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Some Effects of IMF Lending Programs in the MENA Countries

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Abstract: The goal of this paper is to examine whether IMF lending programs in the MENA region lead international lenders to perceive lower lending risks and generate moral hazard as reflected in a shift in the maturity composition of international debt toward long-term debt flows. We find that IMF credit in general generated moral hazard in MENA after the IMF large-scale rescue package to Mexico.

The goal of this paper is to examine whether the International Monetary Fund (IMF) lending programs in the Middle East and North Africa (MENA) region lead, *ceteris paribus*, international lenders to perceive lower lending risks and generate moral hazard. Such moral hazard is reflected in a shift in the maturity composition of international debt toward long-term debt flows. The hypothesis we investigate is whether lenders' perceptions about risk improve, tilting the maturity composition of lending in favor of long-term debt as the result of IMF involvement and the expectation of a bailout at times of crisis. Normally when lenders' perceptions about default risk improve, they would tend to increase the overall level of lending and lengthen the maturity of lending. If expectations of an IMF bailout reduce investors' risk perceptions and generate an increase in the maturity of international loans, then such reaction could reasonably be used as a measure for the existence of moral hazard. The alternative hypothesis is that expected IMF lending does not distort investors' perceptions of risk and therefore does not have a significant impact on the maturity composition of international debt.

The examination of the IMF-induced moral hazard hypothesis is a key component in the debate on international financial architecture reforms. Alternatives to the large-scale IMF rescue packages, such as the inclusion of collective action clauses and universal debt rollover options to loan contracts, and empowerment of IMF to impose a standstill on payments, have been suggested in different fora with the objective of reducing the frequency and severity of financial crises and apparent investors' moral hazard.

This paper contributes to the literature on IMF-induced moral hazard in three ways. We examine for the first time in this literature the moral hazard question from the perspective of the maturity composition of international debt. Second we allow for the differential moral hazard impacts of the various types of IMF lending programs.[1] Third we examine the MENA region, which hardly attracted attention in the empirical literature. The importance of examining this region stems from the large external finance needed to support growth and development.

The rest of this paper is organized as follows. Section I provides a brief literature review of the literature on IMF catalytic effects and IMF-induced moral hazard. Section II discusses IMF lending to the MENA region. Section III discusses the hypothesis, estimation methodology, the empirical model, and data sources. Section IV presents the empirical results. We close with conclusions.

I. Literature Review

To set our research question in the proper context it is desirable to discuss two interrelated strands of the empirical literature on the IMF. The first is the IMF catalytic effects literature, which examines the effect of IMF lending on capital flows. The second is the IMF-induced moral hazard literature, which argues that IMF lending reduces risk perception mainly among investors and generates moral hazard.

The focus of the IMF catalytic effects literature is whether IMF lending catalyzes private capital flows, which are needed to cover the external finance needs of countries undertaking macroeconomic and structural adjustment. The catalysis stems from the informational role of the IMF and the liquidity that IMF programs provide (Rodrick 1995; Bird and Rowlands 2000). In addition, by agreeing to an IMF program the government can signal its commitment to economic reform. Bird and Rowlands (2000) argue that by putting at stake own resources, the IMF would improve the quality of adjustment advice. IMF lending achieves some risk-sharing function at the same time it helps reduce the financing gap in program countries. Private markets can respond positively to the liquidity and commitment factors resulting in positive catalytic effects.

The IMF catalytic effects have received mixed support in the empirical literature. Some studies have found that the presence of significant catalytic effects depends on whether private lending is a substitute or a complement to IMF lending (Joyce 1992; Bird 1994 and 1995). The evidence however leans towards IMF

lending being a substitute for private capital flows (Faini *et al* 1991; Killick 1995), and therefore IMF lending does not generate significant catalytic effect.

One important issue that the IMF catalytic effects literature failed to address is the influence of IMF lending on the maturity composition of capital flows, in particular short-term lending flows. Short-term lending matters because it is a major contributing factor to the Mexican and East Asian financial crises of the second half of the 1990s and is important if we want to avert similar crises in the MENA region. We focus on the maturity composition of international capital flows in this paper.

