Does the World Bank move markets?

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Abstract: This paper builds on the tradition of stock market event studies to examine the impact of World Bank loans on borrowing country equity markets. We exploit a rich dataset with commitments at the monthly level, allowing us to study short run reactions to news about loans (which generates expectations about future disbursements and policy). To the extent that there is ex ante uncertainty over the influx of resources, we expect a positive overall response to loan size in terms of the local stock market. For investment projects, the impact of commitments may increase with the domestic component of project contracts and awards. In the case of program loans, loan approval signals not only resources but also contractionary fiscal policy and thus could spark a stock market reaction in either direction. Finally, we use variation due to bureaucratic factors to identify less predictable events that are more likely to convey new information to markets and thus generate market movement. This research highlights the importance of capturing indirect effects to measure the overall impact of international institutions and how those effects are conditioned by features of the global governance system in practice.

Keywords: World Bank; Event study; Emerging markets; Financial development

JEL codes: F33; F53; G12; G14; G15; H63; H81; O19

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1. Introduction

The World Bank is, alongside the International Monetary Fund (IMF), one of the most important international financial institutions (IFI). Its lending activity in 2016 amounted to $46 billion of new commitments and $37 billion of gross disbursements.[1] For some countries funds received from the World Bank can reach a sizable share of GDP, and an even bigger share of total investment. For example, in 2010 Kenya has received commitments of $680 Million, more than 14 percent of total investment ($4.7 Billion). Similarly, gross disbursements can represent significant financial flows from the World Bank to recipient countries. Staying with the example of Kenya in 2010, gross disbursements reached $202 Million, more than 4 percent of investment.[2]

The IFIs have emphasized that financial sector development is an important contributor to economic growth. One aspect of financial development is the growth of capital markets and a stock exchange. Given that incoming flows from powerful donor institutions can make up a significant share of the domestic economy, announcements of new loans may be market-moving events under certain conditions. As the World Bank recommends financial deepening to its client countries, it is important to investigate the degree to which World Bank actions themselves undercut the benefits of such markets by contributing to excess volatility.

Efficient markets react only to new information since anticipated events are already priced in. For example, when a new loan has been agreed on, equity values of companies in affected sectors should move immediately due to the anticipated impact of any new information. Only when subsequent developments deviate from expectations will markets display further reaction.

[1] These numbers only consider IBRD and IDA activity, not IFC or trust fund amounts.
[2] The funds committed in 2010 started disbursing over the next years, leading to yearly increases in the amounts disbursed reaching $342 Million by 2013.

For this reason, our empirical design attempts to differentiate between expected and unexpected events. There are several dimension to take into account.

First we consider the nature of the loan, looking separately at investment projects and program loans. For investment projects the immediate benefits to the private sector of—and hence the market reaction to—a loan depends on the degree to which the project employs local (rather than foreign) contractors and suppliers. In contrast, program loans consist of general budgetary support, albeit with policy reform conditions attached to the release of funds. Adjustment lending developed in the 1980s, initially taking the form of multi-tranche, multi-year Structural Adjustment Loans (SALs). The conditions and timetable for each tranche release are set out in loan approval documents. By the mid 2000's, the World Bank moved to single tranche operations (Development Policy Loans or DPLs), with loan approval (and disbursement) coming after conditions are met.[3] While conditionality varies across adjustment programs, most include fiscal and structural reforms with short run contractionary implications. Thus, for SALs approval signals upcoming contractionary policy followed by loan disbursement while for DPLs contractionary policy starts before approval and loan disbursement happens almost immediately afterward.

Second, we consider circumstances under which efficient markets might not fully anticipate loan approval so that the announcement could provide market-moving information. We exploit the incentives World Bank staff face to meet lending targets before the end of the fiscal year in June. If a division finds itself falling short of its target, commitment activity may increase in the final month of the fiscal year. Staff may accelerate the preparation process or scale-up pipeline projects. For investment loans, news about higher local expenditures should drive markets higher while news about higher foreign expenditures may push markets lower (assuming higher

[3] The change was formalized within a new operating procedure designated OP8.60. See World Bank (2015) for further details.

foreign expenditures imply lower local expenditure). In the case of adjustment loans, an unanticipated budgetary flow should have a positive effect on stock prices but policy conditionality that results in unanticipated contractionary fiscal policy (i.e., in the case of SALs) should have a negative effect.[4]

Finally, we consider the level of stock market development as a proxy for market efficiency and hence for the applicability of the efficient markets hypothesis. The 50 countries in our sample run the gamut. Stock market capitalization ranges from 0.4% of GDP in Vietnam to 265% of GDP in Malaysia and trading volume ranges from less than 0.1% of GDP in Bangladesh and Panama to 232% of GDP in China. The efficient markets hypothesis is less likely to apply in a small, illiquid market.

Summing up, there is a growing literature that examines the direct impact the IMF has on stock market returns, capital market access, and other measures relating to the financial situation of the recipient country.[5] But there has been little work on the direct impact of World Bank lending activity on emerging market stock returns. This paper aims to fill that gap. Section 2 discusses the relevant literature, section 3 describes the data, section 4 presents results, and section 5 concludes.

[4] This of course depends on expected enforcement of conditionality. The literature on World Bank structural adjustment lending points to a rather mixed record of enforcement (Mosley et al. 1995). Kilby (2009) finds that structural adjustment loan disbursement is unrelated to macroeconomic performance for U.S. friends (based on United Nations General Assembly voting), suggesting that conditionality is not enforced in these cases.

[5] E.g. Brealey and Kaplanis (2004), Dell'Ariccia et al. (2006), Mody and Saravia (2006), Cho (2014) and Kousenidis (2017).

2. Literature

Market reactions to IMF programs

Interest in market reaction to IMF programs is two-fold. First, the IMF often argues that its programs are catalytic and should spark access to other sources of foreign capital. Second, IMF critics question whether there is any reaction (due to expected improvements in economic performance or an expected bailout that allows for continued bad policies); the reaction of sovereign debt markets is a useful benchmark to assess this. A key empirical issue is selection; governments that seek (and receive) IMF programs are likely to be different from those that do not. Disentangling the effects of IMF programs from those differences is one of the central challenges in the empirical literature.

