857***
	(2.877)	(0.400)	(0.961)	(2.163)	(0.526)
Observations	4,686	4,393	1,691	3,350	3,337

| R-squared | 0.028 | 0.659 | 0.670 | 0.338 | 0.096 |

Table 23: ESAF/PRGF/ECF Dummy, Model Specification Two, Resources Allocated

Model specification 2, ESAF/PRGF/ECF Dummy, Total Access	(1) FDI/GDP	(2) Ln(FDI-pc)	(3) Ln(Portfolio-pc)	(4) ODA/GDP	(5) Ln(ODA-pc)
imf_var	-1.010	-0.646***	0.705	12.79***	1.784***
	(0.705)	(0.222)	(0.628)	(2.247)	(0.150)
imf_var_level	0.325**	0.144***	-0.138	-2.447***	-0.296***
	(0.156)	(0.0492)	(0.156)	(0.514)	(0.0340)
Chinn_Ito	0.539***	0.110***	0.197***	0.560***	0.139***
	(0.127)	(0.0173)	(0.0375)	(0.131)	(0.0194)
Vix	-0.0526	0.0173	-0.0238	-0.150	0.00723
	(0.190)	(0.0326)	(0.0816)	(0.125)	(0.0434)
Fed_Funds	-0.140	-0.196***	0.0382	0.455*	-0.0364
	(0.285)	(0.0580)	(0.125)	(0.251)	(0.0682)
logGDPcurrent	-0.842***	0.980***	1.594***	-3.910***	-0.327***
	(0.139)	(0.0241)	(0.0472)	(0.205)	(0.0339)
Broad_Money	0.0156***	-0.00311***	0.00195*	-0.00636	0.00128
	(0.00422)	(0.000760)	(0.00113)	(0.00428)	(0.00117)
Inflation	-4.85e-05	-0.000157***	5.96e-05	-0.000524***	-9.90e-05***
	(4.54e-05)	(4.00e-05)	(4.98e-05)	(7.81e-05)	(3.06e-05)
Exports_Ratio	0.0814***	0.0184***	0.00958***	0.0234***	0.0122***
	(0.00532)	(0.000905)	(0.00145)	(0.00683)	(0.00161)
Constant	7.006***	-4.073***	-10.56***	35.55***	5.571***
	(2.447)	(0.447)	(1.131)	(2.205)	(0.582)
Observations	3,199	3,015	1,235	2,455	2,435
R-squared	0.184	0.691	0.702	0.366	0.161

Table 24: ESAF/PRGF/ECF Dummy, Model Specification Three, Resources Allocated

Model specification 3, ESAF/PRGF/ECF Dummy, Total	(1) FDI/GDP	(2) Ln(FDI-pc)	(3) Ln(Portfolio-pc)	(4) ODA/GDP	(5) Ln(ODA-pc)

Access

imf_var	-2.920***	-0.787***	0.123	1.989	0.280***
	(0.939)	(0.256)	(0.605)	(1.691)	(0.0847)
imf_var_level	0.690***	0.186***	-0.0684	-0.0205	0.000240
	(0.172)	(0.0501)	(0.151)	(0.380)	(0.0199)
Chinn_Ito	0.285**	0.0445*	0.105	-0.0516	0.0144
	(0.114)	(0.0258)	(0.0672)	(0.180)	(0.0204)
Vix	-0.0665	0.0164	0.0283	-0.0791	0.00458
	(0.189)	(0.0256)	(0.0727)	(0.102)	(0.0214)
Fed_Funds	-0.0628	-0.207***	-0.227	0.344	0.0590*
	(0.311)	(0.0524)	(0.139)	(0.222)	(0.0331)
logGDPcurrent	-1.461***	0.870***	0.796***	-4.265***	0.100
	(0.471)	(0.0876)	(0.246)	(0.445)	(0.0670)
Broad_Money	0.0527***	-0.00145	-0.00131	0.0522***	0.00321*
	(0.0109)	(0.00135)	(0.00292)	(0.00960)	(0.00172)
Inflation	-0.000142***	-0.000350***	-9.75e-06	-0.000674***	-6.61e-05***
	(5.08e-05)	(7.29e-05)	(7.47e-05)	(0.000153)	(1.05e-05)
Exports_Ratio	0.0160	0.00855***	0.00283	-0.0140	0.00180
	(0.0185)	(0.00202)	(0.00541)	(0.0168)	(0.00157)
Constant	13.23***	-1.890**	-3.349	34.80***	3.349***
	(4.549)	(0.765)	(2.259)	(3.707)	(0.596)
Observations	3,199	3,015	1,235	2,455	2,435
R-squared	0.421	0.819	0.834	0.715	0.839

