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How successful are International Monetary Fund loan programs?

By Kavish HAJARNAVIS ^{a†}
Dhruv MAHAJAN ^b
& Hyunwoo ROH ^c

Abstract. This paper evaluates the effectiveness of International Monetary Fund (IMF) loan programs from 2000 to 2010 by looking at macroeconomic indicators such as the unemployment rate, inflation, real GDP, government debt as a percentage of GDP, and export value. Data is used from the year before the implementation of the IMF loan program to three years after the loan policy was implemented. We chose three years into the future because it gives time for the macroeconomic factors within a country to fully materialize while weeding out much “white noise” (shocks that have nothing to do with the program itself). Our analysis shows that IMF loan programs between 2000 and 2010 were generally unsuccessful in improving macroeconomic growth and stability in countries that sought loans. An accompanying workbook contains the data.

Keywords. IMF; Lending.

JEL. F30; F33; F34.

1. Introduction

This paper aims to evaluate the effectiveness of International Monetary Fund (IMF) loan programs from 2000 to 2010. To determine the influence of these programs on the borrowing country’s economy, we look into the seven different types of IMF loan programs and analyze if any improved the country’s general economic conditions more than others. To measure the effect of the loans on a country’s economic performance, we analyzed five macroeconomic metrics: the unemployment rate, inflation, real GDP growth, export growth, and government debt as a percentage of GDP. We use both quantitative and qualitative analysis to show that IMF loan programs have slightly reduced countries’ inflation rates while having apparently minimal effects on GDP growth rates, government debt, unemployment rates, and exports.

We analyze IMF loan programs between 2000 and 2010 because of the lack of scholarly research of IMF programs during the period. For the period 1974-1999, many researchers agree that IMF loan programs contributed to “massive capital outflows and severe banking crises” in countries from Mexico to Russia (Papi, 2015). In his book *The IMF and the Future*, Graham Bird (2003), a leading researcher on the topic, argues that countries that borrowed from the IMF in the past are more likely to borrow from it in the future and points to the lack

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[†] Business Breakthrough University, Departure of Management, Koujimachi Square Building 1F,3 Niban-cho Chiyoda-ku, Tokyo,102-0084 Japan.

✉. +81-90-8919-4012 ✉. takaharuishii7@yahoo.co.jp

of evidence to prove that macroeconomic performance in countries with IMF programs is superior to those that do not have IMF programs. In addition, other researchers have claimed that IMF loan programs failed monumentally in Sub-Saharan Africa because the IMF assumed that corrupt and inefficient government could implement strict monetarist policies, which only exacerbated extreme poverty in these already underdeveloped countries (Ihonvbere, 1997). At the turn of the 20th century, the IMF remodeled loan programs and “oriented its lending activity to the preservation of financial sector stability and the prevention of liquidity crises” (Papi, 2015). This working paper will seek to test this claim and assess whether IMF loan programs from 2000 to 2010 ushered in economic recovery within a country.

2. Types of Loan Programs

From 2000 to 2010, there were six different types of IMF loan programs implemented in various countries.

The **Extended Credit Facility (ECF)** commitment is a type of loan aimed at supporting sustainable macroeconomic growth coupled with poverty reduction within a country. Fittingly, mainly low- and middle-income countries enter this type of loan program. The ECF program is provided for a maximum of five years and countries adhere to the strict set of rules the IMF outlines for progress over the medium term. The financial structure of the ECF is a 0% interest rate with a grace period of 5½ years, and a final maturity of 10 years (IMF, 2022).

The **Standby Credit Facility (SCF)** commitment supports low-income countries that are displaying sustainable policies for growth but are susceptible to short-term financial shocks. The SCF is used to address short-term needs so is available to countries for 3 years out of any 6-year period. Under the SCF, countries agree to follow the strict set of rules the IMF outlines for progress over the short term. The financial structure of the SCF is a 0% interest rate, with a grace period of 4 years and a final maturity of 8 years (IMF, 2022).

The **Standby Arrangement (SBA)** is for emerging and middle-income countries that need help with overcoming balance of payment problems. The SBA allows the IMF to respond to countries’ financing needs and support adjustment policies over the short-term period of 1 – 3 years. Repayment of borrowed financial capital is due within 5 years of disbursement and case-by-case interest rates apply (IMF, 2022). The SBA is the IMF’s oldest support program and for many years was the dominant type of lending arrangement.