In principle, an IMF loan agreement and subsequent tranche disbursements are contingent on the borrowing country satisfying a range of macroeconomic conditions associated with prudent fiscal management. One objective of such conditionality is to send a positive signal to financial markets about the government's commitment to reform (Marchesi and Thomas 1999; Bird 2007). Consistent with signaling, Eichengreen et al. (2006) find lower bond spreads in response to IMF programs for countries with a debt-to-GDP ratio below 70%. Mody and Savarian (2006) differentiate between countries that are vulnerable and those that are desperate in terms of foreign exchange reserves and debt levels; according to their empirical results, for the former group (situations in which better policies could make headway in the short run) an IMF program is associated with an improvement in bond spreads.

Steinwand and Stone (2008) review the literature and conclude that the IMF's catalytic effects through private capital markets are likely to be heterogeneous across countries. One type of heterogeneity is the orientation of the borrowing government. Cho (2014) finds a positive effect

of adopting an IMF program on sovereign credit ratings in the case of leftist governments but no effect for other governments.

Much of the literature takes a more agnostic approach, closer to the finance literature and using GARCH models. Evrensel and Kutan (2007) examine daily stock market returns in response to news about both the start of IMF program negotiations and IMF program approval during the Asian Financial Crisis. Their sectoral analysis of stocks for Indonesia, Korea, and Thailand uncovers some positive effects for both financial and non-financial sectors, with the impact (positive or not) of start of negotiations versus approval news varying by country and sector. Evrensel and Kutan (2008) provide a similar analysis for bond spreads for Indonesia and Korea. For program approval, both countries saw reduced spreads; for the start of negotiations, only Korea. Hayo and Kutan (2005) perform a similar analysis for panel data including Indonesia, South Korea, Argentina, Brazil, Pakistan, and Russia, over the period 1997 to 1999, examining daily reactions to IMF news in stock returns, bond spreads, and foreign exchange rates. Results to positive and negative news for stock returns are as expected but forex markets only responded to negative news while bond spreads showed no statistically significant association with IMF news. See also Kutan et al. (2012).

Fratzscher and Reynaud (2011) take a different approach, looking at the impact of IMF surveillance on sovereign spreads for a group of about 30 emerging market economies. They confirm a bias in surveillance reports in favor of the more politically influential countries, while also finding that release of surveillance reports had a more positive effect on the sovereign spreads of these same countries. Although the authors do not state this directly, their findings suggest that markets react to the revealed degree of government influence in the IMF (and hence protection

from pressure to pursue contractionary policy) rather than new information about the health of the economy.

Gogstad et al. (2017) provide a detailed examination of the Greek stock market reaction to various announcements from the Troika (which included the IMF) during the Greek sovereign debt crisis. Their data on local reactions (riots and government actions) allow them to separate out direct and indirect effects on stock market reactions.

The IMF literature focuses particular attention on stock price reactions in the financial sector. The World Bank has different objectives and finances projects with a wider range of objectives than the IMF. While some projects are directly finance-related, they make up only about 8% of the total in terms of number and about 10% in terms of the committed dollar amount.[6] Nonetheless, a similar analysis of World Bank lending is possible.

Event Study Methodology

This paper follows the literature on event studies. For example, Bernanke and Kuttner (2005) measure the average reaction of the stock market to an unanticipated change in the Federal funds rate. The efficient markets hypothesis implies that any anticipated flow from the World Bank to the recipient country will already be priced into the equity share valuations. This is the parallel case to the U.S. stock market pricing in a particular, expected Federal funds rate change. It is only the *unexpected* part of a rate change (or equivalently, the unexpected part of a World Bank loan or disbursement) that should lead to movements in the stock market. As a consequence, the main challenge in adopting this approach to our question lies in identifying the *unanticipated* part of the financial flows we are observing. Disregarding this issue means treating the entire disbursement as unanticipated, an implicit measurement error that leads to attenuation bias. For our applications,

[6] Numbers refer to projects with the sector board code of FIP, FM, FPD, FSP or FSY.

investment loan disbursements are possible essentially any time (as the countries in our sample always have active investment projects). Since adjustment loans are less ubiquitous, we do need to limit that sample to cases where the country had an active program. For commitments, again the countries in our sample have a steady pipeline of projects under preparation so new commitments are, in principle, possible at any time, at least for investment projects.

With these restrictions noted, the data do not allow us to construct a precise measure of surprises. Instead we will leverage a number of findings from the previous literature in order to differentiate recipient countries for which commitments or disbursements should be less certain in terms of timing and magnitude from those that can be reasonably sure of prompt payments. Finding a differential effect here can be interpreted as evidence supporting our hypothesis that unexpected disbursements positively affect stock market indices in the recipient countries.

End-of-year spending surges

One novel way to identify commitments that are likely to be unexpected by the markets is to examine those at the end of the World Bank's fiscal year. This approach builds on a small but growing literature that analyzes end-of-year public sector spending surges. Figure 1 depicts the total number of adjustment loan commitments by month of the year.

[Figure 1]

There is a notable spike in June, the end of the World Bank fiscal year.[7] This picture supports theories of internal lending processes that are at least in part driven by annual targets. Meeting those may at times result in a flurry of activity before the fiscal year ends, leading to the

[7] The picture looks identical when we analyze commitment amounts rather than project count.

observed pattern.[8] The World Bank is by no means alone in having such a strong end-of-year pattern in its spending. While anecdotal evidence is plentiful, rigorous analysis of the causes and consequences of this phenomenon is much less frequent. In a recent article, Liebman and Mahoney (2017) analyze procurement spending by the U.S. federal government. They find that spending in the last week of the year is almost five times higher than the weekly average. The authors blame "use-it-or-lose-it"-type incentives, and they confirm the suspicion that this kind of end-of-year spending surge will generally be less efficient. Using data on the quality of information technology related projects, they show the ones initiated at the end of the year have substantially lower quality ratings. Putting it simply, the stories of stockpiles of printers, monitors and scanners that are purchased by various government agencies for the sole reason to spend the money appear to have some truth to them.