In the IMF-induced moral hazard literature, IMF lending has been criticized for its moral hazard impact on international financial markets. Calomiris (1998), for example, have argued that IMF programs have led to moral hazard with less prudent policies of risk taking by lenders during the Mexican and Asian crises.

The empirical literature on moral hazard has focused on the existence of distortions in the pricing of credit to emerging economies. These studies have mainly examined whether IMF lending lowers risks to lenders and reduces bond spreads. Zhang (1999), Lane and Phillips (2000), and Kamin (2001) found evidence that bond spreads in emerging markets increase following crises in which IMF extended crisis lending, which yields no support to the IMF-induced moral hazard hypothesis. In contrast, Dell'Ariccia, Schnabel, and Zettelmeyer (2002) found that by not supporting Russia's government after the 1998 crisis the IMF sent a signal to international financial markets that lenders will not be bailed out, resulting in an increase in the level and the cross-country dispersion of spreads.

None of the above studies, however, has analyzed the potential differential impact of the various IMF programs on moral hazard. These programs differ in their objectives, conditionality, country eligibility, and terms of borrowing.

II. IMF Lending to the MENA Region

The Middle East and North Africa (MENA) region is comprised of fourteen countries which are: Algeria, Bahrain, Egypt, Iran, Iraq, Jordan, Lebanon, Libya, Morocco, Oman, Saudi Arabia, Syria, Tunisia, and Yemen. This classification follows the World Bank's Global Development Finance (GDF) regional classification. Although GDF classifies Turkey under Europe and Central Asia, in this paper we classify Turkey also as a MENA region country, bringing the number of MENA countries to fifteen.

Out of the fifteen countries, the IMF extended programs to seven countries during 1992-97: Algeria, Egypt, Jordan, Morocco, Tunisia, Turkey and Yemen. In this paper we exclude Algeria because of the political problems the country experienced in the 1990's, which might influence our estimation results.

The IMF has provided regular lending to these six countries in the form of either Stand-By Arrangements (SBA) or extended arrangements (see Table 1). Out of the six countries, five countries had SBAs with the IMF. Turkey obtained by far the largest SBA credit in the region in 1994 amounting to SDR 611 million or about \$880 million. However, relative to GDP, this IMF credit amounted to one half of one percentage point of GDP, one of the lowest in the region. On the other hand, Yemen obtained IMF credit, which amounted to about 4 percent of its GDP, which relative to GDP is the largest in the region. Given the limited access of many countries in the MENA region to international capital markets, we think it is quite appropriate to interpret the size of SBA credit relative to GDP as an indicator of the size of the economic problem the country faces.

One interesting observation about SBA lending to the MENA countries is that the commitment to economic reform, as reflected by the percentage of withdrawn resources to the agreed credit, is positively related to the relative size of SBA and therefore the size of the economic problem.

Jordan and Yemen had extended arrangements with the IMF subsequent to their SBAs. Jordan had two extended arrangements starting 1994, each amounting to 5 percent of GDP and were about triple the size of the SBA credit the country obtained between 1992 and

1994. Similarly for Yemen the credit size of the extended arrangement was more than double that of its SBA.

In the case of Egypt's SBA and extended arrangements, no withdrawal took place, which could be explained in terms of the Egyptian government's desire to only get the IMF's seal of approval for its macroeconomic policies and use perhaps cheaper sources of financing. Note that during that period, Egypt accumulated foreign exchange reserves that reached about \$18 billion in 1998, and therefore was not in dire need for foreign exchange.

III. Hypothesis, Estimation Methodology, Empirical Model and Data Sources

A. Hypothesis

The hypothesis of interest is whether IMF lending induces moral hazard that takes the form less short-term debt flows relative to total debt flows. We test for the presence of IMF lending induced moral hazard by comparing the effects of different *expected* IMF lending programs on short-term debt flows relative to total debt flows before and after a major IMF rescue package. By using *expected* IMF lending programs we appropriately model the relationship between private capital flows and IMF lending in which the former lead the latter in anticipation of bailouts.