The **Extended Fund Facility (EFF)** is for countries that face “serious medium-term balance of payments problems because of structural weaknesses that require time to address” (IMF, 2022). EFF programs are medium-term, focused on structural reform, and are repaid over the long term (4-10 years). The cost of EFF programs is directly tied to the IMF’s market-related interest rate (IMF, 2022).

The **Flexible Credit Line (FCL)** program was created directly in response to the 2008 financial crisis and is used to “encourage countries to ask for assistance before they face a full-blown crisis” (IMF, 2022). It has been used so far in five countries: Chile, Colombia, Mexico, Peru, and Poland. The FCL program has no cap on the amount of IMF resources a country can borrow and works as a sort of renewable credit line. Repayments of borrowed financial

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capital under the FCL are due within 5 years of disbursement and case-by-case interest rates apply (IMF, 2022).

The **Exogenous Shocks Facility (ESF)** was established in 2008 in response to the Global Financial Crisis. The ESF provides funding to low- and middle-income countries facing needs concerning balance of payments caused by sudden or unexpected shocks. ESF programs were provided on a case-by-case basis and instituted over a period of 1 to 2 years. Under ESF programs, less focus was given to structural adjustment and more focus was placed on adjusting to the specific shock. ESF loan programs carried zero interest rates up to ten years after disbursement (IMF, 2022). The ESF program was replaced by the SCF commitment in 2010.

3. Literature Review

Many other researchers have examined similar questions to those we do here. Ul Haque & Khan's (1998) paper "A Survey of the Cross-Country Empirical Evidence" evaluates cross-country evidence from a collection of past studies on the macroeconomic impacts of IMF-supported programs for countries around the world and categorizes them based on their methodology and results. Their overall analysis suggests that it is now becoming increasingly well-accepted that Fund-supported programs lead to an improvement in the current account balance and balance of payments. Although the results for inflation are less clear cut, the consensus seems to be that output will decrease in the short run but that the structural reform elements of the program eventually lead to a longer-term increase in growth.

Brooks, Mühleisen, & Steinberg's (2019) paper "A Review of IMF-Supported Loan Programs" evaluates the findings of the IMF's internal evaluation of its programs from September 2011 to December 2017. In that period, there were 133 IMF-backed lending programs. A key assessment was that three-quarters of its programs were viewed as "successful." Here, the authors define success as having met their specific objectives; ranging from GDP growth to the credit account deficit, and so on. One characteristic of the IMF programs was that over a third of them were dedicated towards lower-income countries looking to reduce poverty.

With our paper, we aim to fill a gap between Haque and Khan's collection of 20th century studies and Brooks, Mühleisen, and Steinberg's findings of loan programs from 2011 to 2018 by examining loans issued from 2000 to 2010.

4. Methodology

To determine the effectiveness of IMF loan programs, we ultimately took the linear regression with the loan amount (in Special Drawing Rights, or SDRs, the IMF's unit of account) as the independent variable and the percentage changes of each of five macroeconomic indicators we discuss below as the dependent variables. To get to the actual regression, we took several steps we took to ensure credible results. The methodology of our data analysis has three steps: data gathering, cleaning up data, and the linear regression analysis.

4.1. Data Gathering Process

To first determine the number of loans during the period of 2000 to 2010 and the loan amount agreed upon, we used data from the IMF MONA

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Database. We then decided to measure macroeconomic trends of each of the loan countries during the period of 2000 to 2010 using five economic indicators: the unemployment rate, inflation, real GDP growth, monetary value of exports, and the debt-to-GDP ratio. We chose these indicators as they give the best overall view of both monetary and fiscal policy, as well as underlining the effects of the IMF loan on the changing prosperity of the country as a whole. Each indicator gives a distinct perspective on the macroeconomic status of a country, as follows.

Why the Unemployment Rate: Our first metric was the country's unemployment rate, the percentage of workers in a labor force who are actively looking for work and do not currently hold a job (Economic Policy Institute, n.d.). This is a useful indicator as it provides an insight into the labor market and the opportunity for work in that country. Moreover, the IMF states that countries in crisis (prior to their loan arrangement) tend to have high unemployment rates, therefore it can be inferred that IMF programs aim to reduce them.