In related work, Fichtner and Greene (2014) propose reforms to such "use-it-or-lose-it" rules. Again focusing on the U.S., the authors provide further evidence that various departments spend a disproportionate share of their budgets during the last month of the fiscal year. However, they point out that there is no consensus that all or even most of this accelerated year-end spending is wasteful. Nonetheless it is argued that introducing rules that allow balances to be carried into the next fiscal year (called *carry-over* or *rollover*) should curb some of the excesses and be efficiency-improving.

Returning to the World Bank, Eichenauer (2016) presents evidence of accelerated year-end spending in the form of trust fund contributions by OECD donor countries. The author analyzes various theoretical reasons for such uneven temporal contribution patterns by the donors

[8] There is also a smaller spike in December, which may reflect an additional effect related to quarterly or calendar year targets. In addition, it could reflect standard seasonal end-of-year activity related to holidays.

and reports that the evidence favors an explanation centered on bureaucratic efficiency, i.e., countries with more effective bureaucracies have a less significant spike in trust fund contributions at the end of the fiscal year.

For our purposes, the question whether the projects approved at the end of the fiscal year are of a lower quality or reflect an inefficient use of resources is secondary. The central point is that markets are more likely to be *surprised* by these events than they are by funds committed at other times. The pressure to "get the money out of the door" toward the end of the fiscal year implies that both the primary decision whether to lend and the subsequent decision on loan size are harder for markets to forecast. Thus, end-of-year commitments more closely fit the definition of unexpected financial flows.

3. Data

We employ data on commitments of World Bank loans obtained directly from the World Bank projects database. Using the detailed information available at the project level we construct a data set featuring dollar amounts at a monthly frequency. Our data covers all projects through 2016.

In addition, we employ Bloomberg stock return data from the largest exchange in each recipient country. This is an important factor limiting the breadth of our empirical investigation: some countries do not have a stock exchange, and many of those that do have seen recent changes and innovations that prevent obtaining a long historical series. Using Kenya as an example again, our monthly stock market data features 83 observations from February 2008 to December 2016.[9]

[9] The beginning date here corresponds to Bloomberg coverage of the NSE All Share Index (NASI).

Table 1 features the list of 50 countries alongside the time range for which we have stock market data. There are 16 countries from Europe and Central Asia, 9 from Latin America and the Caribbean, 8 from Middle East and North Africa, 7 from Sub-Saharan Africa, 6 from East Asia-Pacific, and 4 from South Asia. Months covered range from 47 (Bangladesh) to 458 (Malaysia) with a mean coverage duration of 247 months (median 252). The start date ranges from January 1978 (Malaysia) to February 2013 (Bangladesh), with a mean start date of September 1995 (median August 1995). Note that highly aid-dependent countries (e.g., small island developing states and countries recovering from conflict) are not in our sample because we lack stock market data.

Many emerging markets—and some well-established markets—suffer occasional wild swings. In our data, these range from a 44.2% drop (Russian Federation in August 1998) to a 177% rise (China in May 1995). To avoid the impact of such large, noisy swings, we restrict our estimation sample to months where the stock market index changes by less than 20%. This restriction drops 447 of 12,779 monthly observations, leaving an estimation sample of 12,332 observations[10].

Throughout, our unit of analysis is the country-month. The dependent variable is stock market return, computed as the percentage change in the monthly index data. Four control variables are included in all specifications: monthly inflation (computed from World Development Indicators data on annual inflation and lagged by 12 months to avoid potential endogeneity: *Inflation*), GDP per capita growth (lagged by 12 months: *Growth*), population (logged: *Pop*), and real GDP in constant 2010 USD (logged and lagged 12 months: *GDP*). In addition, we include

[10] Because our focus is on domestic investors, we use local currency based stock market indices rather than USD denominated data.

country fixed effects and year dummies. Where we include continuous measures of commitments it is log of 1 plus the commitment amount (to avoid log of zero).

4. Results

Local versus foreign contracting shares

We start by exploring whether investment project commitments impact stock market returns in the recipient country. In some specifications, we use World Bank contracting data (available since 1992) to determine the local contract component of new commitments. This approach is based on two suppositions. First, projects that include more contracts for local companies are likely to have a greater impact on the profitability of companies listed on the local exchange. Second, the extent of local benefits should become clearer once a project is approved and the details become public. If local contracting opportunities are higher than anticipated, this new information should have a positive effect on stock prices in the borrowing country; based on this, we expect that, controlling for country fixed effects, higher values should be associated with increasing stock prices. Finding no effect could indicate that these resources do not have a significant impact on the local stock market or that little new information was revealed at project approval (i.e., the market had already priced in the impact of the resource flow).[11]

[11] Or that the efficient markets hypothesis fails, a possibility we explore below. Procurement data include contracts paid for with cofinancing and trust funds, funding sources not otherwise covered in our data. This can cause the sum of local and foreign contracts to be greater than the commitment amount. In addition, exchange rate fluctuations can impact these figures, resulting in a sum greater than or less than the commitment amount. Finally, some contracts are not covered. To address these issues, we define the following country-period level variables based on project level data (indexed by j in the definitions below):

$$lnLocalCommitment_{it} = \log\left(1 + \left[\sum_j \frac{Local\ Contracts_{ijt}}{Local + Foreign\ Contracts_{ijt}} \times Commitment\ Amount_{ijt}\right]\right)$$

Table 2 presents results. In addition to country fixed effects and year dummies, we include a number of control variables. The estimated coefficient for monthly inflation is positive but insignificant across all specifications. Real GDP per capita growth enters with a statistically insignificant coefficient estimate, as does population. Real GDP enters with a negative coefficient, significant in some specifications.