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

2C: Difference-In-Difference Models

Table 25: Contemporaneous Treatment, Model Specification One

Model specification 1, DID, Contemporaneous treatment	(1) FDI/GDP	(2) Ln(FDI-pc)	(3) Ln(Portfolio-pc)	(4) ODA/GDP	(5) Ln(ODA-pc)
treatment_var	0.642	0.173***	0.194	1.343***	0.329***
	(0.465)	(0.0548)	(0.125)	(0.295)	(0.0477)
Ever_IMF_Program	0.542	0.163***	-0.408***	-2.174***	-0.360***
	(0.603)	(0.0521)	(0.133)	(0.347)	(0.0773)
Chinn_Ito	0.528***	0.0585***	0.233***	0.590***	0.153***
	(0.118)	(0.0150)	(0.0349)	(0.104)	(0.0167)
Vix	-0.246	0.0258	-0.0718	-0.0504	0.0313
	(0.211)	(0.0291)	(0.0723)	(0.144)	(0.0395)
Fed_Funds	0.191	-0.193***	0.0941	0.409	-0.0827
	(0.303)	(0.0526)	(0.119)	(0.281)	(0.0616)
logGDPcurrent	0.653***	1.167***	1.616***	-4.446***	-0.259***

	(0.172)	(0.0203)	(0.0500)	(0.152)	(0.0257)
Constant	0.682	-5.308***	-9.475***	41.19***	5.643***
	(3.027)	(0.405)	(1.035)	(2.181)	(0.532)
Observations	4,686	4,393	1,691	3,350	3,337
R-squared	0.029	0.661	0.672	0.330	0.084

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

Table 26: Contemporaneous Treatment, Model Specification Two

	(1)	(2)	(3)	(4)	(5)
Model specification 2, DID, Contemporaneous treatment	FDI/GDP	Ln(FDI-pc)	Ln(Portfolio-pc)	ODA/GDP	Ln(ODA-pc)
treatment_var	0.797***	0.174***	0.235	1.730***	0.432***
	(0.273)	(0.0592)	(0.145)	(0.328)	(0.0527)
Ever_IMF_Program	0.574**	0.207***	-0.448***	-1.242***	-0.110
	(0.235)	(0.0621)	(0.154)	(0.320)	(0.0928)
Chinn_Ito	0.507***	0.0998***	0.194***	0.517***	0.123***
	(0.124)	(0.0172)	(0.0376)	(0.133)	(0.0196)
Vix	-0.0655	0.0130	-0.00196	-0.131	0.0118
	(0.190)	(0.0320)	(0.0816)	(0.130)	(0.0428)
Fed_Funds	-0.0586	-0.169***	-0.00643	0.430*	-0.0357
	(0.284)	(0.0576)	(0.127)	(0.256)	(0.0674)
logGDPcurrent	-0.696***	1.037***	1.527***	-4.208***	-0.370***
	(0.129)	(0.0241)	(0.0553)	(0.180)	(0.0325)
Broad_Money	0.0178***	-0.00233***	0.00150	-0.0111***	0.000824
	(0.00420)	(0.000781)	(0.00114)	(0.00426)	(0.00118)
Inflation	-4.06e-05	-0.000176***	8.40e-05*	-0.000526***	-9.91e-05***
	(3.74e-05)	(4.31e-05)	(5.00e-05)	(7.32e-05)	(3.00e-05)
Exports_Ratio	0.0816***	0.0184***	0.00942***	0.0269***	0.0130***
	(0.00529)	(0.000897)	(0.00146)	(0.00684)	(0.00163)
Constant	5.095**	-4.777***	-9.934***	38.33***	5.825***
	(2.428)	(0.453)	(1.198)	(2.174)	(0.584)
Observations	3,199	3,015	1,235	2,455	2,435
R-squared	0.188	0.694	0.704	0.343	0.147

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

Table 27: Contemporaneous Treatment, Model Specification Three

	(1)	(2)	(3)	(4)	(5)
Model specification 3, DID, Contemporaneous	FDI/GDP	Ln(FDI-pc)	Ln(Portfolio-pc)	ODA/GDP	Ln(ODA-pc)