Why Annual Inflation Rate: We evaluated the annual inflation rate changes in each country where an IMF loan program was instituted. Inflation rates tend to underline the stability (or lack of) in a country, and hence how attractive certain markets are for foreign investors. Ensuring stability is a key goal for IMF loan programs in countries with ongoing issues and hence, they should be evaluated on this metric. The IMF states that "most economists believe that low, stable, and – most important – predictable inflation is good for an economy" (Oner, n.d.).

Why the Gross Domestic Product: Possibly the most important economic indicator, and the most cohesive measure of an economy's health, is Gross Domestic Product (GDP). The U.S. Bureau of Economic Analysis defines GDP as "the total value of the final goods and services produced in a country (without double counting the intermediate goods and services used up to produce them)." The IMF stresses the importance of a country's real GDP value as it "gives information about the size of the economy and how an economy is performing" (Rohrer, n.d.). An increasing GDP, in most circumstances, implies that the economy is growing and that there are many opportunities present. Moreover, an increasing GDP typically means that there is an increasing need for labor to keep up with the growing demand.

Why the Export Value: Increasing a country's export value is a key component of expanding economic growth, especially within the developing countries that the IMF provides loans to. When a country is exporting more, it means there is a high level of output being produced in the country, leading to the development of internal industrial centers and the employment of people within these industrial centers (Kremer, 2022). In addition, consumer spending increases because consumer purchasing power is greater due to higher levels of employment and higher income being brought in from exports. In order to export more, central banks must ensure that inflation stays tame because high levels of inflation hurt exports due to increases in input costs for production (Kremer, 2022). Export values constitute a vital component of a country's GDP. GDP can be expressed as equivalent to $G + I + C + (X - M)$ where G is government spending, I is investment, C is consumer spending, X is exports, and M is imports. In order for a developing country to increase its GDP and flourish as an economy, it must strive to keep exports greater than imports, thereby increasing GDP and resulting in a trade surplus.

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The export value within a country is directly correlated with the success of an economy due to its close relationships with unemployment, inflation, consumer spending, real GDP, and other key macroeconomic indicators.

Why Government Debt as a Percent of GDP: Most economists agree that high levels of government debt adversely affects the capacity for economic growth within a country. Some of the ramifications of rising levels of government debts include: “the crowding out of private investment [due to increased government borrowing in order to finance debt repayments] ... higher long term interest rates... higher distortionary taxes to fund future liabilities and rising debt repayments... and an increase in the rate of inflation (Salmon, 2021). While some government debt can assist economic growth by enabling infrastructure or human capital to form sooner than they otherwise would, high levels of government debt often spell looming economic disaster. We divided government debt as a percentage of GDP to standardize the differing debt proportions within countries. For example, although Greece’s government debt is currently less than that of the Netherlands in raw terms, the Greek economy is suffering because of its far higher debt-to-GDP ratio, which is hampering capacity for growth within the country.

The data of these five metrics for each loan country was gathered from sources such as the World Bank Database, Macrotrends, Trading Economics, CountryEconomy, and the IMF Monitoring of Fund Arrangements (MONA) Database.

4.2. Cleaning up the Data

Once we gathered the raw values of the five macroeconomic metrics for the 188 loan programs, we then cleaned up these values to improve the comparability of the regression analysis. To do so, we calculated the percentage changes for each metric to focus more on the effect that loan problems had on the country’s economy instead of the absolute values of each of the metrics. We chose a percentage change comparison rather than a logarithm of change method as it provided a more intuitive comparison especially taking all 5 macroeconomic indicators into consideration. This is important because each country has its own context and environment, so making a horizontal comparison for all countries without accounting for these country-specific nuances would skew the results of the analysis. We also took out certain loan programs due to the lack of publicly available information. The total number of programs dropped from 188 to 155 once the data cleaning was complete. Then we sorted the data into the six different types of loans that the IMF offered from 2000 to 2010, which we listed above.

Loan Programs Not Included in the Study: This paper does not include the Flexible Credit Line (FCL) or the Standby Credit Facility (SCF) loan programs in its analysis and conclusions. We exclude the FCL program because loans provided under the FCL are variable and heavily dependent on the whims of the government. The FCL has no cap on the amount governments withdraw and serves as a renewable source of credit (IMF, 2022). Since there is no initial amount drawn, comparing the various loan amounts undertaken over several years under the FCL would go beyond the scope of this paper. In addition, there were a mere five FCL loan programs supplied from 2000-2010. We exclude the SCF loan program, used in countries that are vulnerable to short-term financial shocks (IMF, 2022), because there was only one such program from 2000-2010, in the Solomon Islands. It does not provide adequate

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information for an overarching conclusion.

