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Trade Costs of Sovereign Debt Restructurings: Does a
Market-Friendly Approach Improve the Outcome?

by Tamon Asonuma, Marcos Chamon and Akira Sasahara

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I N T E R N A T I O N A L M O N E T A R Y F U N D

IMF Working Paper

Research Department and Western Hemisphere Department

Trade Costs of Sovereign Debt Restructurings: Does a Market-Friendly Approach Improve the Outcome?

Prepared by Tamon Asonuma, Marcos Chamon and Akira Sasahara*

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Abstract

Sovereign debt restructurings have been shown to influence the dynamics of imports and exports. This paper shows that the impact can vary substantially depending on whether the restructuring takes place preemptively without missing payments to creditors, or whether it takes place after a default has occurred. We document that countries with post-default restructurings experience on average: (i) a more severe and protracted decline in imports, (ii) a larger fall in exports, and (iii) a sharper and more prolonged decline in both GDP, investment and real exchange rate than preemptive cases. These stylized facts are confirmed by panel regressions and local projection estimates, and a range of robustness checks including for the endogeneity of the restructuring strategy. Our findings suggest that a country's choice of how to go about restructuring its debt can have major implications for the costs it incurs from restructuring.

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I. INTRODUCTION

Sovereign debt restructurings are typically associated with a decline in imports and exports (Rose, 2005 and Martinez and Sandleris, 2011). While the effect of restructurings on trade has been well documented, the existing literature has lumped together all the episodes without taking into account differences in the nature of the restructuring process. This paper explores how the trade response varies depending on whether the restructuring takes place before or after a default occurs. That is, whether countries restructure pre-emptively (without missing any payment to creditors), or wait until payments are missed (default) to restructure. This distinction will prove key in determining the trade costs associated with the debt restructuring.

There are a number of channels through which sovereign debt restructurings could impact trade. Imports could decline if the restructuring country has difficulties financing a trade deficit, or if the restructuring is accompanied by an exchange rate depreciation (through a standard expenditure switching channel as in Abiad et al., 2014). Constrained access to trade credit can contribute to a decline in exports, as shown by Zymek (2012) for sovereign defaults and Amiti and Weinstein (2011) and Ahn et al., (2011) for financial crises. Limited financing for imports of intermediate goods can also affect exports (Levchenko et al., 2010). Pre-emptive restructurings are generally more creditor-friendly, and countries that avoid defaulting may be able to maintain better access to financing, which can help support trade as discussed above.

Using data from 177 private external debt restructurings in 69 countries over 1978–2007, we document that countries with a post-default restructuring—results in larger net present value (NPV) haircuts—experience have on average: (i) a more severe and protracted decline in imports, (ii) a larger fall in exports, and (iii) a sharper and more prolonged decline in both GDP, investment and real exchange rate than those with a preemptive restructuring. Interestingly, the experience of countries that start their debt renegotiation prior to a default but temporarily miss some payments during that process (which we call weakly pre-emptive restructurings with smaller NPV haircuts), tends to fall in between that of the strictly pre-emptive and post-default restructurings. While not the main focus of our paper, we also document that pre-emptive restructurings are associated with more rapid GDP and investment recoveries and less depreciation of the exchange rate.

Our results show that the approach that countries take to a debt restructuring can have first order implications for some of the key costs associated with restructuring.¹ This distinction has not received attention in the sovereign debt literature, with the exception of a couple of

¹ Borensztein and Panizza (2009) and Sandleris (2015) identify four main costs of sovereign defaults: reputation costs, trade exclusion costs, costs to the domestic economy through the financial system, and political costs.

(continued...)

recent studies. IMF (2013) documents that recent preemptive restructurings on external private debt over 2005–2013 (10 episodes) achieve high creditor participation than post-default episodes.² Asonuma and Trebesch (2016) study 179 restructurings over 1978–2010 and show that preemptive restructurings are associated with lower haircuts, shorter duration, lower output losses, and quicker market re-access than post-default cases. The current paper fills a gap in the literature by exploring the impact of both preemptive and post-default restructurings on exports and imports. It suggests that much of the cost of restructuring may stem from waiting until after a default takes place to restructure. The difference in outcomes between a post-default and a strictly preemptive restructuring in our estimates is often smaller than the difference in outcomes between a strictly preemptive restructuring and the control sample of countries that did not experience a restructuring. Moreover, even temporarily missing payments after the start of renegotiation seems to be associated with significantly worse outcomes for the country, as shown by the difference in our results between strictly and weakly preemptively restructurings. These stark results have not been documented before in this new and emerging literature.

Our findings are supported by regression based estimates for the impact of trade, which control for a number of other variables such as terms of trade, the real exchange rate and GDP growth. We obtain these results both under a conventional panel regression, which is commonly used in the trade and sovereign default literature (Rose 2005, Martinez and Sandleris, 2011, Zymek, 2012), and under a local projection model—originally proposed by Jordà (2005) and recently used by Jordà et al., (2013, 2016), Jordà and Taylor (2016) and Kuvshinov and Zimmermann (2016). These two approaches are complementary. The conventional panel regression provides an estimate of direct period-specific impacts of the different restructuring strategies. On the other hand, the local projection method quantifies the overall effect (both direct and indirect) of the restructuring approach over longer horizon.

The conventional panel regression estimates indicate that post-default restructurings are associated with a severe and prolonged decline in imports (1.7 percent over the first 3 years on average – in line with that of sovereign defaults in Zymek, 2012). In contrast, weakly preemptive cases experience a mild and short drop (0.8 percent over first 2 years on average) and strictly preemptive cases only experience a contemporaneous fall in imports (0.7 percent at the start year). Similarly, on exports, post-default restructurings lead to a sharp contemporaneous drop in exports (1.8 percent), while neither weakly nor strictly preemptive cases experience a significant drop. Sharp differences also emerge in our local projection estimates. On imports, post-default restructurings lead to a sharp decline in imports for the first 3 years from the start year and a prolonged compression over 4 additional years—similar to Kuvshinov and Zimmermann (2016) on sovereign defaults. In contrast, the decline in imports is milder (but still severe) for weakly preemptive and even more gradual

² For recent case studies, see also Sturzenegger and Zettelmeyer (2006), Erce (2013), Panizza et al. (2009), Diaz-Cassou et al. (2008), Das et al. (2012), and Finger and Mecagni (2007).

for strictly preemptive ones. In a similar vein, post-default restructurings experience a severe decline of exports over the medium term followed by a moderate decline over the first 4 years. But the decline in exports is smaller for both weakly and strictly preemptive restructurings.

The decision of whether or not to restructure debt either pre-emptively or after default may be related to other country characteristics that help shape the post-restructuring outcome. For example, countries that restructure pre-emptively may be the ones that have accumulated debt and experienced more gradual adverse shocks. Similarly, countries with post-default restructurings suffer both prolonged recession and increased debt burden due to unexpected shocks. We address that potential endogeneity problem using a conventional Instrument Variable (IV) estimation and the Augmented Inverse Probability Weighted (AIPW) estimator (Jordà et al., 2016 and Kuvshinov and Zimmermann, 2016). Our estimates remain robust. Moreover, additional robustness checks on both expanding country sample and differentiations of exchange rate regimes, commodity exporters, IMF-supported programs, and official external (Paris Club) restructurings show the validity of our baseline results.

In addition to the emerging literature on the approach to debt restructurings discussed earlier, this paper also contributes to the empirical literature on trade costs of sovereign defaults.³ On official external debt (bilateral debt), both Rose (2005) and Martinez and Sandleris (2011) find that debt renegotiation (Paris Club restructurings) over 1948–2007 are associated with a significant decline in sovereign debtors' overall trade. On private external debt, Zymek (2012) shows that defaults trigger a severe reduction in sovereign debtors' exports in financially dependent industries. Similarly, Kuvshinov and Zimmermann (2016) document defaulting countries experience gross trade collapses in tandem with severe GDP contractions.⁴ Our paper differs from these studies in that we find asymmetric impacts across the three types of restructuring approaches discussed above.

Our empirical findings on trade around restructurings is also related to growing literature on trade collapse during the 2008–2009 global financial crisis. Among recent studies, using either firm-level or sector-level data, Amiti and Weinstein (2011), Alessandria et al., (2010) and Chor and Manova (2012) find that trade was negatively affected through a contraction of

³ Gu (2015) theoretically explains the pro-cyclicality of imports, exports and terms of trade around sovereign defaults.

⁴ Zymek (2012) uses industry-level export data in a sample of 100 countries over 1970–2007 (with 61 default episodes). Kuvshinov and Zimmermann (2016) use a panel of 117 countries with 88 external defaults over 1970–2010.

(continued...)

trade credits, while with a disaggregated data on the US imports and exports, Levchenko et al., (2010) argue that vertical linkages across countries amplify the decline in trade.

In contrast, using monthly aggregate US import data, Novy and Taylor (2014) emphasize a channel of inventory adjustments.⁵

The remainder of the paper is organized as follows. Section 2 documents the stylized facts related to the response of trade to different restructurings. Section 3 describes the data and our empirical strategies. Section 4 reports the baseline results. Section 5 deals with endogeneity, while Section 6 presents additional robustness checks. Finally, Section 7 discusses some policy implications and concludes.

II. NEW STYLIZED FACTS ON TRADE DYNAMICS AROUND DEBT RESTRUCTURINGS

A. Classification of Restructuring Approaches

Throughout the paper, we focus on private external debt restructurings. Of 179 debt restructurings, 131 episodes accompany at least one official external (Paris Club) debt restructuring over the periods from 2 years prior to the start of restructurings to 2 years after the end of restructurings.⁶ In contrast, 48 episodes are not associated with any external official debt restructurings. With a single exception, Paris Club restructurings were accompanied by an IMF-supported program.

Asonuma and Trebesch (2016) define classifications of restructurings on private external debt as follows:

- “Strictly preemptive” restructurings are those which are implemented with no missed payments at all (no legal default).
- “Weakly preemptive” restructurings are those in which some payments are missed, but only temporarily and after the start of formal or informal negotiations with creditor representatives (no unilateral default).
- “Post-default restructurings” are all other cases, in which payments are missed unilaterally and without the agreement of creditor representatives (unilateral default prior to negotiations).

⁵ On related studies, see also Asmundson et al. (2011), Eaton et al. (2013), and Greenland et al. (2014).

⁶ Section VI.B explores how the trade dynamics respond differently whether the country has an official external debt (Paris Club) restructuring or an IMF-supported program.

(continued...)

As highlighted above, our definition hinges on whether the country misses any scheduled payments. The classification of the nature of the restructuring strategy can only be made after its completion.