treatment

treatment_var	0.435	0.0376	0.0176	1.462***	0.268***
	(0.324)	(0.0655)	(0.146)	(0.302)	(0.0323)
Ever_IMF_Program	-2.448*	-1.134***	0.611	-10.60***	-0.793***
	(1.287)	(0.265)	(0.473)	(1.505)	(0.127)
Chinn_Ito	0.315***	0.0516**	0.103	-0.0827	0.00963
	(0.114)	(0.0258)	(0.0670)	(0.175)	(0.0200)
Vix	-0.0703	0.0163	0.0271	-0.0705	0.00607
	(0.189)	(0.0259)	(0.0728)	(0.104)	(0.0215)
Fed_Funds	-0.0260	-0.205***	-0.220	0.383*	0.0704**
	(0.313)	(0.0529)	(0.139)	(0.221)	(0.0334)
logGDPcurrent	-1.374***	0.876***	0.830***	-4.206***	0.126*
	(0.462)	(0.0890)	(0.254)	(0.436)	(0.0671)
Broad_Money	0.0534***	-0.00139	-0.00140	0.0526***	0.00343**
	(0.0110)	(0.00136)	(0.00293)	(0.00975)	(0.00172)
Inflation	-0.000152***	-0.000349***	-8.25e-06	-0.000666***	-6.41e-05***
	(4.76e-05)	(7.49e-05)	(7.57e-05)	(0.000154)	(1.05e-05)
Exports_Ratio	0.0163	0.00859***	0.00296	-0.0176	0.00134
	(0.0184)	(0.00203)	(0.00543)	(0.0167)	(0.00158)
Constant	14.54***	-0.851	-4.307*	44.35***	3.788***
	(4.672)	(0.811)	(2.321)	(3.881)	(0.592)
Observations	3,199	3,015	1,235	2,455	2,435
R-squared	0.421	0.818	0.834	0.715	0.841

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

Table 28: Three-Years Post Intervention Treatment, Model Specification One

	(1)	(2)	(3)	(4)	(5)
Model specification 1, DID, Three-Years Post Intervention Treatment	FDI/GDP	Ln(FDI-pc)	Ln(Portfolio-pc)	ODA/GDP	Ln(ODA-pc)
treatment_var	0.769*	0.198***	0.208*	0.485	0.271***
	(0.467)	(0.0558)	(0.125)	(0.325)	(0.0558)
Ever_IMF_Program	0.406	0.130**	-0.437***	-1.941***	-0.377***
	(0.628)	(0.0559)	(0.137)	(0.367)	(0.0806)
Chinn_Ito	0.521***	0.0568***	0.233***	0.608***	0.153***
	(0.120)	(0.0150)	(0.0349)	(0.105)	(0.0167)
Vix	-0.254	0.0236	-0.0739	-0.0579	0.0267
	(0.211)	(0.0292)	(0.0723)	(0.142)	(0.0392)
Fed_Funds	0.221	-0.185***	0.100	0.383	-0.0744
	(0.306)	(0.0528)	(0.119)	(0.281)	(0.0614)
logGDPcurrent	0.674***	1.172***	1.619***	-4.512***	-0.261***
	(0.167)	(0.0205)	(0.0501)	(0.158)	(0.0260)

	(1) FDI/GDP	(2) Ln(FDI-pc)	(3) Ln(Portfolio-pc)	(4) ODA/GDP	(5) Ln(ODA-pc)
Constant	0.548	-5.338***	-9.491***	41.89***	5.705***
	(2.963)	(0.404)	(1.035)	(2.177)	(0.530)
Observations	4,686	4,393	1,691	3,350	3,337
R-squared	0.029	0.661	0.672	0.326	0.080

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

Table 29: Three-Years Post Intervention Treatment, Model Specification Two

Model specification 2, DID, Three-Years Post Intervention Treatment	(1) FDI/GDP	(2) Ln(FDI-pc)	(3) Ln(Portfolio-pc)	(4) ODA/GDP	(5) Ln(ODA-pc)
treatment_var	0.982***	0.208***	0.241	0.573	0.357***
	(0.262)	(0.0595)	(0.149)	(0.369)	(0.0631)
Ever_IMF_Program	0.393	0.169***	-0.474***	-0.923***	-0.132
	(0.249)	(0.0651)	(0.160)	(0.351)	(0.0969)
Chinn_Ito	0.497***	0.0978***	0.194***	0.554***	0.124***
	(0.126)	(0.0173)	(0.0375)	(0.135)	(0.0195)
Vix	-0.0781	0.0103	-0.00480	-0.135	0.00694
	(0.190)	(0.0322)	(0.0817)	(0.127)	(0.0425)
Fed_Funds	-0.0176	-0.160***	0.000387	0.378	-0.0272
	(0.285)	(0.0578)	(0.127)	(0.254)	(0.0674)
logGDPcurrent	-0.671***	1.042***	1.530***	-4.306***	-0.374***
	(0.131)	(0.0240)	(0.0552)	(0.189)	(0.0330)
Broad_Money	0.0181***	-0.00228***	0.00158	-0.0121***	0.000880
	(0.00421)	(0.000784)	(0.00115)	(0.00438)	(0.00119)
Inflation	-3.10e-05	-0.000173***	8.51e-05*	-0.000555***	-9.97e-05***
	(3.82e-05)	(4.30e-05)	(5.03e-05)	(7.38e-05)	(3.00e-05)
Exports_Ratio	0.0816***	0.0184***	0.00935***	0.0265***	0.0129***
	(0.00528)	(0.000898)	(0.00146)	(0.00689)	(0.00164)
Constant	4.967**	-4.801***	-9.937***	39.38***	5.915***
	(2.437)	(0.452)	(1.194)	(2.192)	(0.582)
Observations	3,199	3,015	1,235	2,455	2,435
R-squared	0.189	0.694	0.704	0.336	0.140