Column (1) reports results for the log of investment project commitments. As discussed earlier, it is the surprises in commitments that should impact market valuation; the positive but insignificant coefficient estimate suggests that commitments are largely anticipated in advance (if indeed markets are efficient). The World Bank publishes the Board's calendar (typically including which projects will be considered) two months in advance and, to date, no motion to approve a project has ever failed.[12] Column (2) repeats the analysis but, to be comparable with Column (3), restricts the sample period to 1993-2016 when contract data (with contractor locations) are available. Again, the coefficient estimate is positive but not statistically significant.

Column (3) splits investment project commitments into local and foreign, based on contractor location data from the World Bank's procurement contracting database. Local commitments are positively associated with increases in local stock market indices but the effect is small and not statistically significant. The foreign component of investment project commitments enters with a negative sign (*ceteris paribus*) and is also insignificant. Again, the interpretation is either that these flows do not matter or are largely anticipated.

$$lnForeignCommitment_{it} = \log\left(1 + \left[\sum_j \frac{Foreign\ Contracts_{ijt}}{Local + Foreign\ Contracts_{ijt}} \times Commitment\ Amount_{ijt}\right]\right)$$

In the case that both local and foreign contract amounts are zero, our aggregation method treats the calculated commitment amounts as zero.

[12] That is, problem projects are not presented to the board. It is possible for a project on the docket to be withdrawn so some residual uncertainty still exists—but not much.

As a next step we expand the analysis in an attempt to identify investment project commitments that are more likely to catch markets by surprise. In Table 3, we differentiate between June commitments and commitments in other months to identify the effect of investment projects rushed through at the end of the World Bank's fiscal year. This follows the rationale that end-of-year spending surges are difficult to anticipate, as outlined in more detail above.

Column (1) replicates the first column of Table 2 but with commitments split between June and other months.[13] Contrary to expectations, the coefficient for commitments in other months (when approval should be more predictable) is slightly larger than the coefficient for June and weakly significant (though not significantly different than the June commitment coefficient). Column (2) differentiates between local and foreign commitments, again in June and in other months. Although the coefficient estimates for the June commitments are now larger in absolute value than for commitments in other month (in line with the notion of June surprises), none of the coefficient estimates are significantly different from zero. Column (3) narrows the focus to more recent years (2000 to 2016). In this sample, we do see some evidence of unexpected commitments impacting stock market prices. The coefficient for local commitments in June is positive and marginally significant; it is also nearly triple the value of the coefficient for other months. The coefficient for foreign commitments in June is negative and statistically significant—and nearly 20 times the coefficient estimate for other months. While this is an intriguing finding, it is not immediately obvious how to justify dropping the 1993 to 1999 period. One suspicion is that our sample includes fewer sophisticated markets in the early period. Indeed, if we include only

[13] One interesting feature is the coefficient on the uninteracted June dummy. In all samples that include FY2006 and later years, the estimated coefficient on the June dummy is negative and significant. Thus at least if we consider the last 10 years, markets appear to move down in June, ceteris paribus.

markets with at least a 25% market cap (market capitalization as a percent of GDP), we get similar results. We explore this issue in more detail below.

DPL and SAL commitments

Next, we focus on adjustment lending. As noted above, World Bank adjustment lending shifted from SALs—where contractionary policies are likely to follow approval—to DPLs—where contractionary policies are likely put in place before approval. Although the World Bank began experimenting with DPLs in the late 1990s, the operational directive signaling the formal shift was introduced in August of 2004 (World Bank 2017, 1). Figure 2 summarizes SAL and DPL loan commitments by fiscal year and demonstrates that FY2005 does mark the transition from the post-commitment conditionality of SALs to the pre-commitment conditionality of DPLs. The results below use the subsample up to FY2005 for SAL estimations and the subsample starting with FY2006 for DPL estimations.[14]

[Figure 2]

Table 4 presents adjustment lending estimation results. As a starting point, Column (1) ignores the transition described above, lumping together SAL and DPL commitments and covering the full time period. Not surprisingly, the coefficient estimate on commitments is small and insignificant. Column (2) presents results for SAL commitments only. The negative coefficient estimate is consistent with a signal of future contractionary policies that drive stock markets lower. However, the effect is not statistically significant at conventional levels. Column (3) repeats this exercise but for DPL commitments. The positive coefficient estimate is consistent with

[14] Our measure of SAL commitments includes all adjustment lending other than DPLs (i.e., where the lending instrument type is "Development Policy Lending" but the lending instrument is not). This excludes 22 DPLs approved before July 1 of 2005. Likewise, our measure of DPL commitments includes only true DPLs and so excludes 5 straggler SALs approved after FY2005.

information about an infusion of funds (and no new contractionary policies). Again, this falls short of statistical significance. Columns (4), (5) and (6) again attempt to better identify when loan approval comes as a surprise by separating end-of-fiscal-year commitments made in June from commitments made in other months. The Column (4) coefficient estimate for the combined adjustment loan commitments is now negative and marginally significant for June, positive but small and not statistically significant for other months. Column (5) reports SAL results. June SAL commitments are associated with a statistically significant drop in stock market indices, ceteris paribus. A doubling of SAL June commitments is associated with a ½ percent decrease in the stock market. Since the return variable is computed at the monthly frequency, this effect corresponds to a 5.4 percent drop at an annualized rate. The coefficient on SAL commitments in other months is also negative but one tenth the magnitude and not statistically significant.[15] Column (6) presents results for DPL commitments. The coefficient estimate for June commitments is negative but not significant. The coefficient estimate for DPL commitments in other months comes as a surprise—positive and significant (though smaller in magnitude than the June SAL effect). This conflicts with expectations as we expect a stronger positive result in June.

The dimension we explore next is the degree of stock market development and hence the plausibility of the efficient markets hypothesis. Figure 3 ranks countries by their market cap (stock market capitalization as a percent of GDP) for the SAL sample; Figure 4 presents the same ranking for the DPL sample. Both figures show a wide range of market cap, with many countries having extremely underdeveloped markets (even single digit values for market cap).