Empirically, we will compare the effect of IMF lending on the maturity of international debt flows in the period following the Mexican crisis and the associated IMF rescue package to the pre-crisis period. We select the Mexican crisis because it was the first large-scale spending program, which the IMF extended in the 1990s. Our approach is similar to that in Dell'Ariccia, Schnabel, and Zettelmeyer (2002), Lane and Phillips (2000), and Kamin (2001).

B. Estimation Methodology

Because it is likely that borrowing country characteristics influence short-term capital flows, we use a one-way error component model to account for those factors in the empirical model (Hsiao 1986; Baltagi

1995). The decision to treat the effects as a fixed or random effects model is based on Hausman's specification test.

C. Empirical Model

The empirical model that we estimate is given by

$$\begin{aligned}
 STD_{it} = & \beta_0 + \beta_1 GDP_{i,t-1} + \beta_2 DEBT_{i,t-1} + \beta_3 INSTDELTA_{i,t-1} + \beta_4 DEFICIT_{i,t-1} + \beta_5 OPEN_{i,t-1} \\
 & + \beta_6 CREDIT_{i,t-1} + \beta_7 IMF_{i,t+1} + \beta_8 WITHDRAWN_{i,t+1} + u_{it}
 \end{aligned}$$

The dependent variable *STD* is the net flows of short-term foreign debt as a percentage of total external debt net flows, *GDP* is real GDP in billions of US dollars, *DEBT* is total external debt in billions of US dollars, *INSTDELTA* is the change in investors' perceptions about the institutional environment, *OPEN* is the degree of openness of the economy, *CREDIT* is private credit as a percentage of GDP, *IMF* is the IMF agreed program credit as a percentage of GDP, and *WITHDRAWN* is the withdrawn IMF program credit as a percentage of program credit, and *u* is a composite error term.

The IMF variables *IMF* and *WITHDRAWN* are led one period ahead to account for investors' expectations of IMF lending and the country commitment to economic reform. The remaining explanatory variables constitute the economic fundamentals that may affect the maturity of international loans. These variables are lagged one period to allow for the fact that the changes in loan maturity this period may reflect the fundamentals at the end of the previous period. These variables are similar to those used by Rodrick and Velasco (1999). [2]

The dependent variable, *STD*, measures the importance of the short-term debt flows relative to total debt flows. Riskier countries, other things being equal, are expected to attract relatively more short-term debt flows. *GDP* accounts for the level of economic activity in the economy. Economies with higher GDP levels are expected to attract a lower proportion of short-term debt flows. *DEBT* accounts for the overall level of indebtedness of the country. We expect to find positive relationship between short-term debt flows and the level of total debt; *ceteris paribus*, as total debt increases, default risk increases and therefore the relative importance of short-term debt flows would also increase. *INSTDELTA* are proxied by the change in the rule of law and captures changes in investors' perceptions about default risk and, *ceteris paribus*, is expected to lead to an increase in the relative share of short-term debt flows. *OPEN* is an indicator of the ability of a country to purchase foreign reserves in the economy. Therefore a higher degree of openness of the country lowers its default risk. Even if the economy does not have current account surplus, a more open economy is more integrated into the world economy, has better access to international capital markets, and is less likely to default on international debt than a less open economy. Hence, *ceteris paribus*, more open economies attract in relative terms less short-term debt flows and more long-term debt flows. Therefore, we expect to find a negative relationship between the degree of openness and the relative importance of short-term debt flows.