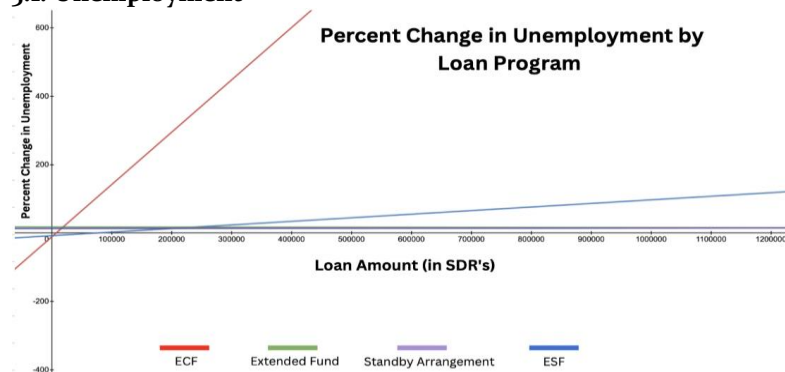
4.3. Linear Regression Analysis

For the linear regression, we used the loan amount in SDR as the independent variable on the x-axis and the cleaned data for each of the five metrics as the dependent variable on the y-axis. Because there are four loan types that we analyzed and 5 macroeconomic indicators each, we computed a total of twenty separate slopes and r-squared values. Once we determined these values for all 20 scenarios, we plotted the four lines for each loan type onto one graph and compiled five of these graphs (one for each macroeconomic metric). This produced five visual representations that allowed us to deduce the trends and differences among the four loan types within each metric.

Discussion of Controls: To assess whether International Monetary Fund loan programs positively encouraged a country's economy, there needs to be a comparison set of countries that did not implement IMF loan programs but were in a similar economic situation as countries who did. From 2000-2010, 27 countries entered talks with the International Monetary Fund regarding the implementation of a loan program in their country, but ultimately received zero monetary compensation. These countries faced dire economic circumstances similar to other countries who entered IMF loan programs during this period but decided against pursuing cash assistance from the IMF and opted for a domestic resolution of economic woes. These 27 countries will be referenced throughout the paper as the control group because they provide the most fair basis of comparison to the non-control group. This is due to the control group's lack of monetary compensation from the IMF, despite facing similar economic circumstances as the non-control group. The full table of control group countries and macroeconomic indicators is listed in the appendix. The graphical analysis section of each macroeconomic variable includes a discussion of how the control countries compared to the non-control countries with respect to the given macroeconomic variable over the selected four-year period.

5. Data Analysis

5.1. Unemployment



Note: 1 SDR = 1.33 USD in all graphs

Loan Type	R-squared Value	Slope
ECF	0.13	.00153
ESF	0.64	.000105
Extended Fund	0.02	-0.00000187
Standby	.01	0.00000138

The percentage changes in unemployment for the countries that entered loan agreements from 2000-2010 displayed different relationships with the size of the loan depending on the type of loan agreement. The linear regression analysis indicated a negative slope with the Extended Fund loan type and positive slopes for the Extended Credit Facility, Exogenous Shocks Facility, and Standby Arrangement. However, out of the three loan types with positive slope values, there was a huge discrepancy between the Extended Credit Facility and the two others. The slope of the Extended Credit Facility was 14.6 times greater than the Exogenous Shocks Facility and 1,208.7 times greater than the Standby Arrangement.