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

Table 30: Three-Years Post Intervention Treatment, Model Specification Three

Model specification 3, DID, Three-Years Post Intervention Treatment	(1) FDI/GDP	(2) Ln(FDI-pc)	(3) Ln(Portfolio-pc)	(4) ODA/GDP	(5) Ln(ODA-pc)

	(1)	(2)	(3)	(4)	(5)
	FDI/GDP	Ln(FDI-pc)	Ln(Portfolio-pc)	ODA/GDP	Ln(ODA-pc)
treatment_var	0.893***	0.104	-0.0661	0.920***	0.255***
	(0.340)	(0.0686)	(0.150)	(0.332)	(0.0373)
Ever_IMF_Program	-2.835**	-1.185***	0.685	-10.51***	-0.826***
	(1.294)	(0.264)	(0.477)	(1.540)	(0.130)
Chinn_Ito	0.323***	0.0529**	0.100	-0.0846	0.00962
	(0.113)	(0.0258)	(0.0670)	(0.175)	(0.0200)
Vix	-0.0866	0.0142	0.0275	-0.0729	0.00307
	(0.190)	(0.0260)	(0.0728)	(0.107)	(0.0214)
Fed_Funds	0.0515	-0.194***	-0.226	0.343	0.0780**
	(0.317)	(0.0534)	(0.140)	(0.226)	(0.0338)
logGDPcurrent	-1.259***	0.893***	0.811***	-4.387***	0.118*
	(0.462)	(0.0889)	(0.254)	(0.440)	(0.0671)
Broad_Money	0.0548***	-0.00120	-0.00145	0.0530***	0.00386**
	(0.0110)	(0.00136)	(0.00294)	(0.00994)	(0.00172)
Inflation	-0.000140***	-0.000343***	-1.54e-05	-0.000670***	-6.34e-05***
	(4.65e-05)	(7.48e-05)	(7.60e-05)	(0.000157)	(1.07e-05)
Exports_Ratio	0.0167	0.00865***	0.00295	-0.0180	0.00128
	(0.0183)	(0.00203)	(0.00543)	(0.0168)	(0.00158)
Constant	13.45***	-1.014	-4.148*	45.92***	3.822***
	(4.662)	(0.805)	(2.321)	(3.893)	(0.595)
Observations	3,199	3,015	1,235	2,455	2,435
R-squared	0.422	0.819	0.834	0.712	0.840

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

Table 31: Five-Years Post Intervention Treatment, Model Specification One

	(1)	(2)	(3)	(4)	(5)
Model specification 1, DID, Five-Years Post Intervention Treatment	FDI/GDP	Ln(FDI-pc)	Ln(Portfolio-pc)	ODA/GDP	Ln(ODA-pc)
treatment_var	0.446	0.206***	0.322**	-0.0702	0.192***
	(0.496)	(0.0584)	(0.128)	(0.355)	(0.0608)
Ever_IMF_Program	0.512	0.113*	-0.506***	-1.668***	-0.349***
	(0.659)	(0.0589)	(0.141)	(0.384)	(0.0830)
Chinn_Ito	0.530***	0.0559***	0.230***	0.623***	0.154***
	(0.121)	(0.0151)	(0.0349)	(0.107)	(0.0167)
Vix	-0.248	0.0240	-0.0761	-0.0494	0.0296
	(0.211)	(0.0292)	(0.0725)	(0.143)	(0.0393)
Fed_Funds	0.196	-0.184***	0.110	0.331	-0.0830
	(0.305)	(0.0527)	(0.120)	(0.282)	(0.0614)
logGDPcurrent	0.642***	1.172***	1.631***	-4.567***	-0.270***
	(0.163)	(0.0204)	(0.0500)	(0.160)	(0.0260)
Constant	0.801	-5.345***	-9.573***	42.31***	5.749***