CREDIT accounts for the degree of financial development in the economy. The more financially developed the country,

the more likely it will be able to attract a higher proportion of long-term loans. Therefore we expect a negative sign for the estimated coefficient for *CREDIT_IMF* accounts for investors' expectations of IMF liquidity provided under a rescue package. The expectations of an IMF program increase the perceived chances of bailout, improve risk perceptions and therefore result in a shift toward relative more long-term loans. In the regressions below we use two specifications of this variable. One specification does

not distinguish between the different IMF programs and aims to capture the overall lending effect of IMF programs. The other specification makes such distinction and aims at capturing the program specific effects.

WITHDRAWN accounts for investors' expectations about the country's commitment to economic reform program agreed with the IMF. If lenders expect that the country is committed to the economic reform program, then country will be able to withdraw the available IMF program resources, and there will be the expectation that the country fundamentals will improve and therefore it will be safer to increase the maturity of the loans.

D. Data Sources

We construct a balanced panel data set for the six MENA countries discussed above for the period 1992-1997. The data set is drawn from three main sources. The first is the history of IMF lending arrangements available from the IMF website, which provides data on IMF lending arrangements and the amount of credit withdrawn. The second is Global Development Finance, which provides data on debt flows. The third is the International Country Risk Guide, which provides data on political risk, including the rule of law component. We use the rule of law to proxy for investors' perceptions about the institutional environment. The rule of law is defined as "...the degree to which the citizens of a country are willing to accept the established institutions to make and implement laws and adjudicate disputes." The variable ranges from 0 to 6. Lower scores indicate "a tradition of depending on physical force or illegal means to settle claims." Upon changes in government, new leaders "may be less likely to accept the obligations of the previous regime." Higher scores indicate "sound political institutions, a strong court system, and provisions for an orderly succession of power."

IV. Empirical Results

Hausman specification test suggests the appropriateness of the random effects model. Table 2 presents the empirical results from different specifications of the estimation equation. The first specification includes the effect of IMF lending in general. The other two specifications are for SBAs and Extended Arrangements. Based on the Wald test statistic, we fail to reject the hypothesis that all slope parameters are equal to zero for the SBA and Extended Arrangements specifications. Thus the focus of this section is on

the effect of IMF lending in general.

The effect of IMF lending in general was statistically insignificant in the pre-crisis period. In the post-crisis period, however, IMF lending seems to have reduced lending risk and therefore relative short-term debt flows. An increase in IMF credit by 1 percentage point resulted in a reduction in short-term lending flows by about 7 percentage points. Since we control for the total level of debt and economic fundamentals, we conclude that IMF lending in general introduced some measure of moral hazard in international lending in the MENA region during the post-crisis period.

The level of real GDP appears to have lowered risk in the pre-crisis period leading to a reduction in the relative role of short-term debt. However, higher levels of real GDP led to the opposite result in the post-crisis period. An increase in the level of total external debt, *ceteris paribus*, increased relative short-term debt flows because of the increase in lending risk. The coefficient multiplies in sign in the post crisis period, which suggests that the Mexican crisis worsened risk perceptions among investors. Improvement in investors' perceptions about institutional development, on the other hand, reduced relative short-term debt flows, a result consistent with the results of Mina (2002). This result is interesting and opens up the door for further investigation about the influence of institutional factors on capital flows and how these factors are related to default risk.

Fiscal deficit increased relative short-term debt flows in the post-crisis period since larger deficits increase default risk, *ceteris paribus*. Comparing the sign and coefficient size to those for the pre-crisis period, this result seems to confirm our interpretation that investors' risk perceptions worsened in the post-crisis period. The degree of financial reduced relative short-term debt flows in the post-crisis period.

V. Conclusion

In this paper we have examined the issue of whether IMF lending generates moral hazard in the MENA region through its effects on the maturity composition of international debt flows. The importance of the maturity of international debt stems from the significant role that short-term capital flows played in the 1990's international financial crises. We found that IMF lending programs in general tend to reduce short-term debt flows relative to total debt flows especially in the post Mexican crisis period and therefore generate moral hazard.