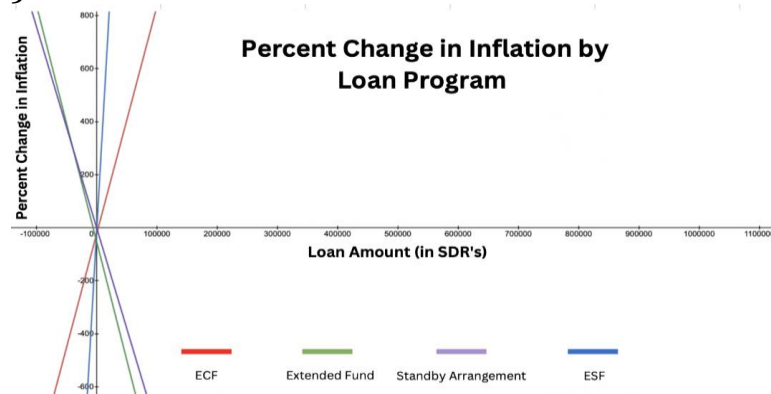
In terms of consistency of the value of the slopes, the Exogenous Shocks Facility, Standby Arrangement, and Extended Fund Facility all had slope values very close to 0, indicating a weak relationship between the loan amount and the percentage changes in the unemployment rate. The r-squared values of this regression revealed that only the results of the Exogenous Shocks Facility program (with an r-squared value of 0.64) represented a sufficient proportion of the variance for the dependent variable that is explained by the independent variable. The r-squared values for the other three loan types were too close to zero, which signifies that it is difficult to conclude that the dependent variable can be explained by the independent variable.

To assess the effectiveness of the loan types, we compared the average percent changes in unemployment of all 155 loan programs to that of the control countries. For the non-control countries, the average percent change in unemployment was 5.8%, while the average percent change in the controls was -7%. Generally speaking, the lower the unemployment rate, the healthier

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the labor market. While a severely low unemployment rate could have negative consequences such as inflation and reduced productivity (Hankin, 2022), governments typically aim to reduce the value so that more opportunities are created for those who previously had difficulty in finding a job (Vaughn-Furlow, 2018). Thus, our comparison of non-control to control countries shows that IMF loan programs were ineffective in lowering the unemployment rate and instead may have increased it.

5.2 Inflation



Loan Type	R-squared Value	Slope
ECF	0.329	.0086
ESF	0.006	.000058
Extended Fund	0.0052	-0.0000036
Standby	.012	0.000003

The percentage change in inflation over the four-year measuring period showed a positive correlation with the loan amount supplied in SDRs. Extended Credit Facility and Exogenous Shocks Facility loan programs displayed extremely strong correlations thereby implying that the greater the loan amount the larger the increase in inflation. The r-squared values for the four loan types were all on the lower end, with Extended Credit Facility having the highest value of 0.329. A country (in most cases) aims to reduce inflation, therefore this correlation suggests that IMF loan programs were not very helpful in reducing inflation. In contrast, the Extended Fund and Standby Arrangement loan programs showed strong negative correlations. As loan amounts increased, inflation fell noticeably. These programs were relatively the most successful in reducing a country's inflation.

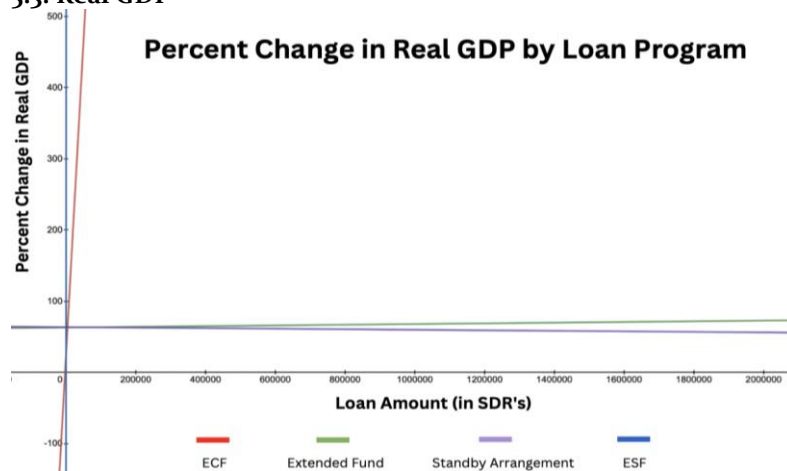
In the control countries, inflation for the four-year period rose 26%. (Note that this is *not* percentage points: for instance, inflation that was initially 10% rose to 12.6%, not to 36%.) In contrast, the percentage change in inflation for countries where an IMF loan was instituted showed an overall decrease of 70%. Therefore, with regards to inflation, we can infer that IMF loan programs were generally effective in reducing a country's inflation.