[Figures 3 and 4]

[15] As a placebo test, we estimated specifications where we distinguished commitments made in a particular month for all other months of the year, as well, including December. The presented effect only occurs for commitments made in the month of June.

Table 5 explores the role of market development by restricting the sample to those countries with larger and hence presumably more efficient markets. Column (1) simply repeats the SAL specification from Column (5) of Table 4 for comparison—a negative and statistically significant coefficient on June SAL commitments and an insignificant coefficient on SAL commitments in other months. Column (2) limits the sample to the 8 largest countries by market cap, cutting the sample size from 5811 to 1222. The estimated coefficient on June SAL commitments is again negative and statistically significant, now doubled in magnitude. Column (3) further limits the sample, now to just the 5 countries that standout as having substantially higher market cap than their neighbors. This final coefficient estimate is negative and significant, now three times the original estimate. A doubling of June SAL commitments is associated with a 1.65% drop in the stock market, ceteris paribus; this is almost 17% at an annualized rate.[16] If we look instead at June DPL commitments (Columns (4) to (6)), we find that the original result is not robust. The counterintuitive positive, significant coefficient on DPL commitments in other months is insignificant for the fairly high market cap countries and turns negative for the really high market cap cases. Likewise, the coefficient on June DPL commitments becomes positive when we look at higher market cap cases, though it never reaches statistical significance.

In sum, SAL results get stronger as we narrow our focus to more developed and hence likely more efficient capital markets, while for DPLs the anomalous results disappear. This suggests that the *bad news* about future contractionary policy conveyed by unanticipated World Bank adjustment loans can contribute to market volatility, especially when those markets are more developed.

[16] If we use a binary measure for June SALs, the coefficient estimates range from -2.3 to -8.2. This indicates that a June SAL is associated with a 2.3 percent drop in the stock market when looking at the wider sample and an 8.2 percentage point drop in the stock market when looking at more efficient markets only, ceteris paribus.

5. Conclusions

This paper is, to our knowledge, the first to investigate a direct, short-run effect of World Bank loan approval on recipient country stock markets. Following the efficient markets hypothesis, we expect an effect only from unanticipated flows, which are difficult to identify in the data. We suggest four dimensions to explore when attempting to identify effects of World Bank commitments on local stock markets. First, we differentiate between the domestic and foreign contracting components of investment projects. Second, we examine adjustment lending, differentiating between structural adjustment loans that signal future contractionary policy and development policy loans where such policies pre-date the loan. Third, we attempt to identify cases where loans may come as a surprise to markets, because the loans are pushed through in an end-of-fiscal year lending surge. Fourth, we argue that results should be stronger when we limit the sample to more developed stock markets where claims that market prices efficiently reflect economic news are more plausible.

While there are some anomalous results, other patterns hold across all countries and all the predictions fare better when we restrict attention to the most developed markets. Surprise news about high levels of local contracting in World Bank funded investment projects is associated with upticks in the local stock market while equivalent information about foreign contracting is associated with drops—particularly in recent years or for countries with more developed stock markets. SAL commitments (and their contractionary policies) that come as surprises in June are associated with lower stock market prices, a feature that is more pronounced in more efficient markets. DPLs, where loans are approved only after policy benchmarks are reached, behave rather differently.

These findings suggest that local markets do respond to news about World Bank lending, which in turn adds to market volatility. This effect is more pronounced in more developed markets and hence may become an increasingly important issue as the World Bank itself pushes for financial sector development.

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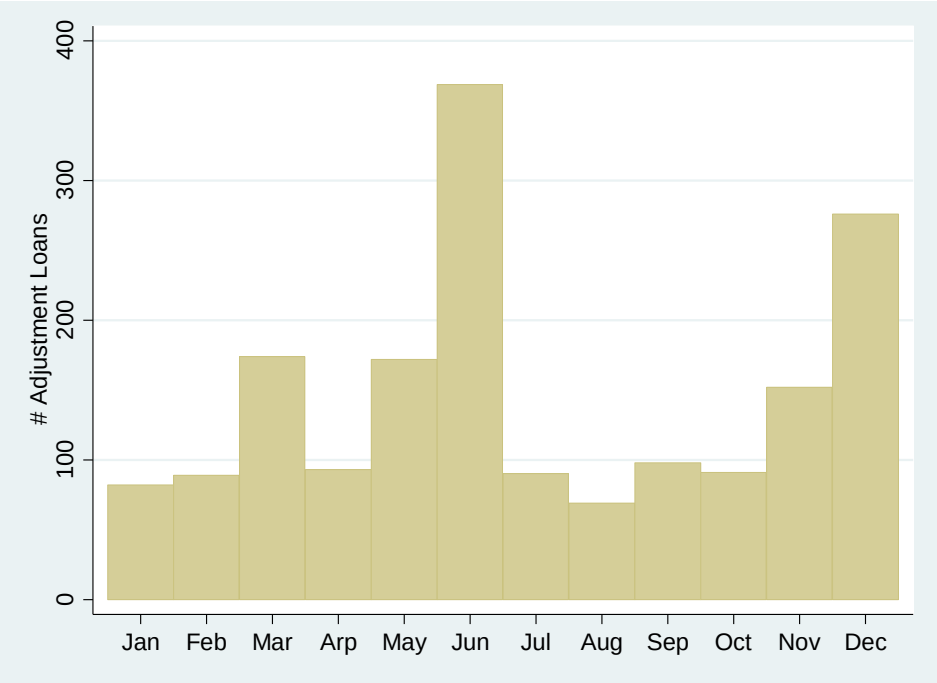

Figure 1: Frequency of World Bank adjustment loan commitments across the months of the year, 1947-2017