Using a wide range of data sources on missed payments by governments vis-à-vis private external creditors and on processes of debt restructurings, Asonuma and Trebesch (2016) code 179 debt restructurings and identify:^{7,8}

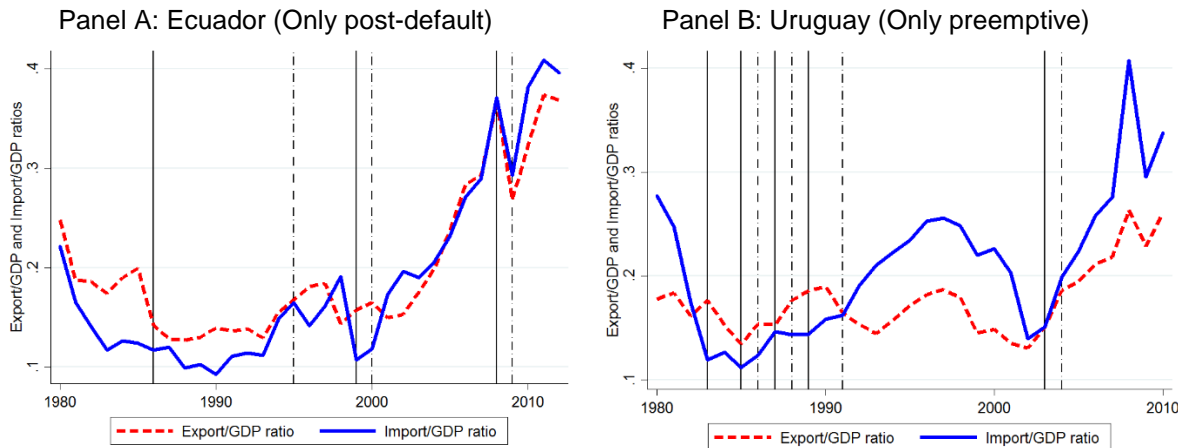
- 23 strictly preemptive restructurings in 13 countries
- 45 weakly preemptive restructurings in 26 countries
- 111 post-default restructurings in 60 countries.

Figure 1 reports trends of exports and imports (relative to GDP) for Ecuador, a post-default restructuring, and Uruguay, a strictly preemptive restructuring.⁹ These episodes were chosen because they are fairly representative of the experience of countries following those restructuring strategies. Vertical solid lines and dashed lines indicate start years and end years of restructurings, respectively. Ecuador experienced three weakly preemptive restructurings overlapping in 1982–1985 and three post-default restructurings (1986–1995, 1999–2000, and 2008–2009). In the most recent post-default restructurings (1999–2000 and 2008–2009), both exports and imports substantially declined around the restructurings. In contrast, Uruguay experienced five non-overlapping preemptive restructurings in 1983, 1985–1986, 1987–1988, 1989–1991 and 2003. In these preemptive restructurings, neither exports nor imports were severely influenced. Prior to its 2003 restructuring, Uruguay experienced a large drop in imports because of spillovers from Argentina’s debt restructuring initiated in end-2001. This comparison reveals a striking difference in the evolution of both exports and imports between these two cases.

⁷ See Asonuma and Trebesch (2016) for detailed data sources.

⁸ Appendix I.2 provides classifications of countries experiencing post-default, weakly preemptive and strictly preemptive restructurings, respectively.

⁹ See Appendix II for additional 4 country cases.

Figure 1: Trade Dynamics around Debt Restructurings

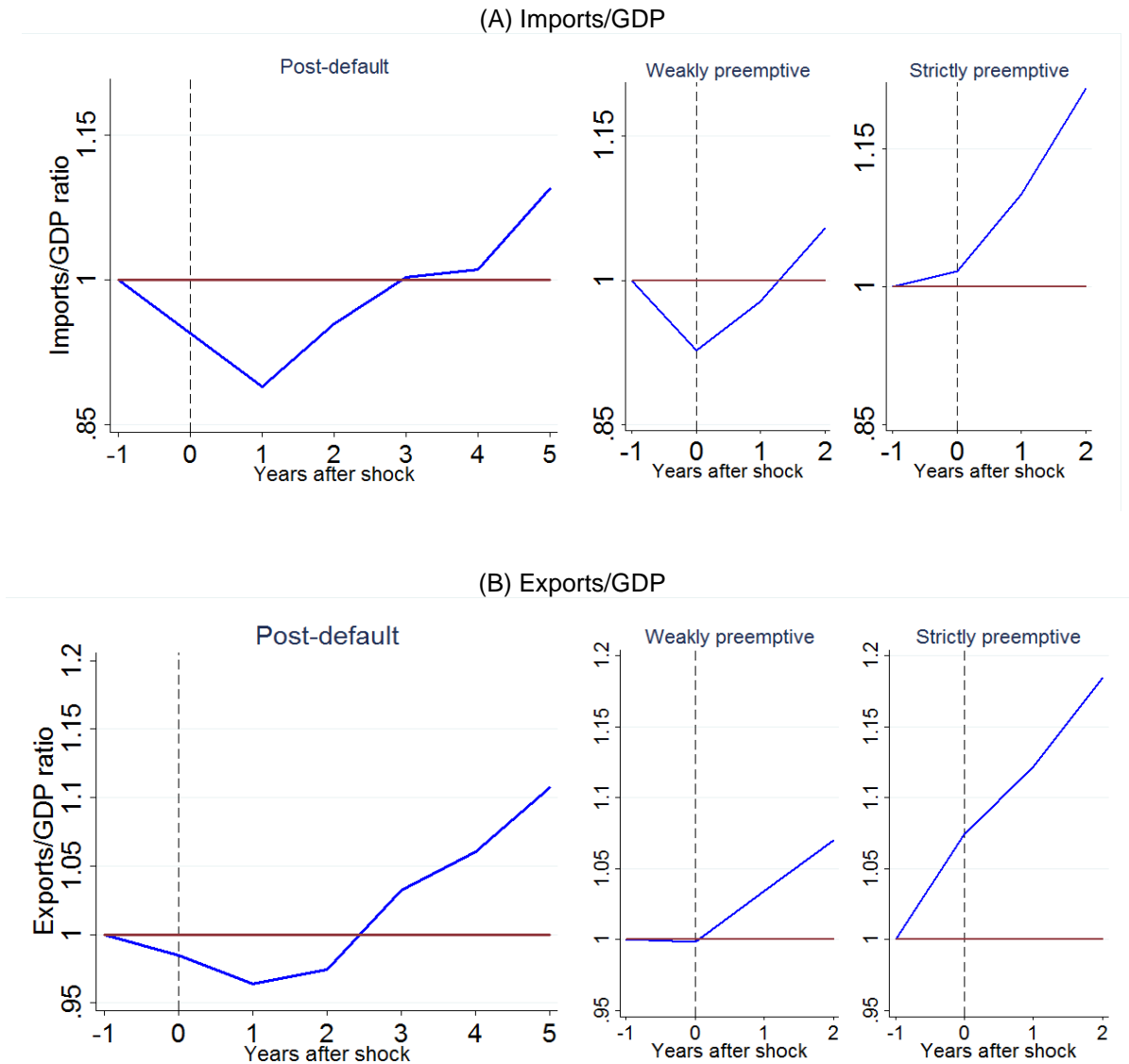
Sources: Asonuma and Trebesch (2016), IMF DOT (exports, imports) and World Bank World Development Indicators (US-dollar denominated GDP).

B. New Stylized Facts on Trade Dynamics

While the comparison of the experiences of Ecuador and Uruguay is informative, it still has an idiosyncratic component by relying on the comparison of two countries. Figure 2 generalizes the comparison by drawing on data from all countries that restructured to illustrate the average experience of exports and imports under the three types of restructurings.¹⁰ The vertical dotted line indicates the start of the restructuring (time 0). Both the exports-to-GDP and imports-to-GDP ratios are normalized at the pre-restructuring level (time -1) indicated by the red horizontal lines. The duration of the renegotiation varies substantially across strategies: 5.1, 1.0 and 0.7 years on average for post-default, weakly preemptive and post-default restructurings, respectively. The time scale of the charts is chosen accordingly. Imports in countries with post-default restructurings experience a substantial decline for a prolonged period (over 3 years on average, A-left panel). Similarly, countries experiencing weakly preemptive restructurings suffer a decline in imports, albeit milder than that in post-default restructurings (A-center panel). In contrast, strictly preemptive restructurings are not associated with any decline in imports (A-right panel).

Turning to exports, post-default restructurings contribute to a severe and protracted drop in exports (2–3 percent over 3 years, B-left panel). In contrast, countries experiencing both weakly and strictly preemptive restructurings do not experience a contraction in exports (B-center and right panel).

¹⁰ See Benjamin and Wright (2009), Sturzenegger and Zettelmeyer (2006, 2008), Reinhart and Rogoff (2009, 2011), Cruces and Trebesch (2013), Asonuma and Joo (2016) for stylized facts around sovereign debt restructurings. See also Tomz and Wright (2013) for a survey.

Figure 2: Exports and Imports around Debt Restructurings

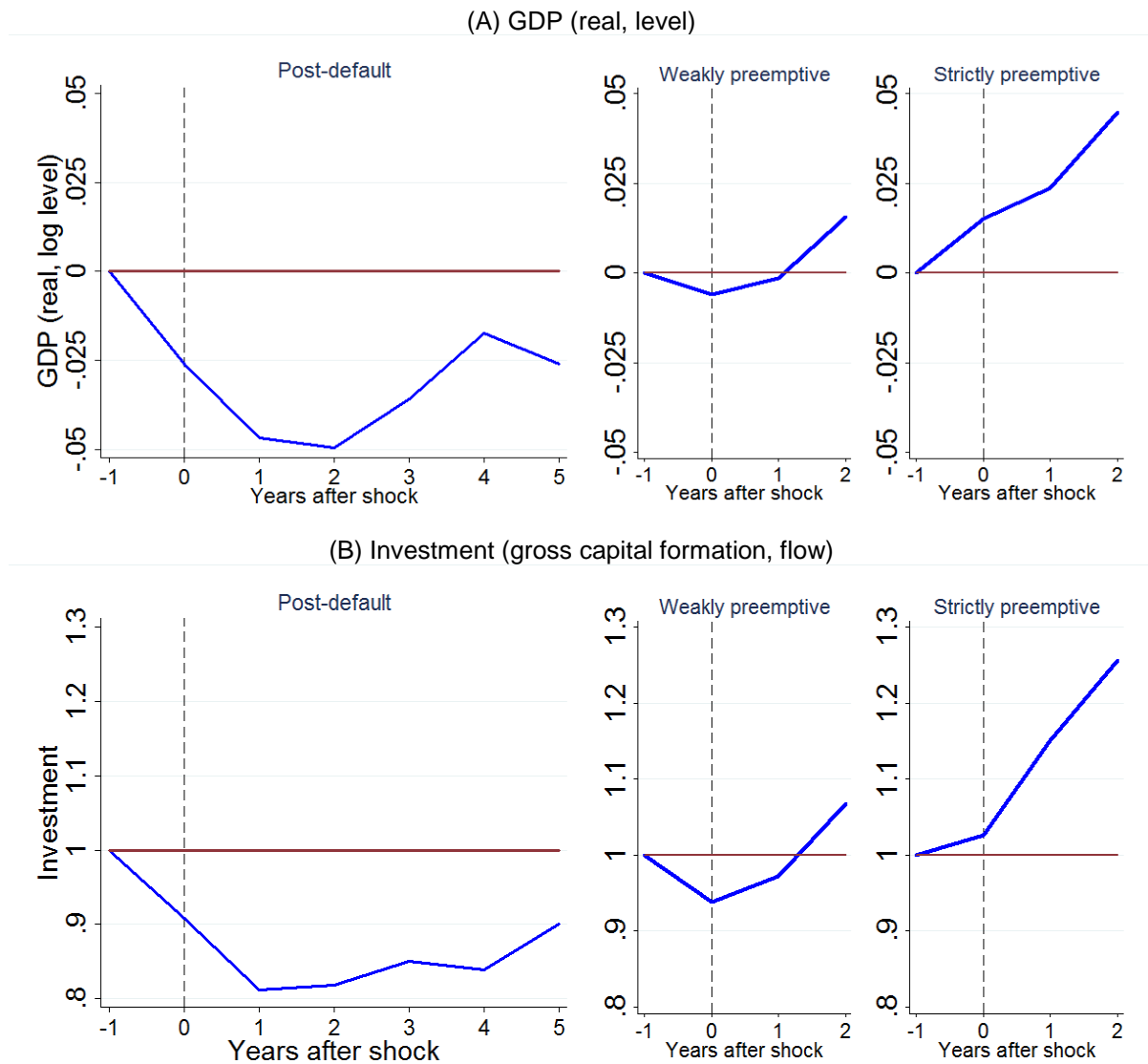
Sources: Asonuma and Trebesch (2016, restructurings), IMF DOT (exports, imports), WB World Development Indicators (US dollar-denominated GDP)