	(2.945)	(0.404)	(1.031)	(2.202)	(0.532)
Observations	4,686	4,393	1,691	3,350	3,337
R-squared	0.029	0.661	0.672	0.326	0.077

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

Table 32: Five-Years Post Intervention Treatment, Model Specification Two

Model specification 2, DID, Five-Years Post Intervention treatment	(1) FDI/GDP	(2) Ln(FDI-pc)	(3) Ln(Portfolio-pc)	(4) ODA/GDP	(5) Ln(ODA-pc)
treatment_var	0.841***	0.220***	0.357**	-0.0665	0.275***
	(0.275)	(0.0625)	(0.156)	(0.416)	(0.0705)
Ever_IMF_Program	0.396	0.150**	-0.547***	-0.617	-0.108
	(0.266)	(0.0679)	(0.166)	(0.378)	(0.100)
Chinn_Ito	0.499***	0.0965***	0.191***	0.580***	0.125***
	(0.127)	(0.0174)	(0.0375)	(0.138)	(0.0196)
Vix	-0.0709	0.0110	-0.00431	-0.125	0.00984
	(0.190)	(0.0321)	(0.0824)	(0.127)	(0.0426)
Fed_Funds	-0.0343	-0.160***	0.00592	0.316	-0.0358
	(0.286)	(0.0577)	(0.128)	(0.255)	(0.0674)
logGDPcurrent	-0.688***	1.042***	1.541***	-4.371***	-0.384***
	(0.133)	(0.0239)	(0.0551)	(0.192)	(0.0329)
Broad_Money	0.0181***	-0.00225***	0.00169	-0.0130***	0.000809
	(0.00424)	(0.000786)	(0.00115)	(0.00446)	(0.00119)
Inflation	-3.47e-05	-0.000172***	9.05e-05*	-0.000575***	-0.000102***
	(3.83e-05)	(4.31e-05)	(5.06e-05)	(7.41e-05)	(3.01e-05)
Exports_Ratio	0.0814***	0.0184***	0.00925***	0.0266***	0.0128***
	(0.00529)	(0.000898)	(0.00146)	(0.00693)	(0.00163)
Constant	5.067**	-4.806***	-10.05***	39.94***	5.976***
	(2.444)	(0.451)	(1.194)	(2.228)	(0.584)
Observations	3,199	3,015	1,235	2,455	2,435
R-squared	0.188	0.694	0.705	0.335	0.135

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

Table 33: Five-Years Post Intervention Treatment, Model Specification Three

Model specification 3, DID, Five-Years Post Intervention treatment	(1) FDI/GDP	(2) Ln(FDI-pc)	(3) Ln(Portfolio-pc)	(4) ODA/GDP	(5) Ln(ODA-pc)

treatment_var	0.826**	0.115	0.0151	0.605*	0.222***
	(0.377)	(0.0711)	(0.156)	(0.354)	(0.0416)
Ever_IMF_Program	-2.801**	-1.193***	0.611	-10.34***	-0.812***
	(1.302)	(0.263)	(0.489)	(1.564)	(0.129)
Chinn_Ito	0.319***	0.0527**	0.103	-0.0906	0.00742
	(0.113)	(0.0258)	(0.0666)	(0.176)	(0.0200)
Vix	-0.0793	0.0146	0.0270	-0.0590	0.00589
	(0.190)	(0.0259)	(0.0728)	(0.106)	(0.0216)
Fed_Funds	0.0348	-0.194***	-0.219	0.283	0.0699**
	(0.318)	(0.0533)	(0.141)	(0.225)	(0.0341)
logGDPcurrent	-1.285***	0.893***	0.830***	-4.498***	0.102
	(0.461)	(0.0889)	(0.256)	(0.440)	(0.0672)
Broad_Money	0.0548***	-0.00114	-0.00139	0.0518***	0.00379**
	(0.0111)	(0.00137)	(0.00295)	(0.0100)	(0.00173)
Inflation	-0.000137***	-0.000342***	-8.29e-06	-0.000673***	-6.31e-05***
	(4.62e-05)	(7.46e-05)	(7.57e-05)	(0.000158)	(1.06e-05)
Exports_Ratio	0.0166	0.00864***	0.00296	-0.0183	0.00119
	(0.0183)	(0.00203)	(0.00543)	(0.0169)	(0.00158)
Constant	13.60***	-1.034	-4.303*	46.93***	3.943***
	(4.643)	(0.806)	(2.327)	(3.899)	(0.602)
Observations	3,199	3,015	1,235	2,455	2,435
R-squared	0.422	0.819	0.834	0.711	0.838

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1