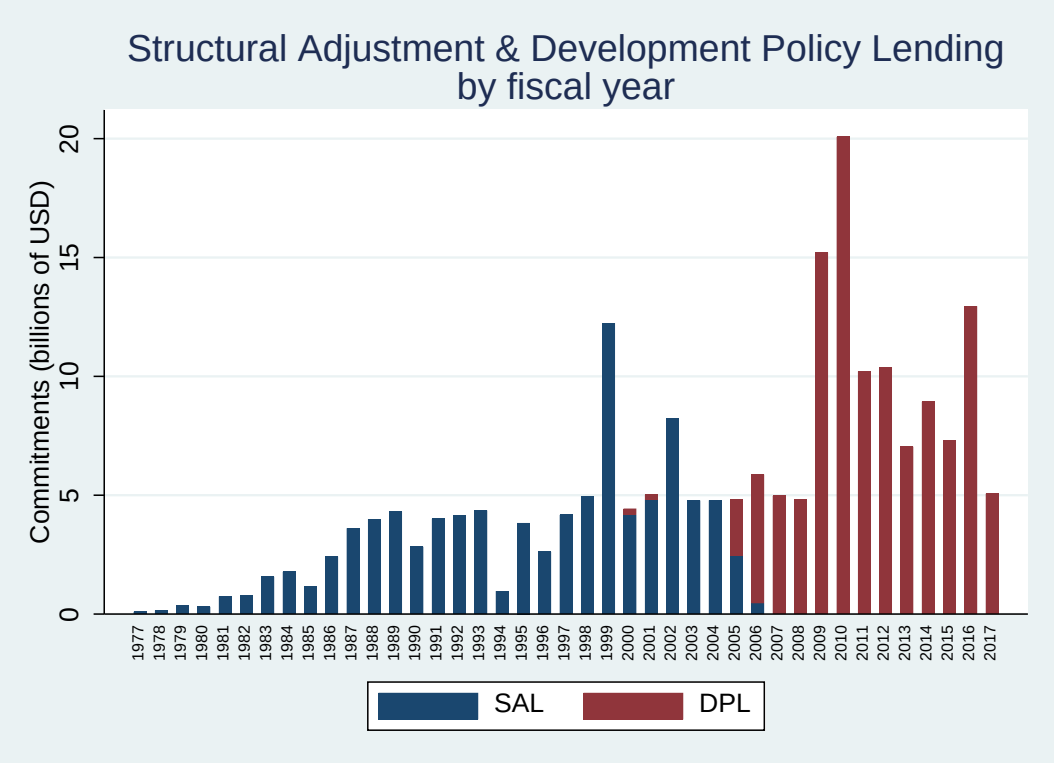

Figure 2: The Evolution of Adjustment Lending

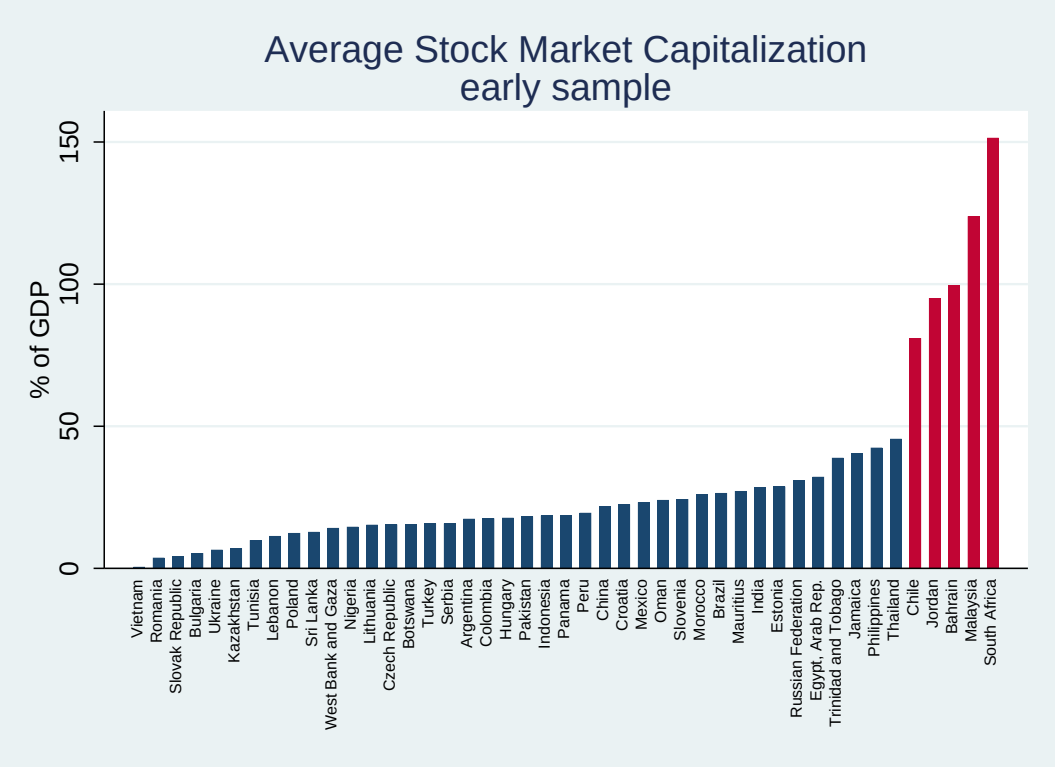

Figure 3: Stock Market Capitalization, Average before FY2006

Figure 4: Stock Market Capitalization, Average from FY2006

Table 1. Country stock market data coverage

Country	First month of coverage	INDEX	Stock market capitalization as percent of GDP	Total value of traded stocks as percent of GDP	Turnover ratio
Argentina	December 1992	BURCAP	8.02	0.42	8.29
Bahrain	July 2004	BHSEASI	66.67	1.63	1.42
Bangladesh	January 2013	DSEX	14.46	1.29	65.09
Bosnia and Herzegovina	February 2006	SASX10			
Botswana	June 1989	BGSMDC	28.46	0.84	2.74
Brazil	March 1988	IBOV	31.11	24.98	76.07
Bulgaria	October 2000	SOFIX	13.63	0.61	5.05
Chile	January 1990	IGPA	82.14	9.05	9.95
China	December 1990	SHCOMP	64.14	231.62	557.04
Colombia	July 2002	COLCAP	33.32	4.16	11.91
Croatia	June 2002	CRO	36.96	1.25	2.36
Czech Republic	April 1994	PX	17.55	8.82	28.13
Egypt	February 1998	EGX30	18.72	6.18	23.83
Estonia	June 1996	TALSE	8.47	0.90	9.36
Ghana	December 2010	GGSECI	7.46	0.33	1.72
Hungary	January 1991	BUX	12.31	5.53	49.64
India	April 1979	SENSEX	71.50	34.95	51.53
Indonesia	April 1983	JCI	42.02	8.98	20.72
Jamaica	March 1987	JMSMX	45.21	3.19	3.07
Jordan	December 1999	JOSMGNFF	67.63	8.82	14.01
Kazakhstan	July 2000	KZKAK	13.89	0.86	10.37
Kenya	February 2008	NSEASI	25.35	1.96	7.90
Lebanon	January 1996	BLOM	23.79	1.08	3.97
Lithuania	January 2000	VILSE	9.20	0.47	4.37
Malaysia	January 1977	FBMKLCI	129.01	38.84	29.17
Mauritius	July 1989	SEMDEX	64.94	3.77	6.07
Mexico	December 1991	INMEX	35.01	9.18	25.88
Morocco	December 1993	MCSINDEX	45.45	2.75	6.39
Nigeria	January 1998	NGSEINDX	10.56	0.86	8.04
Oman	January 1992	MSM30	56.38	6.69	9.04
Pakistan	November 1991	KSE100	16.91	4.79	31.53
West Bank and Gaza	July 1997	PASISI	24.70	2.54	10.23
Panama	January 1992	BVPSBVPS	30.78	1.30	0.96
Peru	December 1991	SPBL25PT	33.73	1.16	2.27

Philippines	January 1987	PCOMP	84.51	13.61	15.54
Poland	June 1994	WIG20	29.30	10.61	37.64
Romania	September 1997	BET	10.23	1.34	12.27
Russian Federation	September 1997	INDEXCF	24.14	8.35	36.51
Serbia	October 2004	BELEXLIN	17.73	0.70	4.01
Slovak Republic	September 1993	SKSM	4.88	0.14	2.28
Slovenia	April 2003	SBITOP	14.40	1.14	5.92
South Africa	June 1995	JALSH	245.42	70.87	30.31
Sri Lanka	January 1985	CSEALL	26.30	2.60	8.28
Thailand	August 1995	SET50	95.85	71.66	71.63
Trinidad and Tobago	January 1983	TTCOMP	65.22	0.61	0.76
Tunisia	April 1999	TUSISE	19.36	2.43	14.29
Turkey	January 1988	XU100	25.67	45.34	189.74
Ukraine	January 1998	PFTS	13.10	0.51	5.21
Vietnam	July 2000	VNINDEX	24.94	10.30	38.65
Zimbabwe	February 2009	ZHINDUSD	136.54	10.97	4.22
United States		SP500	143.31	224.06	160.16