1. For an examination of the effects of IMF programs on the access to international capital markets, see for example, Bird and Rowlands (1997, 1999a, 1999b, and 2000), Bird, Mori, and Rowlands (1999). For an examination of the effects of IMF programs on the cost of borrowing, see for example Eichengreen and Mody (2000 and 2001). These authors discuss the signaling and commitment effects of IMF programs in examining the effect on countries access to international bonds markets, but do not empirically examine these effects nor separate them by IMF programs.

2. In examining the determinants of extended debt maturity Rodrick and Velasco (1999) use income per capita in log form, the ratios of M2, external debt, and imports to GDP, and a corruption index.

REFERENCES

Baltagi, Badi. *Econometric analysis of panel data*. New York: John Wiley, 1995.

Bird, Graham. "The Myths and Realities of IMF Lending." *World Economy*, September 1994, 17 (5), pp. 759-78.

_____. *IMF lending to developing countries: issues and evidence*. Routledge: London, 1995.

Bird, Graham, and Dane Rowlands. "The Catalytic Effect of Lending by International Financial Institutions." *World Economy*, November 1997, 20 (7), pp. 967-91.

_____. "Does IMF Conditionality Signal Policy Credibility to Markets?" *Surrey Centre for International Economic Studies Working Paper Series 99/5*, 1999a.

_____. "Does World Bank Policy Based Lending Catalyse Other Financial Flows?" *Surrey Centre for International Economic Studies Working Paper Series 99/4*, 1999b.

_____. "The Catalyzing Role of Policy-Based Lending by the IMF and the World Bank: Fact or Friction?" *Journal of International Development*, October 2000, 12, 951-73.

Bird, Graham, Antonelli Mori and Dane Rowlands. "Do the Multilaterals Catalyze Other Capital Flows: What Does the Case Study Evidence Show?" *Surrey Centre for International Economic Studies Working Paper Series 99/2*, 1999.

Calomiris, Charles W. "The IMF's Imprudent Role as Lender of Last Resort." *Cato Journal*, Winter 1998, 17 (3), pp. 275-294.

Dell'Araccia, Giovanni, Isbael Schnabel, and Jeromin Zettelmeyer. "Moral Hazard and International Crisis Lending: A Test." *IMF Working Paper WP/02/181*, 2002.

- Eichengreen, Barry, and Ashoka Mody.** "Lending Booms, Reserves and the Sustainability of Short-term Debt: Inferences from the Pricing of Syndicated Bank Loans." *Journal of Development Economics*, October 2000, 63, pp. 5-44.
- _____. "Bail-Ins, Bailouts, and Borrowing Costs." *IMF Staff Papers*, 2001, 47 (0), pp. 155-187.
- Faini, Riccardo, Jaime de Melo, Abdel Senhadji-Semlali, Julie Stanton.** "Macro Performance Under Adjustment Lending," in V. Thomas, A. Chhibber, M. Dailami, and J. DeMelo, eds., *Restructuring economies in distress. policy reform and the World Bank*. Washington, DC: World Bank, 1991, pp. 222-242.
- Hsiao, Cheng.** *Analysis of panel data*. Cambridge: Cambridge University Press, 1986.
- Joyce, Joseph P.** "The Economic Characteristics of IMF Program Countries." *Economics Letters* February 1992, 38 (2), pp. 237-42.
- Kamin, Steven.** "Identifying the Role of Moral Hazard in International Financial Markets." Paper presented at the AEA meetings in Atlanta, January 2001.
- Killick, Tony.** *IMF programmes in developing countries: design and impact*. London: Routledge, 1995.
- Lane, Timothy and Steven Phillips.** Does IMF Financing Result in Moral Hazard? IMF Working Paper WP/00/168, 2000.
- Mina, Wasseem Michel.** "Role of Political Risk and Moral Hazard in International Lending: Two Essays." Ph.D. dissertation, 2002.
- Rodrick, Dani.** "Why is there Multilateral Lending?" National Bureau of Economic Research (Cambridge, MA) Working Paper No. 5160, June 1995.
- Rodrick, Dani, and Andres Velasco.** "Short-Term Capital Flows." National Bureau of Economic Research (Cambridge, MA) Working Paper No. 7364, September 1999.