Figure 3 is analogous to Figure 2, but reports the dynamics of GDP, investment and the real exchange rate (against the US dollar). As shown in Asonuma and Trebesch (2016), GDP experiences a sizable drop in the run-up to a post-default restructuring.¹¹ The drop continues following the restructuring, and GDP remains below its pre-crisis levels for several years. A much smaller drop takes place in the run-up to a weakly preemptive restructuring, and it only takes one year for GDP to recover to its pre-crisis level. In contrast, strictly preemptive restructurings are associated with more resilient growth before and after the restructuring.

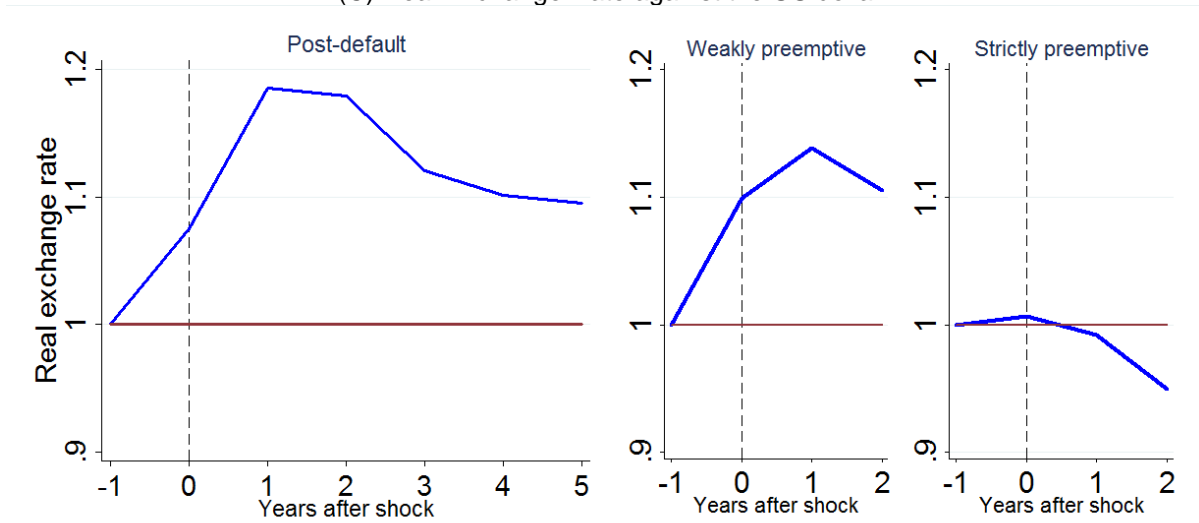
¹¹ See also De Paoli (2009), Sturzenegger (2004), Levy-Yeyati and Panizza (2011), Tomz and Wright (2007), Trebesch and Zabel (2014) for output costs for defaults.

Panel B in Figure 3 reports the results for investment, which follow a similar pattern to that of GDP. Investment experiences a deep and prolonged decline in the context of post-default restructurings, a milder and short-lived decline in weakly preemptive restructurings, while investment remains resilient and accelerates following a strictly preemptive restructuring. Finally, panel C in Figure 3 reports the results for the real exchange rate. Similarly to the findings in Asonuma (2016), the real exchange rate depreciates substantially in the run-up to post-default and weakly preemptive restructurings, and continues to depreciate afterwards. But there is a reduction in the pace of depreciation following weakly preemptive restructurings, and the overall magnitude of the depreciation is also smaller. In contrast, the real exchange rate remains more stable, and appreciates following strictly pre-emptive restructurings.

Figure 3: GDP, Investment, and Exchange Rates around Debt Restructurings



(C) Real Exchange Rate against the US dollar



Sources: Asonuma and Trebesch (2016, restructurings), IMF IFS (real exchange rate), IMF DOT (exports, imports), WB World Development Indicators (GDP, Investment).

The results illustrated above can be summarized into the following stylized facts:

- ***Stylized fact 1: Imports decline substantially in post-default restructurings, less severely in weakly preemptive restructurings, and are not affected in strictly preemptive cases.***
- ***Stylized fact 2: Exports drop substantially in the post-default restructurings, but are not affected in weakly or strictly preemptive restructurings.***
- ***Stylized fact 3: GDP and investment decline substantially and the exchange rate depreciates sharply in post-default restructurings, with a much milder adverse effect in weakly preemptive restructurings, and largely no effect in strictly preemptive cases.***

III. DATA AND EMPIRICAL STRATEGIES

A. Data

Our data has an annual frequency in order to have as large a country coverage as possible. The aggregate nominal trade (both export and import) value data are from the IMF Direction of Trade (DOT) database. We deflate the nominal trade data using the annual U.S. GDP deflator from the World Bank World Development Indicators (WDI). Our approach of using trade value data rather than trade quantity data—conventional in the literature (e.g., Rose, 2005, Martinez and Sandleris, 2011, Zymek, 2012)—is guided by two rationales: First using trade quantity data strictly limits our country coverage, particularly among low income countries (LIC) experiencing restructurings. Second, Gopinath et al., (2012) find that a decline in US international trade was exclusively driven by a drop of trade quantity rather

than a drop in trade prices. Hence, conducting the analysis with trade values does not raise concerns because changes in trade values tend to be driven by changes in trade quantity, not by changes in trade prices.

Debt restructuring variables are from Asonuma and Trebesch (2016) which classifies restructurings as post-default, weakly preemptive and strictly preemptive, and also provides the duration of all 179 restructuring episodes over 1978–2010. In their database, the start of a restructuring process is defined as the default month and/or month in which a distressed restructuring is announced, and the end of a restructuring is defined as the month of the final agreement and/or the implantation of the debt exchange.

Our set of control variables include real GDP growth, real exchange rate depreciation, growth rate of investment, change in the terms of trade, the cyclical component of the log of real GDP per capita, population, import prices and export prices, and dummies for a floating exchange rate regime and for commodity exporters. Appendix A summarizes data sources of these explanatory variables.

Our sample covers the period 1970–2007. Our decision to exclude the period from 2008 onwards is driven by two reasons; first, and more importantly, international trade experienced a structural break which completely changed trade dynamic patterns due to the Great Trade collapse in 2008–2009. Applying a financial crisis dummy is not enough to meaningfully extract information from those years. Second, in our context, there are only two debt restructurings which were initiated after 2008: Seychelles 2008–2010 and Ecuador 2008–2009. Given the data availability constraint for other control variables, Seychelles 2008–2010 would have already been dropped from our sample.

The sample covers 69 countries that have experienced at least one debt restructuring over the specified horizon for our benchmark. Since we divide restructurings into three separate categories, each of the three dummies would become very rare in a sample that includes countries that never experienced a restructuring (which would bring the total to 122 countries), making our estimates less precise and possibly biasing them. Our approach of focusing on countries experiencing a specific event is in line with Jordà and Taylor (2016), in the context of studying fiscal austerity. In order to have our results comparable with previous studies (Zymek, 2012 and Kuvshinov and Zimmermann, 2016), we report estimation results with a full country coverage including non-restructuring countries in Section 6.1.

Table 1 summarizes import and export growth in the universe of restructurings and their classifications. Panel A shows post-default restructurings experience a large decline in imports at the start of restructurings and experience low import growth during that entire

process. In contrast, weakly preemptive episodes witness a milder fall in import growth at the start of the restructuring, followed by a rapid recovery (one year).

Panel B also indicates that for post-default restructurings, exports drop sharply at the onset of restructurings and continue to be subdued over a prolonged period, while for weakly preemptive cases, exports decline sharply only at the beginning of restructurings and quickly recover to their pre-restructuring levels. As expected, these are consistent with Figure 2 in Section 2.2.

Table 1. Summary Statistics

Panel A: $(Import_t - Import_{t-1})/GDP_{t-1}$		Obs	Mean	Std. Dev.	Min	Max
<i>At starting year of debt restructurings</i>						
	Post-default	80	-2.25	5.15	-29.11	9.88
	Weakly preemptive	39	-1.40	4.28	-22.27	2.23
	Strictly preemptive	18	0.20	1.75	-4.18	3.71
<i>During debt restructurings</i>						
	Post-default (until 3 years from the starting year)	285	-0.64	4.72	-29.11	11.04
	Weakly preemptive	84	0.13	4.12	-22.27	21.92
	Strictly preemptive	23	1.12	1.94	-4.18	5.64
<i>Other datasets</i>						
	Banking crisis (Laeven and Valencia, 2012)	45	0.03	3.84	-11.55	11.04
	Sovereign crisis (Laeven and Valencia, 2012)	84	-1.76	5.22	-22.27	11.04
	Sovereign defaults (Standard and Poor's, 2006)	81	-1.60	5.14	-24.02	13.22
	All observations	2,043	1.16	5.48	-37.44	65.92
Panel B: $(Export_t - Export_{t-1})/GDP_{t-1}$		Obs	Mean	Std. Dev.	Min	Max
<i>At starting year of debt restructurings</i>						
	Post-default	80	-0.85	4.79	-22.65	10.60
	Weakly preemptive	39	-0.18	3.06	-12.47	8.74
	Strictly preemptive	18	0.86	1.94	-1.54	5.45
<i>During debt restructurings</i>						
	Post-default (until 3 years from the starting year)	285	-0.06	4.59	-22.65	27.34
	Weakly preemptive	84	0.14	2.94	-12.47	12.16
	Strictly preemptive	23	0.53	2.31	-5.23	5.45
<i>Other datasets</i>						
	Banking crisis (Laeven and Valencia, 2012)	45	0.59	3.82	-10.04	20.20
	Sovereign crisis (Laeven and Valencia, 2012)	84	-0.91	7.25	-25.71	37.87
	Sovereign defaults (Standard and Poor's, 2006)	81	-0.91	5.24	-25.71	8.65
	All observations	2,043	0.76	5.61	-49.56	109.88

Sources: Asonuma and Trebesch (2016, debt restructurings), Laeven and Valencia (2012, banking and sovereign crisis), Standard and Poor's (2006, sovereign defaults), IMF DOT (exports, imports), WB World Development Indicators (US dollar-denominated GDP).