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However, it is important to note that unlike real GDP or the unemployment rate, where there is a clear direction that can be determined as “successful,” in some circumstances a country may indeed want its inflation rate to increase. It depends on a country’s target inflation rate. For example, in 2008, prior to its Extended Credit Facility arrangement, Niger had an inflation rate of 0.05%. Four years after the IMF loan was instituted, this increased by 5780% to 2.94%. The official inflation target rate for Niger is 3%.

5.3. Real GDP



Loan Type	R-squared Value	Slope
ECF	1	.008719
ESF	1	1
Extended Fund	0.026	.0000048
Standby	0.038	-0.0000037

The percentage change in real GDP over the four-year measuring period showed a general positive correlation with loan amount supplied in SDRs. Extended Credit Facility and Exogenous Shocks Facility loan programs displayed a strong relationship between the loan amount supplied and the percentage the GDP positively changed. In contrast to the previous two macroeconomic metrics, both Extended Credit Facility and Exogenous Shocks Facility loans displayed r-squared values of 1, meaning that the dependent variable (changes in real GDP) can be fully explained by the independent variable (the size of the loan). Exogenous Shocks Facility loan amounts provided showed a perfect correlation with increasing GDP. The r-squared values for the other two loan types were both too close to zero to be considered significant.

On the opposite side of the spectrum, the Standby Arrangement loan program displayed a slight negative correlation between loan amount and percentage change in real GDP. The Standby Arrangement is the International Monetary Fund’s hallmark loan program. Countries under the Standby Arrangement receive the most funding, yet the cushion of immense funding

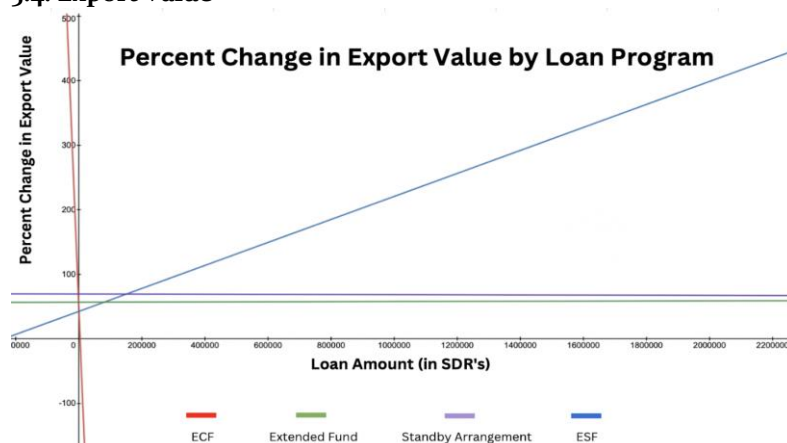
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actually results in slight decreases in a country's real GDP over the four-year measuring period. Given the low r-squared values of the Extended Fund loan program and the Standby Arrangement program, it is safe to conclude that the amount of loan provided had a negligible effect on the percentage change in real GDP over the four-year measuring period.

An aggregate analysis of the control countries' percent change in real GDP over the four-year measuring period yields an overall positive increase in real GDP of 76%. (As with our remarks about inflation, remember that this change is a percentage change, not percentage points.) Overall, real GDP in countries in which IMF loan programs were instituted rose an average 58%. However, control countries, which did not implement such programs despite facing similar economic circumstances, actually fared better, seeing a 76% increase in real GDP. This suggests that IMF loan programs were ineffective in expanding a country's real GDP.

5.4. Export Value



Loan Type	R-squared Value	Slope
ECF	0.70	-0.012
ESF	0.23	0.00018
Extended Fund	0.039	0.00000101
Standby	0.005	-0.00000108

There was generally very little correlation between the percentage change in export value over the four-year measuring period and the amount of loans provided. The Extended Credit Facility loan program had the highest r-squared value and showed a clear pattern of negative correlation between the percent change in export value and the amount of loan size supplied. In simple terms, countries that received an Extended Credit Facility loan program saw a decrease in export value over the four-year measuring period as the size of the loan grew larger. The Extended Fund Facility loan and Standby Arrangement loan graphs had extremely low r-squared values, so it is hard to define a confident correlation between amount of loan size provided and change in export value.