Zhang, Xiaoming Alan. "Testing for Moral Hazard in Emerging Markets Lending." *Institute of International Finance Research Papers*, August 1999, No. 99-1.

Table 1-- IMF Lending Programs for the MENA Countries

	Date of arrangement	Expiration or cancellation date	Agreed IMF credit (millions of SDR)	IMF credit withdrawn (millions of SDRs)	IMF credit (percent of GDP)	Withdrawn credit (percent of agreed credit)
Stand-by arrangements						
Egypt	Oct-96	Sep-98	271.4	0.0	0.6	0.0
Yemen	Mar-96	Jun-97	132.4	132.4	3.7	100.0
Turkey	Jul-94	Mar-96	610.5	460.5	0.5	75.4
Jordan	Feb-92	Feb-94	44.4	44.4	1.2	100.0
Morocco	Jan-92	Mar-93	91.9	18.4	0.4	20.0
Extended arrangements						
Yemen	Oct-97	Oct-01	72.9	46.5	1.7	63.8
Jordan	Feb-96	Feb-99	238.04	202.52	5.3	85.1
Jordan	May-94	Feb-96	189.3	130.32	4.5	68.8
Egypt	Sep-93	Sep-96	400.0	0.0	1.2	0.0
Tunisia	Jul-88	Jul-92	207.3	207.3	2.8	100.0

Table 2: Effect of IMF Programs on Short-term Lending Flows to the MENA Region

Dependent Variable: STD

	(1)		(2)		(3)	
	IMF Credit		Stand-by arrangements		Extended arrangements	
	1992-94	1995-97	1992-94	1995-97	1992-94	1995-97
GDP _{i,t-1}	-0.003***	1.969***	-0.153*	0.244	-0.319**	0.408
	(0.036)	(0.568)	(0.083)	(0.261)	(0.152)	(0.259)
DEBT _{i,t-1}	2.424*	48.901*	8.895**	-7.615	9.749**	-23.347*
	(1.314)	(26.967)	(4.372)	(9.188)	(4.581)	(0.104)
INSTDELTA _{i,t-1}	4.471	-984.361***	30.705	-115.55	18.189	-802.289**
	(12.052)	(342.834)	(26.714)	(246.89)	(33.924)	(369.089)
DEFICIT _{i,t-1}	-12.429** *	60.109**	-20.827* **	-30.089	-26.386**	-118.351*
	(2.107)	(30.073)	(7.532)	(21.331)	(11.510)	(67.681)
OPEN _{i,t-1}	-1.768***	44.383** *	0.025	8.975	-3.215*	-12.804
	(0.526)	(16.998)	(1.330)	(6.549)	(1.954)	(9.786)

CREDIT _{i,t-1}	3.723***	-24.259* **	6.901**	-20.978	11.773**	-8.454
	(1.002)	(6.302)	(3.016)	(12.569)	(5.074)	(12.491)
IMF	0.010	-7.024**				
	(0.052)	(2.771)				
SBA			83.252	-522.271		
			(256.089)	(352.998)		
Withdrawn SBA			-2.156	2.529		
			(2.742)	(2.481)		
Extended arrangements					-208.024*	88.135
					(117.159)	(91.675)
Withdrawn extended arrangements resources					14.713*	9.772
					(8.244)	(10.951)
Constant	112.478	-5618.17	-223.445	-200.458	115.758**	1125.58

		***			*	
	(71.650)	(2183.84)	(207.931)	(378.623)	(184.233)	(1043.135)
No. of Obs.	18	12	18	12	18	12
Wald Chi Squared	293	43	15	11	13	16

Notes: For the first specification, regressions are corrected for panel heteroskedasticity and within-panel correlation. For the second and third specifications, regressions are corrected for panel heteroskedasticity.