Notes: Observations are from 61 countries experienced at least one debt restructuring episode and the sample period is 1970–2007. The impact of post-default on trade during debt restructurings only looks at its effect up to three years after start of the debt restructurings.

B. Conventional Panel Regression Approach

First, we explore the direct period-specific impact of different restructuring strategies “unconditional” on the sovereigns’ restructuring status in the previous period, i.e., independent from whether the country initiated restructurings in the previous period and negotiations have continued. During the restructuring process, some factors such as GDP, investments and the real exchange rate are significantly influenced by the sovereigns’ restructuring strategies as seen in Figure 3. Use of the information set including these factors available in the current period enables us to control for contemporaneous effects of these factors on the current exports and imports. In addition, including lagged event dummies controls for the influence of the sovereigns’ restructuring status in the previous periods. The advantage of the conventional panel approach lies on capturing “direct” contemporaneous or lagged effects of the event dummies (restructurings in our case) on the current trade. In our context, the choice of the conventional panel approach also yields estimates that can be compared to those in the literature (Zymek, 2012) and also provide an assessment for the robustness of our complementary local projection estimates.

Our baseline specification follows closely Amity and Weinstein (2011) and Levchenko et al., (2010) using the change in import/export values normalized by GDP as a dependent variable:¹²

$$100 * \frac{Import_{c,t} - Import_{c,t-1}}{GDP_{c,t-1}} = \beta_0^m + DR_{c,t} \beta_1^m + X_{c,t} \beta_2^m + \varepsilon_{c,t}^m \quad (1)$$

$$100 * \frac{Export_{c,t} - Export_{c,t-1}}{GDP_{c,t-1}} = \beta_0^x + DR_{c,t} \beta_1^x + X_{c,t} \beta_2^x + \varepsilon_{c,t}^x \quad (2)$$

where $100 * (Import_{c,t} - Import_{c,t-1}) / GDP_{c,t-1}$ and $100 * (Export_{c,t} - Export_{c,t-1}) / GDP_{c,t-1}$ are the percentage changes in import values and export values of country c at year t normalized by the previous level of GDP, respectively; β_0^m (and β_0^x) is a constant term; $DR_{c,t}$ is a vector of debt restructuring dummies including the post-default restructuring dummy, the weakly preemptive debt restructuring dummy and the strictly preemptive restructuring dummy; β_1^m (and β_1^x) is a vector of coefficients of debt restructuring dummies to be estimated; $X_{c,t}$ is a set of control variables; β_2^m (and β_2^x) is a vector of coefficients on

¹² Amity and Weinstein (2011) and Levchenko et al. (2010) employ the percentage change in imports and exports as a dependent variable. However, we employ the percentage change in imports and exports scaled by GDP in order to control heterogeneity of variables across countries and have our estimates comparable with those in local projections.

(continued...)

control variables to be estimated; and $\varepsilon_{c,t}^m$ (and $\varepsilon_{c,t}^x$) is the error term. Since our specification follows the first differencing estimator model—all dependent variables and explanatory variables (except for the dummies for floating exchange rate regime and commodity exporters) are in percentage changes—, neither of fixed effects nor time effects are included in our baseline specification.¹³

Our interest lies on β_1^m and β_1^x , a vector of coefficients on restructurings which represents the average difference (in percentage points) in import value growth rates (export value growth rates) between observations that are experiencing a restructuring and those that are not. The choice of control variables follows closely Rose (2005), Levchenko et al., (2010) and Zymek (2012). First, we control for real GDP growth, real exchange rate depreciation, growth rate of investment together with change in the terms of trade since dynamics of these factors differ across restructuring strategies (Figure 3 in Section 2.2) and are mutually linked with sovereigns' restructuring choice. Second, impacts of restructurings differ between a floating and a fixed exchange rate regime, and between commodity exporters and non-commodity exporters; countries with a fixed regime suffer a larger decline in gross trade as they lack automatic stabilizer mechanism of exchange rates. Similarly, non-commodity exports experience larger trade collapses because they do not have large market shares (constant demands) at the global market.

An alternative approach is to use the log of import values or export values (levels) as a dependent variable following a traditional specification of the gravity model literature (Rose 2005, Martinez and Sandleis, 2011, Zymek, 2012).¹⁴ Our main results are robust to this alternative definition.

C. Local Projection Approach

Our next step is to quantify *overall* effects (direct and indirect effects) of restructurings under the premise that events influence trade over a period of time. As mentioned above, exports and imports are influenced not only directly but also indirectly through the effects on other outcomes (GDP, investment, real exchange rate and terms of trade) which are affected by the sovereigns' restructuring choice. The local projection estimation method initially proposed by Jordà (2005) can capture the overall (direct and indirect) effects of events over the horizon in *cumulative* terms from their onset.

The baseline specification equation is along the lines of Jordà and Taylor (2016), Jordà et al., (2013, 2016), and Kuvshinov and Zimmermann (2016):

¹³ See for instance Wooldridge (2012).

¹⁴ See also Abiad et al., (2014), Chor and Manova (2012), and Greenland et al., (2014).

$$100 * \frac{Import_{i,t+h} - Import_{i,t-1}}{GDP_{i,t-1}} = \alpha_i^{m,h} + \Lambda^{m,h} DR_{i,t} + \mathbf{X}_{i,t-1}^m \boldsymbol{\beta}_{-1}^{m,h} + \mathbf{X}_{i,t-2}^m \boldsymbol{\beta}_{-2}^{m,h} + \varepsilon_{i,t+h}^m \quad (3)$$

$$100 * \frac{Export_{i,t+h} - Export_{i,t-1}}{GDP_{i,t-1}} = \alpha_i^{x,h} + \Lambda^{x,h} DR_{i,t} + \mathbf{X}_{i,t-1}^x \boldsymbol{\beta}_{-1}^{x,h} + \mathbf{X}_{i,t-2}^x \boldsymbol{\beta}_{-2}^{x,h} + \varepsilon_{i,t+h}^x \quad (4)$$

for $h = 0, 1, \dots, 9$. We describes the notation for equation (3) here and similar notations apply to variables in equations (4). $(Import_{c,t+h} - Import_{c,t-1}) / GDP_{c,t-1}$ is the cumulative change from time $t-1$ to $t+h$ in 100 times the import values of country i , respectively, $\alpha_i^{m,h}$ are country fixed effects, and $DR_{i,t}$ is a set of debt restructuring dummies that takes 1 if one particular debt restructuring takes place in year t in country i . $\mathbf{X}_{i,t-1}^m$ and $\mathbf{X}_{i,t-2}^m$ are vectors of control variables including the GDP growth rate, log of population, openness measured by $(Export + Import)/GDP$, and the price level of imports (exports for regression for export growth), and the cyclical component of log of real GDP per capita from an Hodrick-Prescott (HP) filtered trend estimated with a smoothing parameter of 100, for year $h = -1$ and -2 , respectively. We only include the cyclical component of log of real GDP per capita from year $h = -1$. $\varepsilon_{i,t+h}^m$ is the error term. Following Jordà (2005) and Jordà and Taylor (2016), we include fixed effects which account for variation in the degree of trade arrangements with partner countries and other macroeconomic differences across countries.

IV. BASELINE RESULTS

A. Conventional Panel Regression

Table 2 reports results of conventional panel regressions for a sample of 69 countries with at least one restructuring over 1970–2007. For both panel (A) and (B), column (1) shows results of a bare-bones model with dummies for the three restructuring approaches for the current, lagged, and 2-year lagged start of restructurings. In column (6), we add a full set of conventional controls explained above, and column (7) also includes a country-specific fixed effect. Column (8) uses a simple restructuring dummy applied to all restructurings. For a comparison with previous study (Zymek, 2012), column (9) indicates results using a sovereign default dummy based on Standard and Poor’s dataset.

On imports, reflecting baseline results (column 6), countries with post-default restructurings experience a severe and prolonged decline in imports (1.7 percent over first 3 years on average). Weakly preemptive restructurings are associated with a less severe and shorter drop in imports (0.8 percent over first 2 years on average). In contrast, strictly preemptive restructurings witness a sizable but only contemporaneous fall in imports (0.7 percent only at the onset of restructurings). If we do not differentiate restructuring strategies (column 8), average negative effects on imports are 1.2 percent over the first 2 years. With specific focus

to sovereign default episodes (column 9), imports decline by 1.7 percent over the first 2 years on average, close to those for post-default restructurings.

On exports, baseline results in column (6) indicate a severe drop at the start of post-default restructurings (1.8 percent) but a quick recovery in the following year. On the contrary, neither weakly nor strictly preemptive restructurings suffer a significant decline in exports even at the beginning of the restructurings. Treating restructurings uniformly in column (8) results in an average drop in exports of 1.2 percent in the start year. As reported in column (9), sovereign defaults are associated with a 2.1-percent drop in exports, close to that of post-default restructurings. This suggests that what the previous literature on sovereign defaults (Zymek, 2012) measures for export decline stems from post-default restructurings.

As expected, including country-specific fixed effects does not influence the benchmark results (column 7 in panels A and B). For the case of a large country sample including non-restructuring countries (total 122 countries), we confirm that our baseline results remain robust in Section 6.1.