*Source: Bloomberg and Financial Development and Structure Dataset: Thorsten Beck, Aslı Demirgüç-Kunt and Ross Levine, (2000), "A New Database on Financial Development and Structure", World Bank Economic Review 14, 597-605.

The data displayed is from the most recent year: This is generally 2015, but 2014 for Argentina, 2013 for the Slovak Republic and 2012 for Bangladesh, Botswana, Bulgaria, Croatia, Estonia, Ghana, Jamaica, Kenya, Lebanon, Lithuania, Pakistan, Panama, Romania, Serbia, Trinidad and Tobago, Tunisia, Ukraine and 2005 for Zimbabwe.

Table 2: Stock market return & Commitments, Investment Projects

	(1)	(2)	(3)	(4)
Inflation	3.639	1.261	1.170	14.41
	(0.94)	(0.28)	(0.26)	(1.21)
Growth	0.00228	-0.00314	-0.00288	0.00315
	(0.14)	(-0.18)	(-0.17)	(0.16)
Pop	-0.331	-0.416	-0.364	0.977
	(-0.40)	(-0.48)	(-0.42)	(0.96)
GDP	-1.215**	-0.831	-0.835	-1.636**
	(-2.54)	(-1.54)	(-1.55)	(-2.36)
Commitments	0.0457	0.0510		
	(1.30)	(1.37)		
Local Commitments			0.0583	0.0987
			(0.99)	(1.58)
Foreign Commitments			-0.0651	-0.121
			(-0.79)	(-1.34)
N	12,332	11,302	11,302	9,180
Countries	50	50	50	50

Dependent variable: percentage change in monthly stock market index (local currency). Unit of observation: country-month. *t*-statistics in parentheses. * p<.1 ** p<.05 *** p<.01.
All specifications include country fixed effects & year dummies. Inflation, growth & GDP lagged by 1 year; Pop, GDP & commitments in logs.
(1) Full sample: 1978-2016
(2) Sample with contracting data: 1993-2016
(3) Sample with contracting data: 1993-2016
(4) 2000-2016

Table 3: Stock Market Return & Surprise Commitments, Investment Projects

	(1)	(2)	(3)
Inflation	3.644	1.207	14.56
	(0.94)	(0.26)	(1.22)
Growth	0.00208	-0.00318	0.00234
	(0.13)	(-0.18)	(0.12)
Pop	-0.347	-0.367	0.999
	(-0.42)	(-0.42)	(0.98)
GDP	-1.211**	-0.830	-1.633**
	(-2.53)	(-1.54)	(-2.36)
June	-0.646***	-0.709***	-0.940***
	(-2.79)	(-3.10)	(-3.93)
Commitments -- in June	0.0579		
	(0.71)		
-- other	0.0654*		
	(1.71)		
Local Commitments -- in June		0.120	0.267*
		(0.84)	(1.72)
Foreign Commitments -- in June		-0.199	-0.426**
		(-1.02)	(-2.01)
Local Commitments -- other		0.0672	0.0922
		(1.06)	(1.37)
Foreign Commitments -- other		-0.0158	-0.0228
		(-0.17)	(-0.23)
N	12,332	11,302	9,180
Countries	50	50	50

Dependent variable: percentage change in monthly stock market index (local currency). Unit of observation: country-month. *t*-statistics in parentheses. * p<.1 ** p<.05 *** p<.01.
All specifications include country fixed effects & year dummies. Inflation, growth & GDP lagged by 1 year; Pop, GDP & commitments in logs.
(1) Investment project commitments & June surprises.
(2) Local & foreign contract commitments & June surprises.
(3) Local & foreign contract commitments & June surprises (2000-2016).