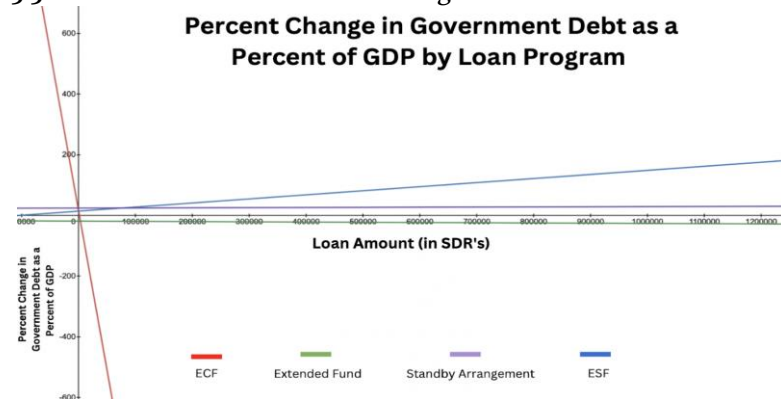
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However, despite the low correlation, Extended Fund Facility loans showed no improvement with regards to an increase in export value in coordination with an increase in loan amount. In addition, Standby Arrangement loan programs seemingly hindered a country's export value as the size of the loan grew larger. The Exogenous Shocks Facility loan program was the sole loan program that showed a clear positive link between the increase in export values as a function of the amount of loan supplied, though its r-squared value was a low .20. Combining all the loan programs together, IMF loan programs seemed to have minimal net benefit on improving an economically hindered country's export value, and specific loans like the Extended Credit Facility loan have a clear negative correlation between the percentage increase in export value and the loan amount.

An aggregate analysis of the control countries' percent change in export value over the four-year measuring period yields an overall positive increase in export value of 99.3%. The percentage change in export value of countries where IMF loan programs were instituted (non-controls countries) was lower, at 72%. IMF loan programs seem to have been ineffective in expanding a country's real export value.

5.5. Government Debt as a Percentage of GDP



Loan Type	R-squared Value	Slope
ECF	0.64	-0.0105
ESF	0.12	0.000134
Extended Fund	0.041	-0.000007653100271
Standby	0.028	0.00000474

There was little to no correlation between a country's percentage change in government debt as a percentage of GDP and the loan amount. As was seen in the graph for the export value changes as well, Extended Credit Facility commitments had the highest r-squared value, of 0.64. As loan amounts increased, government debt as a percentage of GDP decreased, which is an optimal outcome. Countries aim to reduce their government debt, hence a negative correlation here would be defined as a "successful" outcome. The Exogenous Shocks Facility loan arrangement was the only loan that showed any clear positive correlation, which in this case implies a failure: government

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debt as a percentage of GDP increased as loan amounts increased. Extended Financing Facility (r-squared value of 0.041) and Standby Arrangement (r-squared value of 0.028) loans showed no real correlation between loan amount and government debt as a percentage of GDP.

A comprehensive analysis of the control countries shows that, on average, government debt as a percentage of GDP decreased by 16%. In contrast, in the non-control countries government debt as a percentage of GDP increased by 1%. Therefore, IMF loan programs were not successful in decreasing a country's government debt as a percentage of GDP.

6. Conclusion

Our analysis of IMF loan programs shows that these arrangements only outperformed the control countries in the percentage change in inflation metric. In the other four indicators (unemployment rate, real GDP, export value, government debt as a percentage of GDP) the control countries performed significantly better.

Generally, we found that IMF loan programs were generally unsuccessful in improving a country's capacity for economic growth by having a minimal effect on the upward trajectory of the five selected macroeconomic variables. In addition, there was generally little correlation between the amount of loan provided (in SDRs) and a "better" reading for the five chosen macroeconomic variables.

With regards to next steps for this analysis, there are certain improvements that could be made. Firstly, a similar analysis in a different time period would shed light on whether these apparent IMF failures are isolated to the post-2000 era or if this has been an overarching theme in the organization. Second, evaluating other macroeconomic indicators could prove interesting. For example, looking at metrics for per-capita improvement as opposed to overall national improvement would be useful. Finally, the IMF places great emphasis on reducing poverty. Looking at poverty metrics would be another avenue to assess the effectiveness of IMF loan programs. Countries typically ask the IMF for loans when they are in bad economic condition. Perhaps there is not much the IMF can really do to help. Our findings suggest that countries may have to go through the suffering to learn how to forge onward with their best economic interests in mind.

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