Table 2: Conventional Panel Regression Results, OLS

Panel A: Imports									
	Import growth rate, $100*(\text{Import}_t - \text{Import}_{t-1})/\text{GDP}_{t-1}$								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Post-default (lag 0)	-3.233*** (0.64)	-2.663*** (0.70)	-3.181*** (0.66)	-3.166*** (0.63)	-3.162*** (0.62)	-2.486*** (0.68)	-2.467*** (0.62)		
Post-default (lag 1)	-1.364*** (0.46)	-1.106** (0.46)	-1.331*** (0.47)	-1.328*** (0.45)	-1.354*** (0.45)	-1.052** (0.45)	-1.098* (0.58)		
Post-default (lag 2)	-1.632* (0.85)	-1.489* (0.85)	-1.648* (0.85)	-1.614* (0.84)	-1.635* (0.85)	-1.465* (0.84)	-1.526* (0.85)		
Weakly preemptive (lag 0)	-1.745*** (0.39)	-1.199*** (0.38)	-1.702*** (0.41)	-1.690*** (0.39)	-1.639*** (0.39)	-0.986*** (0.38)	-1.096*** (0.35)		
Weakly preemptive (lag 1)	-0.923*** (0.33)	-0.779*** (0.28)	-0.923*** (0.33)	-0.911*** (0.32)	-0.840** (0.33)	-0.650** (0.28)	-0.741*** (0.27)		
Weakly preemptive (lag 2)	0.148 (0.41)	-0.202 (0.44)	0.129 (0.41)	0.131 (0.41)	0.144 (0.41)	-0.240 (0.43)	-0.266 (0.50)		
Strictly preemptive (lag 0)	-0.931** (0.44)	-0.660* (0.34)	-0.931** (0.44)	-0.918** (0.43)	-1.017** (0.47)	-0.745* (0.40)	-0.711** (0.33)		
Strictly preemptive (lag 1)	1.033 (0.71)	1.008* (0.59)	1.017 (0.70)	0.973 (0.70)	1.003 (0.70)	0.917 (0.56)	0.906 (0.57)		
Strictly preemptive (lag 2)	0.900** (0.43)	0.672 (0.43)	0.881** (0.43)	0.869** (0.43)	0.985** (0.44)	0.747* (0.42)	0.726** (0.31)		
Any types of debt restructurings (Lag 0)								-1.688*** (0.44)	
Any types of debt restructurings (Lag 1)								-0.579* (0.31)	
Any types of debt restructurings (Lag 2)								-0.715 (0.52)	
Sovereign default -- S&P (Lag 0)									-1.782*** (0.66)
Sovereign default -- S&P (Lag 1)									-1.740*** (0.54)
Sovereign default -- S&P (Lag 2)									-0.697 (0.73)
GDP growth rate		0.158*** (0.05)				0.168*** (0.05)	0.171** (0.07)	0.170*** (0.05)	0.169*** (0.05)
Real exchange rate, rate of change			-0.003 (0.01)			0.001 (0.01)	0.002 (0.01)	0.000 (0.01)	0.001 (0.01)
Investment growth rate				0.005 (0.00)		0.004 (0.00)	0.004 (0.00)	0.004 (0.00)	0.004 (0.00)
Terms of trade, rate of change					0.0501*** (0.01)	0.0663*** (0.01)	0.0672*** (0.02)	0.0657*** (0.01)	0.0651*** (0.01)
Floating exchange rate regime dummy	2.321** (0.94)	2.493*** (0.89)	2.316** (0.94)	2.305** (0.94)	2.220** (0.97)	2.357*** (0.90)	1.736** (0.78)	2.204** (0.89)	2.086** (0.90)
Commodity exporter dummy	-0.549* (0.29)	-0.512* (0.29)	-0.540* (0.29)	-0.512* (0.29)	-0.536* (0.29)	-0.461 (0.28)	0.274 (0.20)	-0.492* (0.29)	-0.527* (0.29)
Country fixed effect	No	No	No	No	No	No	Yes	No	No
R-squared	0.034	0.093	0.035	0.04	0.043	0.113	0.109	0.108	0.107
Number of countries	47	47	47	47	47	47	47	47	47
Observations	1,298	1,298	1,298	1,298	1,298	1,298	1,298	1,274	1,274

Notes: All regressions include a constant term. Robust standard errors, clustered at the country-level, are in parentheses. The number of observations are set so that all regressions (except (8) and (9)) include the same number of observations. Countries that experienced at least one debt restructuring event are included in the sample. The sample period is from 1970 to 2007. The debt restructuring dummies (post-default, weakly preemptive, strictly preemptive and any restructuring) are based on the data from Asonuma and Trebesch (2016). The dummy for sovereign defaults is from Standard and Poor's (2006). ***, ** and * indicate that the corresponding coefficients are statistically significant at 1%, 5%, and 10% level, respectively.

Table 2: Conventional Panel Regression Results, OLS (continued)

Panel B: Exports									
Export growth rate, $100*(\text{Export}_t - \text{Export}_{t-1})/\text{GDP}_{t-1}$									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Post-default (lag 0)	-1.928** (0.84)	-0.942 (0.93)	-2.662** (1.14)	-1.912** (0.84)	-2.023** (0.84)	-1.770* (1.01)	-1.841* (1.00)		
Post-default (lag 1)	0.569 (0.94)	1.016 (0.90)	0.097 (1.09)	0.578 (0.94)	0.555 (0.94)	0.505 (0.97)	0.374 (0.96)		
Post-default (lag 2)	-0.866* (0.52)	-0.618 (0.55)	-0.647 (0.55)	-0.861* (0.52)	-0.862* (0.51)	-0.370 (0.58)	-0.505 (0.78)		
Weakly preemptive (lag 0)	-0.959 (0.72)	-0.014 (0.79)	-1.575 (0.98)	-0.946 (0.72)	-1.100 (0.73)	-0.741 (0.84)	-0.903 (0.77)		
Weakly preemptive (lag 1)	0.076 (0.64)	0.325 (0.67)	0.080 (0.60)	0.079 (0.64)	-0.036 (0.63)	0.274 (0.60)	0.146 (0.71)		
Weakly preemptive (lag 2)	-0.748 (0.63)	-1.354* (0.72)	-0.467 (0.67)	-0.752 (0.63)	-0.743 (0.64)	-1.053 (0.68)	-1.131** (0.56)		
Strictly preemptive (lag 0)	-0.175 (0.54)	0.295 (0.66)	-0.172 (0.58)	-0.172 (0.55)	-0.059 (0.63)	0.367 (0.70)	0.381 (0.77)		
Strictly preemptive (lag 1)	-0.160 (0.43)	-0.202 (0.55)	0.067 (0.44)	-0.174 (0.44)	-0.119 (0.45)	0.052 (0.52)	0.048 (0.63)		
Strictly preemptive (lag 2)	-0.137 (0.60)	-0.531 (0.65)	0.148 (0.64)	-0.144 (0.60)	-0.251 (0.60)	-0.293 (0.65)	-0.332 (0.54)		
Any types of debt restructurings (Lag 0)								-1.213* (0.69)	
Any types of debt restructurings (Lag 1)								0.384 (0.57)	
Any types of debt restructurings (Lag 2)								-0.542 (0.43)	
Sovereign default -- S&P (Lag 0)									-2.051** (1.00)
Sovereign default -- S&P (Lag 1)									-0.585 (0.86)
Sovereign default -- S&P (Lag 2)									-0.110 (0.47)
GDP growth rate		0.274*** (0.08)				0.276*** (0.07)	0.287*** (0.09)	0.277*** (0.07)	0.275*** (0.07)
Real exchange rate, rate of change			0.047 (0.04)			0.051 (0.04)	0.052 (0.04)	0.051 (0.04)	0.052 (0.04)
Investment growth rate				0.001 (0.00)		0.00117* (0.00)	0.001 (0.00)	0.00115* (0.00)	0.001 (0.00)
Terms of trade, rate of change					-0.0674*** (0.02)	-0.036 (0.02)	-0.0362** (0.02)	-0.037 (0.02)	-0.0379* (0.02)
Floating exchange rate regime dummy	0.459 (0.62)	0.756 (0.82)	0.534 (0.60)	0.455 (0.62)	0.594 (0.60)	0.909 (0.80)	1.063 (1.09)	0.878 (0.80)	0.766 (0.78)
Commodity exporter dummy	-0.070 (0.32)	-0.005 (0.32)	-0.200 (0.30)	-0.061 (0.32)	-0.087 (0.32)	-0.146 (0.30)	0.054 (0.29)	-0.245 (0.30)	-0.238 (0.30)
Country fixed effect	No	No	No	No	No	No	Yes	No	No
R-squared	0.005	0.118	0.036	0.006	0.016	0.159	0.167	0.158	0.159
Number of countries	47	47	47	47	47	47	47	47	47
Observations	1,298	1,298	1,298	1,298	1,298	1,298	1,298	1,274	1,274

Notes: All regressions include a constant term. Robust standard errors, clustered at the country-level, are in parentheses. The number of observations are set so that all regressions (except (8) and (9)) include the same number of observations. Countries that experienced at least one debt restructuring event are included in the sample. The sample period is from 1970 to 2007. The debt restructuring dummies (post-default, weakly preemptive, strictly preemptive and any restructuring) are based on the data from Asonuma and Trebesch (2016). The dummy for sovereign defaults is from Standard and Poor's (2006). ***, ** and * indicate that the corresponding coefficients are statistically significant at 1%, 5%, and 10% level, respectively.

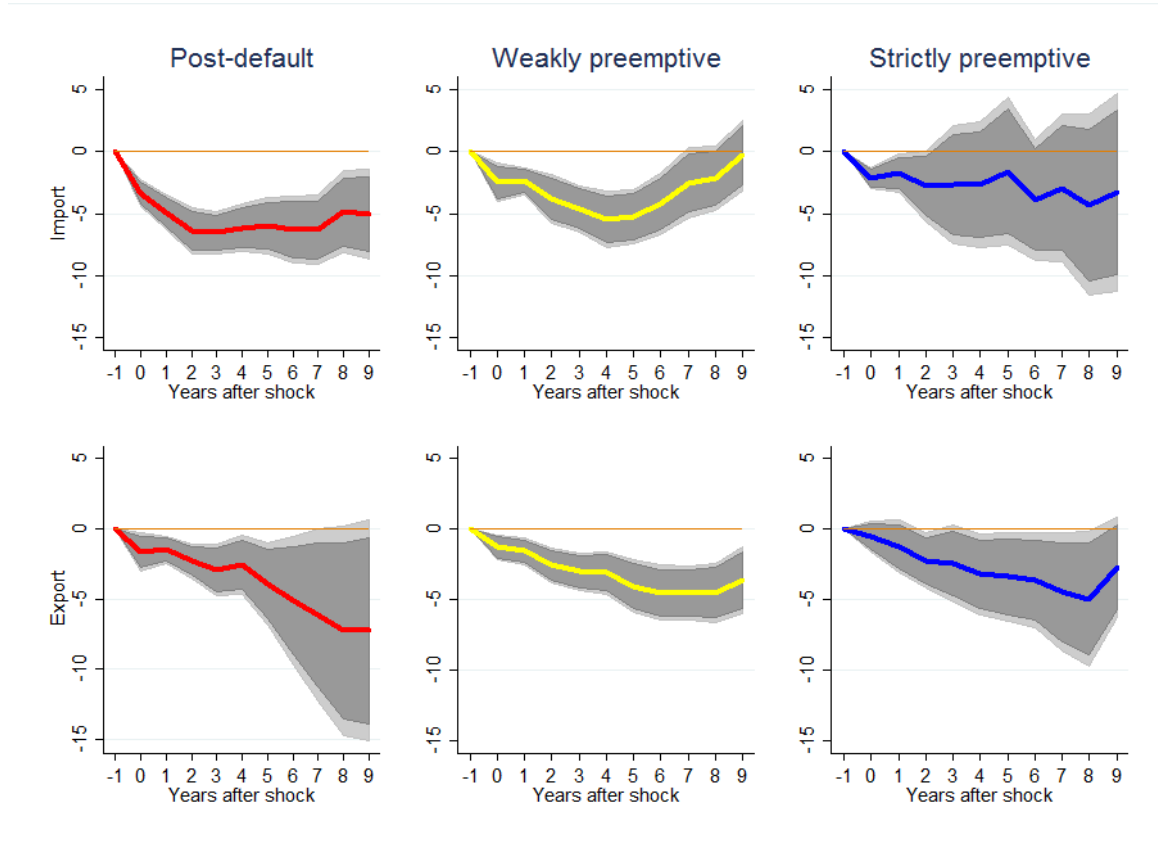
B. Local Projection Estimation

Figure 4 reports the cumulative responses calculated using equation (3) and (4) for imports and exports, respectively. Both imports and exports are in percentage change from the pre-restructuring level (at $t-1$). Based on estimation results in Table 3, the solid lines in red, yellow and blue indicate the point estimates and the thinner and thicker bands are 90% and 95% confidence intervals, respectively. For responses to each restructuring (top row of Figure 4) imports decline sharply for the first 3 years from the onset of post-default restructuring (from $t-0$ to $t+2$) and remain subdued until the 8th year since the start of year ($t+7$). Weakly preemptive restructurings experience a less severe decline in imports over the first 3 years from the start (from $t-0$ to $t+2$) and recover gradually from the 5th year onwards ($t+4$). On the contrary, imports for strictly preemptive restructurings decline only gradually over the first 4 years.