Table 4: Stock Market Return & Commitments, Adjustment Lending

	(1)	(2)	(3)	(4)	(5)	(6)
Inflation	3.414	1.585	6.243	3.373	1.674	6.114
	(0.88)	(0.33)	(0.43)	(0.87)	(0.35)	(0.42)
Growth	0.00261	-0.00627	-0.000927	0.00269	-0.00479	-0.00128
	(0.16)	(-0.24)	(-0.04)	(0.16)	(-0.18)	(-0.05)
Pop	-0.297	-4.494	3.183**	-0.320	-4.416	3.176**
	(-0.36)	(-1.61)	(1.99)	(-0.39)	(-1.58)	(1.99)
GDP	-1.216**	-3.983***	-4.234***	-1.212**	-3.996***	-4.238***
	(-2.54)	(-3.79)	(-4.10)	(-2.53)	(-3.80)	(-4.11)
June	-0.606***	0.136	-1.262***	-0.485**	0.280	-1.167***
	(-3.10)	(0.44)	(-5.15)	(-2.40)	(0.88)	(-4.60)
Commitments	0.0177	-0.162	0.0985			
	(0.32)	(-1.54)	(1.60)			
in June				-0.238*	-0.504**	-0.0997
				(-1.93)	(-2.40)	(-0.66)
Other				0.0779	-0.0500	0.136**
				(1.28)	(-0.41)	(2.03)
N	12,332	5,811	6,521	12,332	5,811	6,521
Countries	50	45	50	50	45	50

Dependent variable: percentage change in monthly stock market index (local currency). Unit of observation: country-month. *t*-statistics in parentheses. * p<.1 ** p<.05 *** p<.01.
All specifications include country fixed effects & year dummies. Inflation, growth & GDP lagged by 1 year; Pop, GDP & commitments in logs.
(1&4) All adjustment lending; (2&5) SALs only (FY2005 & earlier); (3&6) DPLs only (FY2006 & later).

Table 5: Stock Market Capitalization & Market Efficiency

	(1)	(2)	(3)	(4)	(5)	(6)
Inflation	1.674	-211.3***	-257.2*	6.114	7.781	-12.75
	(0.35)	(-3.92)	(-1.77)	(0.42)	(0.27)	(-0.18)
Growth	-0.00479	-0.0418	-0.0835	-0.00128	-0.131**	-0.262**
	(-0.18)	(-0.48)	(-0.63)	(-0.05)	(-2.34)	(-2.11)
Pop	-4.416	6.841	37.20*	3.176**	4.173*	2.660
	(-1.58)	(0.88)	(1.80)	(1.99)	(1.76)	(0.64)
GDP	-3.996***	-3.899	1.972	-4.238***	-6.277***	-0.141
	(-3.80)	(-1.45)	(0.15)	(-4.11)	(-3.43)	(-0.02)
June	0.280	0.690	0.252	-1.167***	-0.850**	-1.375**
	(0.88)	(1.03)	(0.31)	(-4.60)	(-2.21)	(-2.28)
Commitments						
in June	-0.504**	-1.120**	-1.653**	-0.0997	0.161	1.477
	(-2.40)	(-2.03)	(-1.98)	(-0.66)	(0.32)	(1.30)
Other	-0.0500	-0.269	-0.780	0.136**	0.168	-0.336
	(-0.41)	(-0.85)	(-0.91)	(2.03)	(1.51)	(-1.17)
N	5811	1222	700	6521	1650	551
Countries	45	8	5	50	12	4

Dependent variable: percentage change in monthly stock market index (local currency). Unit of observation: country-month. *t*-statistics in parentheses. * p<.1 ** p<.05 *** p<.01.
All specifications include country fixed effects & year dummies. Inflation, growth & GDP lagged by 1 year; Pop, GDP & commitments in logs.

(1) SALs only (FY2005 & earlier).
(2) SALs only (FY2005 & earlier), countries with sample average stock market capitalization above 40% of GDP.
(3) SALs only (FY2005 & earlier), countries with sample average stock market capitalization above 50% of GDP.
(4) DPLs only (FY2006 & later).
(5) DPLs only (FY2006 & later), countries with sample average stock market capitalization above 60% of GDP.
(6) DPLs only (FY2006 & later), countries with sample average stock market capitalization above 100% of GDP.

Appendix

A1: Descriptive Statistics, Main

	mean	sd	min	max
Dstmkt	.8350399	6.156515	-19.88415	19.99251
Inflation	.0071563	.016139	-.0265913	.320086
Growth	3.059713	4.035214	-19.05683	30.35658
Pop (log)	16.82516	1.830088	13.629	21.04438
GDP (log)	25.30342	1.543953	21.97775	29.818
June	.0843334	.2778985	0	1
N	12332			

A2: Descriptive Statistics, Commitments (logs)

	N	mean	sd	min	max
Investment	12332	.74433	1.719733	0	8.229813
Local	11302	.4860556	1.394636	0	8.12261
Foreign	11302	.2644665	.9531602	0	7.09537
Adjustment	12332	.1874454	1.013702	0	8.016747
SAL	5811	.1321207	.8474143	0	8.016747
DPL	6521	.227709	1.119573	0	7.601402