On exports, post-default restructurings suffer a moderate decline over the first 4 years, but a more severe decline over the following 5 years. In contrast, both weakly and strictly preemptive restructurings experience moderate declines in exports over the first 4–5 years. Our estimated responses of both imports and exports on post-default restructurings are similar to those in Kuvshinov and Zimmermann (2016). This confirms that finding of sovereign defaults in the existing literature (e.g. Kuvshinov and Zimmermann, 2016) are clearly driven by post-default restructurings.

Table 3 reports the local projection coefficients and robust standard errors in parentheses. The first three rows report average responses of imports (exports) in each type of restructuring and the last three rows indicate tests for differences in restructuring coefficients among three types. The statistical test results on imports indicate significant differences among restructuring strategies: impacts over the 1st and 2nd years differ between post-default and weakly preemptive restructurings. The impacts on imports is remarkably different between weakly and strictly preemptive cases over the 3rd–5th year. However, there are no statistically significant difference for the results on exports across the three types of restructuring. Robustness check for different exchange rate regimes and commodity v.s. non-commodity exporters are discussed in Section 6.2.

Figure 4: Conditional Cumulative Change from the Start of Restructurings, OLS



Notes: The figure plots local projections of 100 times $(Import_{t+h} - Import_{t-1}) / GDP_{t-1}$ and 100 times $(Export_{t+h} - Export_{t-1}) / GDP_{t-1}$ where h indicates years after the start of debt restructurings. The figure is based on the estimation results presented in Table 3. The solid lines in red, yellow and blue indicate the point estimates for post-default, weakly preemptive, and strictly preemptive respectively. The thinner and thicker bands are 90% and 95% confidence intervals, respectively.

Table 3: Local Projection Results under Baseline Model, OLS

Panel A: Imports										
Dep. var. is 100 times the cumulative change in the import value from year $t - 1$ to year $t + h$ scaled by real GDP at year $t - 1$										
	$h = 0$	$h = 1$	$h = 2$	$h = 3$	$h = 4$	$h = 5$	$h = 6$	$h = 7$	$h = 8$	$h = 9$
Post-default	-2.948***	-4.416***	-6.347***	-6.272***	-6.242***	-6.267***	-6.744***	-7.233***	-5.134*	-5.762**
	(0.53)	(0.64)	(0.98)	(1.00)	(1.05)	(1.30)	(1.82)	(1.95)	(2.57)	(2.33)
Weakly preemptive	-1.877***	-2.640***	-3.367***	-4.641***	-5.937***	-5.384***	-4.877***	-3.687**	-2.930**	-1.360
	(0.43)	(0.65)	(0.75)	(0.88)	(1.26)	(1.22)	(1.42)	(1.63)	(1.41)	(1.59)
Strictly preemptive	-1.831***	-1.727*	-1.564	-0.533	-1.532	-0.292	-1.066	0.451	0.901	1.623
	(0.45)	(0.93)	(1.06)	(1.47)	(1.90)	(2.14)	(1.94)	(2.35)	(2.06)	(2.79)
Cyclical component of log GDP per capita at $h = -1$, the dependent variable ($h = -1, -2$), openness ($h = -1, -2$), population ($h = -1$ and -2), the import price index ($h = -1, -2$), % change in investment ($h = -1, -2$), % change in the real exchange rate ($h = -1, -2$), and country fixed effects										
R-squared	0.083	0.123	0.173	0.187	0.206	0.222	0.253	0.324	0.382	0.413
Number of countries	47	47	46	46	45	44	44	44	44	43
Observations	1,178	1,134	1,088	1,043	998	953	909	865	821	777
<i>Differences in debt restructuring coefficients</i>										
Post-default - Weakly preemptive	-1.072	-1.777**	-2.980***	-1.631	-0.305	-0.883	-1.867	-3.546	-2.204	-4.402
	(0.68)	(0.85)	(1.10)	(1.10)	(1.44)	(1.65)	(2.03)	(2.32)	(2.65)	(2.73)
Post-default - Strictly preemptive	-1.117	-2.689**	-4.783***	-5.739***	-4.711**	-5.976***	-5.678**	-7.684***	-6.035**	-7.385**
	(0.69)	(1.09)	(1.48)	(1.81)	(1.96)	(2.10)	(2.17)	(2.56)	(2.61)	(3.46)
Weakly preemptive - Strictly preemptive	-0.046	-0.912	-1.803	-4.109**	-4.406**	-5.092**	-3.811	-4.138	-3.83	-2.983
	(0.53)	(1.04)	(1.18)	(1.55)	(2.19)	(2.46)	(2.45)	(2.87)	(2.35)	(2.91)

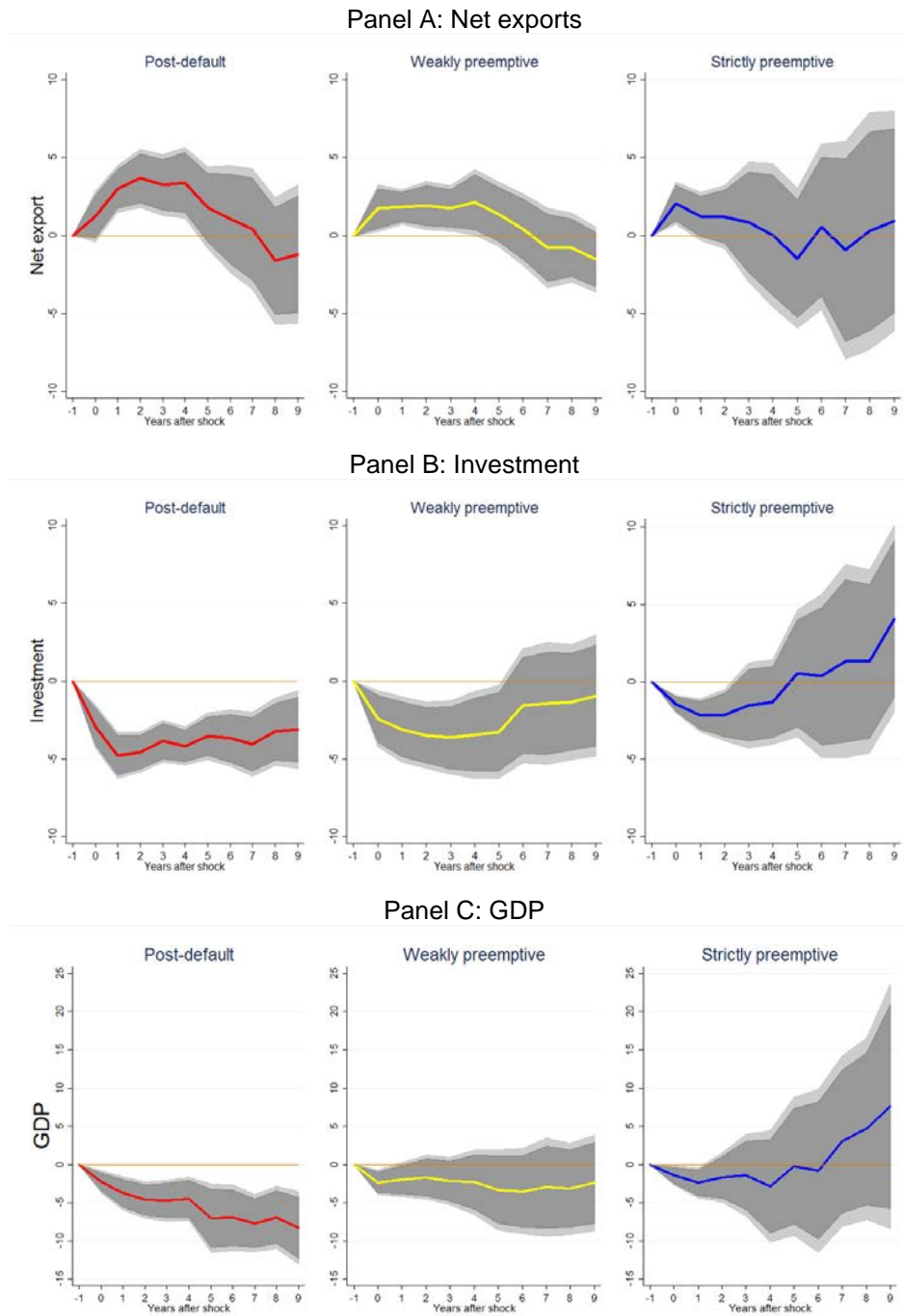
Panel B: Exports

Dep. var. is 100 times the cumulative change in the export value from year $t - 1$ to year $t + h$ scaled by real GDP at year $t - 1$										
	$h = 0$	$h = 1$	$h = 2$	$h = 3$	$h = 4$	$h = 5$	$h = 6$	$h = 7$	$h = 8$	$h = 9$
Post-default	-2.868** (1.35)	-2.220* (1.13)	-2.992*** (0.84)	-3.994*** (1.33)	-2.591* (1.48)	-5.095** (2.32)	-6.927* (4.04)	-8.178 (5.35)	-9.768 (5.95)	-8.968 (5.48)
Weakly preemptive	-2.279** (0.87)	-2.484** (1.09)	-3.348*** (1.08)	-4.389*** (1.14)	-4.629*** (1.10)	-6.101*** (1.47)	-6.879*** (1.83)	-6.113*** (1.80)	-5.279*** (1.63)	-3.081* (1.57)
Strictly preemptive	-1.146 (0.89)	-2.344* (1.39)	-2.858* (1.65)	-2.993 (1.96)	-4.047** (2.00)	-3.197 (2.08)	-3.843 (2.48)	-4.789* (2.68)	-3.880 (2.52)	-0.997 (1.70)
Cyclical component of log GDP per capita at $h = -1$, the dependent variable ($h = -1, -2$), openness ($h = -1, -2$), population ($h = -1$ and -2), the export price index ($h = -1, -2$), % change in investment ($h = -1, -2$), % change in the real exchange rate ($h = -1, -2$), and country fixed effects										
R-squared	0.118	0.159	0.186	0.216	0.213	0.221	0.247	0.267	0.302	0.36
Number of countries	47	47	46	46	45	44	44	44	44	43
Observations	1,178	1,134	1,088	1,043	998	953	909	865	821	777
<i>Differences in debt restructuring coefficients</i>										
Post-default - Weakly preemptive	-0.589 (1.16)	0.263 (1.04)	0.356 (1.23)	0.394 (1.55)	2.038 (1.49)	1.006 (1.90)	-0.048 (3.07)	-2.065 (4.11)	-4.489 (4.83)	-5.887 (5.29)
Post-default - Strictly preemptive	-1.722 (1.28)	0.123 (1.21)	-0.135 (1.53)	-1.001 (2.20)	1.456 (2.10)	-1.899 (1.94)	-3.085 (2.80)	-3.389 (3.57)	-5.888 (4.17)	-7.971 (5.21)
Weakly preemptive - Strictly preemptive	-1.133 (0.91)	-0.14 (1.22)	-0.49 (1.33)	-1.395 (1.51)	-0.583 (1.49)	-2.905* (1.71)	-3.036 (1.96)	-1.324 (1.92)	-1.398 (1.95)	-2.083 (2.05)

Notes: The table shows estimated local projections of 100 times $(Import_{t+h} - Import_{t-1})/GDP_{t-1}$ for Panel A and 100 times $(Export_{t+h} - Export_{t-1})/GDP_{t-1}$ for Panel B where h indicates years after the start of debt restructurings. Robust standard errors, clustered at country-level, are in parentheses. ***, ** and * indicate that corresponding coefficients are statistically significant at 1% level, 5% level, and 10% level, respectively.

Figure 5 is analogous to Figure 4, but reports the cumulative responses of net exports, investment and GDP, respectively. For post-default and weakly preemptive restructurings, net exports improve over several years since the start of the episode (panel A-left and center). This is consistent with Figure 3 where the decline in imports is larger than that in exports. On investment, both post-default and weakly preemptive restructurings are associated with a prolonged decline, with a sharper drop over the first 2 years for post-default cases (panel B-left and center). Lastly, post-default restructurings experience a more severe decline in GDP than weakly preemptive restructurings (panel C-left and center). This is in line with finding in the literature (Asonuma and Trebesch, 2016) and Figure 2. The dynamics of net exports, investment and GDP for post-default restructurings are consistent with previous findings on impacts of sovereign defaults (Kuvshinov and Zimmermann, 2016, Furceri and Zdzienicka, 2012). Table 4 indicates local projection results for these variables in the same presentation format as in Table 3.

Figure 5: Local Projections on Other Variables, OLS



Notes: Panels A, B and C plot local projections of 100 times $(NetExport_{t+h} - NetExport_{t-1}) / GDP_{t-1}$, 100 times $(Investment_{t+h} - Investment_{t-1}) / GDP_{t-1}$, and 100 times $(GDP_{t+h} - GDP_{t-1}) / GDP_{t-1}$, respectively, where h indicates years after the start of debt restructurings. The figure is based on the estimation results presented in Table 4. See note in Figure 4 for presentation for point estimates and confidence intervals.

Table 4: Local Projections for Other Variables under Baseline Model, OLS

Part A: Net exports										
Dep. var. is 100 times the cumulative change in the net export value from year $t - 1$ to year $t + h$ scaled by real GDP at year $t - 1$										
	$h = 0$	$h = 1$	$h = 2$	$h = 3$	$h = 4$	$h = 5$	$h = 6$	$h = 7$	$h = 8$	$h = 9$
Post-default	1.226 (0.82)	3.002*** (0.75)	3.681*** (0.94)	3.248*** (0.98)	3.398*** (1.14)	1.799 (1.31)	1.055 (1.72)	0.412 (1.94)	-1.621 (2.03)	-1.205 (2.23)
Weakly preemptive	2.071*** (0.68)	1.234 (0.77)	1.202 (1.02)	0.863 (1.93)	0.0391 (2.31)	-1.457 (2.26)	0.559 (2.66)	-0.928 (3.50)	0.273 (3.80)	0.929 (3.52)
Strictly preemptive	1.736** (0.76)	1.822*** (0.56)	1.928** (0.78)	1.747** (0.73)	2.127** (1.05)	1.354 (1.03)	0.411 (1.15)	-0.801 (1.28)	-0.785 (1.11)	-1.541 (1.03)
Control variables	Cyclical component of log GDP per capita at $h = -1$, the dependent variable ($h = -1, -2$), openness ($h = -1, -2$), population ($h = -1, -2$), terms of trade ($h = -1, -2$), and country fixed effects									
R-squared	0.115	0.138	0.157	0.171	0.144	0.163	0.186	0.205	0.218	0.225
Number of countries	59	59	59	59	59	59	59	59	59	58
Observations	1,860	1,801	1,742	1,683	1,624	1,565	1,506	1,447	1,388	1,329
Part B: Investment										
Dep. var. is 100 times the cumulative change in investment from year $t - 1$ to year $t + h$ scaled by real GDP at year $t - 1$										
	$h = 0$	$h = 1$	$h = 2$	$h = 3$	$h = 4$	$h = 5$	$h = 6$	$h = 7$	$h = 8$	$h = 9$
Post-default	-2.919*** (0.72)	-4.770*** (0.76)	-4.568*** (0.66)	-3.865*** (0.69)	-4.169*** (0.62)	-3.540*** (0.76)	-3.688*** (0.93)	-4.051*** (1.05)	-3.251*** (1.11)	-3.111** (1.27)
Weakly preemptive	-1.451*** (0.29)	-2.175*** (0.55)	-2.155** (0.85)	-1.514 (1.41)	-1.330 (1.39)	0.555 (2.10)	0.358 (2.69)	1.344 (3.19)	1.332 (3.02)	4.055 (3.07)
Strictly preemptive	-2.423** (0.92)	-3.114*** (1.08)	-3.487*** (1.09)	-3.637*** (1.21)	-3.443** (1.42)	-3.266** (1.53)	-1.583 (1.88)	-1.430 (1.99)	-1.330 (1.89)	-0.940 (1.98)
Control variables	Cyclical component of log GDP per capita at $h = -1$, the dependent variable ($h = -1, -2$), openness ($h = -1, -2$), population ($h = -1, -2$), terms of trade ($h = -1, -2$), and country fixed effects									
R-squared	0.097	0.178	0.214	0.236	0.221	0.206	0.214	0.253	0.257	0.263
Number of countries	59	59	59	59	59	59	59	59	59	58
Observations	1,860	1,801	1,742	1,683	1,624	1,565	1,506	1,447	1,388	1,329
Part C: GDP										
Dep. var. is 100 times the cumulative change in GDP from year $t - 1$ to year $t + h$ scaled by real GDP at year $t - 1$										
	$h = 0$	$h = 1$	$h = 2$	$h = 3$	$h = 4$	$h = 5$	$h = 6$	$h = 7$	$h = 8$	$h = 9$
Post-default	-2.262*** (0.72)	-3.761*** (1.10)	-4.625*** (1.20)	-4.703*** (1.36)	-4.490*** (1.45)	-7.018*** (2.29)	-6.963*** (2.19)	-7.650*** (1.92)	-6.896*** (2.09)	-8.297*** (2.43)
Weakly preemptive	-1.432** (0.64)	-2.407** (1.02)	-1.675 (1.64)	-1.4 (2.71)	-2.865 (3.72)	-0.197 (4.60)	-0.773 (5.45)	3.051 (5.69)	4.696 (6.06)	7.639 (8.16)
Strictly preemptive	-2.321*** (0.83)	-1.969* (1.14)	-1.671 (1.46)	-2.172 (1.59)	-2.302 (2.17)	-3.319 (2.69)	-3.513 (2.84)	-2.933 (3.26)	-3.165 (3.06)	-2.409 (3.22)
Control variables	Cyclical component of log GDP per capita at $h = -1$, the dependent variable ($h = -1, -2$), openness ($h = -1, -2$), population ($h = -1, -2$), terms of trade ($h = -1, -2$), and country fixed effects									
R-squared	1.663	1.605	1.547	1.489	1.431	1.373	1.315	1.257	1.199	1.141
Number of countries	0.216	0.328	0.36	0.364	0.343	0.335	0.335	0.325	0.318	0.304
Observations	58	58	58	58	58	58	58	58	58	55

Notes: Panels A, B and C show local projections of 100 times $(NetExport_{t+h} - NetExport_{t-1}) / GDP_{t-1}$, 100 times $(Investment_{t+h} - Investment_{t-1}) / GDP_{t-1}$, and 100 times $(GDP_{t+h} - GDP_{t-1}) / GDP_{t-1}$, respectively, where h indicates years after the start of debt restructurings. Regressions include the same control variables from Table 3. ***, ** and * indicate that corresponding coefficients are statistically significant at 1% level, 5% level, and 10% level, respectively.

V. DEALING WITH ENDOGENEITY

A. Endogeneity Issue

Our baseline Ordinary Least Square (OLS) estimation is unbiased provided observations with events are randomly selected from a large pool of observations with and without events. However, this might not necessarily be the case for restructurings: countries currently experiencing restructurings are different from those that are not in many aspects. In addition, debt restructuring strategies including preemptive v.s. post-default are presumably an endogenous optimal choice made by the sovereign debtors (Asonuma and Trebesch, 2016). In such cases, baseline OLS estimation results could potentially be driven by some other characteristics of countries at the time of their restructurings rather than a “pure effect” of debt restructurings.

First, we explore whether there are statistical differences in various macroeconomic variables between observations with and without restructuring approaches by conducting a diagnostic test, reported in Table 5. Each column reports the result from a regression specifying one particular variable as the dependent variable. Columns (1)–(4) show test results for restructuring dummies coded as 1 for all years during restructurings, while columns (5)–(8) show those for restructuring dummies coded as 1 only at the start of restructurings.

Columns (1)–(4) suggest that there are significant differences in the public debt-to-GDP ratio, credit ratings—data from the *Institutional Investor* magazine—, and GDP growth rates between observations during post-default restructurings and other observations, and also between weakly preemptive restructurings and other observations. In contrast, we do not see any striking differences in these macroeconomic variables during strictly preemptive restructurings. A similar pattern emerges in Columns (5)–(8) where the dummies apply only to start year of the restructuring.

Table 5: Difference between Treatment and Control Sub-samples

Dependent variable	log debt/GDP ratio	log private credit/GDP ratio	log country's credit rating	GDP growth rate	log debt/GDP ratio	log private credit/GDP ratio	log country's credit rating	GDP growth rate
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post-default dummy (takes 1 during restructuring until completion)	0.413*** (0.06)	-0.152*** (0.06)	-0.441*** (0.05)	-1.901*** (0.45)				
Weakly preemptive dummy (takes 1 during restructuring until completion)	0.274*** (0.09)	0.007 (0.11)	-0.238*** (0.07)	-1.379** (0.53)				
Strictly preemptive dummy (takes 1 during restructuring until completion)	0.129 (0.11)	-0.028 (0.11)	-0.082 (0.08)	1.565** (0.71)				
Post-default dummy (takes 1 at start years of restructuring)					0.163*** (0.06)	0.112* (0.06)	-0.060 (0.05)	-3.593*** (0.81)
Weakly preemptive dummy (takes 1 at start years of restructuring)					0.266*** (0.09)	0.044 (0.09)	-0.166** (0.07)	-2.852*** (1.02)
Strictly preemptive dummy (takes 1 at start years of restructuring)					0.067 (0.13)	0.100 (0.14)	-0.104 (0.08)	2.479* (1.31)
Observations	1,563	1,645	1,566	2,885	1,563	1,645	1,566	2,885
Number of countries	61	63	63	63	61	63	63	63
R-squared	0.119	0.018	0.27	0.011	0.016	0.004	0.014	0.011

Notes: All regressions include a constant term and country fixed effects. Robust-standard errors, clustered at country-level, are in parentheses. The dependent variables are in log scale except for the GDP growth rate. Therefore, the reported coefficients approximate percentage difference from the rest of the sample. Sample countries are restricted to countries that have ever experienced debt restructuring(s). Sample period is from 1970 to 2007 with some years missing for some countries. See the main text for data sources. ***, ** and * indicate that corresponding coefficients are statistically significant at 1% level, 5% level, and 10% level, respectively.

Next, we apply a logit estimation to predict the likelihood of each restructuring event. Our dependent variables in Panels A, B and C, respectively are dummies for post-default, weakly and strictly preemptive restructurings which take 1 over the entire restructuring duration. The first four rows report estimated coefficients and robust standard errors, and the fifth row reports the area under ROC (Receiver Operating Characteristic) curve. If the area under the ROC curve is close to 1, this indicates that the regressors have perfect classification power. If it is close to 0.5, the regressors have no classification power. For predicting post-default restructuring, applying all the four relevant variables results in an area under ROC of 0.93 indicating these variables have high classification power (column 5 in Panel A). Similarly, for predicting weakly preemptive and strictly preemptive restructurings reported in Panels B and C, including all the four relevant variables yields an area under the ROC of 0.80 and 0.77 respectively. This also indicates that these variables have high classification power (column 5 in Panel B and C).

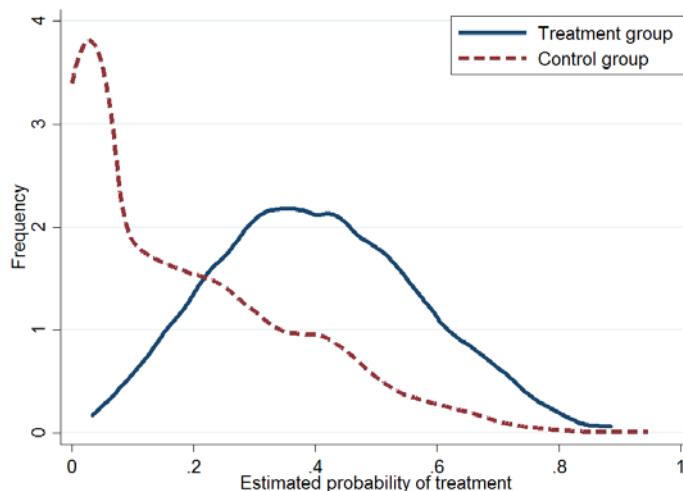
In tandem with these findings, Figure 6 displays kernel density estimates of the probability of treatment on both treatment and control groups—in this case, observations with restructurings and those otherwise. In an ideal randomized control trial, the distribution of propensity score for treat and control groups would be uniform and identical. Probabilities of being treated for the control observations are clustered around zero generating a left-skewed distribution. This suggests these observations are indeed less likely to be treated (i.e., less likely to experience debt restructurings). In contrast, the probability of being treated is

normally distributed with a mean of around 0.4. This indicates that the treated observations are indeed more likely to experience debt restructurings.

Table 6. Predicting Restructuring Events, Logit Estimation (Marginal Effects)

Panel A: Post-default (takes 1 during restructuring)					
	(1)	(2)	(3)	(4)	(5)
log debt/GDP ratio	2.629*** (0.240)				1.326*** (0.336)
log private credit/GDP ratio		-0.0356*** (0.007)			0.019 (0.012)
log country's credit rating			-0.296*** (0.023)		-0.290*** (0.027)
GDP growth rate				-0.048*** (0.009)	-0.037* (0.020)
Area under the ROC curve	0.83	0.77	0.92	0.75	0.93
Observations	1,198	1,297	1,225	2,473	1,051
Pseudo R-squared	0.281	0.173	0.466	0.133	0.500
Panel B: Weakly preemptive (takes 1 during restructuring)					
	(1)	(2)	(3)	(4)	(5)
log debt/GDP ratio	2.060*** (0.403)				0.735 (0.483)
log private credit/GDP ratio		-0.009 (0.009)			-0.004 (0.010)
log country's credit rating			-0.110*** (0.017)		-0.079*** (0.019)
GDP growth rate				0.006 (0.011)	-0.019 (0.033)
Area under the ROC curve	0.77	0.68	0.82	0.58	0.80
Observations	647	653	576	4,861	527
Pseudo R-squared	0.136	0.041	0.184	0.008	0.167
Panel C: Strictly preemptive (takes 1 during restructuring)					
	(1)	(2)	(3)	(4)	(5)
log debt/GDP ratio	2.475*** (0.801)				0.835 (1.050)
log private credit/GDP ratio		-0.006 (0.014)			0.008 (0.020)
log country's credit rating			-0.124*** (0.034)		-0.088* (0.047)
GDP growth rate				0.017 (0.011)	-0.004 (0.067)
Area under the ROC curve	0.74	0.67	0.79	0.62	0.77
Observations	233	239	240	4,739	203
Pseudo R-squared	0.135	0.063	0.193	0.025	0.181

Notes: Area under the ROC curve represents the predicting power of regressors regarding the binary independent variable. The measure takes a value between 0.5 and 1, which implies zero and perfect predicting power, respectively. All regressions include a constant term and country fixed effects). Robust-standard errors, clustered at the country-level, are in parentheses. The regressors are in log scale except for the GDP growth rate. Sample countries are restricted to countries that have experienced debt restructuring(s). Sample period is from 1970 to 2007 with some years missing for some countries. See the main text for data sources. ***, ** and * indicate that corresponding coefficients are statistically significant at 1% level, 5% level, and 10% level, respectively.

Figure 6: Estimated Probability of Treatment

Notes: The propensity score is estimated in a probit model. The dependent variable is a dummy equal to 1 if there is any kind of debt restructurings for all years until completion. Regressors include the debt/GDP ratio, private credit/GDP ratio, credit ratings, and GDP growth rate. The figure shows the predicted probability of treatment with a solid line for the treatment observations and with a dashed line for the control observations.

B. Instrument Variable (IV) Estimation Approach

For the conventional panel regressions, we apply a traditional Instrument Variable (IV) estimation approach. The requirement of a large number of instruments to control restructuring dummies including lagged ones makes it difficult for us to estimate the specification including the multiple restructuring dummies simultaneously. Instead, we separately run regressions with the estimated dummy variable specific to each restructuring strategy. Two reasons justify this approach: first, and most importantly, the three types of restructuring are orthogonal to each other, i.e. one debt restructuring falls into only one of three categories. Each restructuring episode is specific to the debt instruments affected and is not related with debt covered in other restructuring cases. Each type of restructuring choices is predicted by the similar determinants with different estimated coefficients (Table 6). Second, we use the same sample of observations (864) and the estimated coefficients reflect the impact of each restructuring strategy relative to the symmetric sample mean. Our set of instruments include public debt-to-GDP ratio, private credit-to-GDP ratio, countries' credit ratings, GDP growth rate, and other control variables employed in the second-stage regression. Validity of these instruments are confirmed by logit regression results (Table 6).

Table 7 reports IV panel regression results of import and export growth on debt restructurings for 1970–2007 with the same sample of 61 countries. For both imports and exports, columns (1)–(3) show results for each restructuring strategy, while column (4) uses a simple restructuring dummy applied to all three types of restructuring. Column (5) reports

results using a sovereign default dummy from Standard and Poor's for comparison with findings from previous studies (Zymek, 2012).

For imports, the results reported in columns (1)–(5) are in line with our OLS results (Table 2); both post-default and weakly preemptive restructurings are associated with a severe decline in imports with longer periods for post-default cases. Similar results are obtained when we use a common dummy for all three types of restructuring, as well as a dummy based on sovereign defaults.

The IV results for exports are also similar to the OLS results; exports drop sharply only for post-default restructurings. Our results for the common dummy for all three types of restructurings as well as for the dummy based on sovereign defaults are also found to be robust.

Table 7: Conventional Panel Regression Results, IV

Variable	Import growth rate, 100*(Import _t -Import _{t-1})/GDP _{t-1}					Export growth rate, 100*(Export _t -Export _{t-1})/GDP _{t-1}				
	Post-default	Weakly preemptive	Strictly preemptive	All types of debt restructurings	Sovereign default --- S&P	Post-default	Weakly preemptive	Strictly preemptive	All types of debt restructurings	Sovereign default --- S&P
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Variable (lag 0)	-3.980*** (1.42)	-3.534** (1.63)	0.585 (3.91)	-3.369*** (1.26)	-10.759*** (2.13)	-3.563* (1.84)	-1.357 (2.11)	-1.330 (5.08)	-3.765*** (1.63)	-5.215* (2.78)
Variable (lag 1)	-1.738** (0.85)	-1.721 (1.14)	0.81 (1.47)	-1.416** (0.66)	-1.997** (0.81)	2.631 (1.81)	-0.357 (1.90)	1.035 (4.98)	-1.547** (0.85)	4.661* (2.71)
Variable (lag 2)	-0.345 (0.86)	-1.524 (1.08)	0.938 (1.42)	-0.500 (0.65)	-1.561 (0.80)	2.685 (1.74)	0.257 (2.02)	0.896 (5.34)	-1.236 (0.84)	4.976* (2.76)
GDP growth rate	0.196*** (0.02)	0.199*** (0.02)	0.202*** (0.02)	0.190*** (0.02)	0.175*** (0.02)	0.340*** (0.03)	0.344*** (0.03)	0.346*** (0.03)	0.331*** (0.03)	0.334*** (0.03)
Real exchange rate, rate of change	-0.007 (0.01)	-0.011 (0.01)	-0.013 (0.01)	-0.005 (0.01)	0.003 (0.01)	0.116*** (0.01)	0.111*** (0.01)	0.111*** (0.01)	0.119*** (0.01)	0.118*** (0.01)
Investment growth	0.002 (0.00)	0.003 (0.00)	0.003 (0.00)	0.002 (0.00)	0.002 (0.00)	0.002 (0.00)	0.002 (0.00)	0.002 (0.00)	0.002 (0.00)	0.001 (0.00)
Terms of trade, rate of change	0.106*** (0.03)	0.106*** (0.03)	0.115*** (0.03)	0.097*** (0.03)	0.079*** (0.03)	-0.118*** (0.03)	-0.110*** (0.03)	-0.107*** (0.03)	-0.129*** (0.03)	-0.123*** (0.03)
Floating exchange rate regime dummy	0.671* (0.39)	0.746* (0.40)	0.739* (0.40)	0.811** (0.40)	0.715* (0.42)	-0.020 (0.51)	0.051 (0.51)	0.078 (0.52)	0.109 (0.51)	0.041 (0.51)
Commodity exporter dummy	-1.465*** (0.46)	-1.501*** (0.46)	-1.496*** (0.46)	-1.428*** (0.46)	-1.042** (0.49)	-0.678 (0.59)	-0.686 (0.60)	-0.660 (0.60)	-0.638 (0.59)	-0.487 (0.60)
Country fixed effect	No	No	No	No	No	No	No	No	No	No
Year fixed effect	No	No	No	No	No	No	No	No	No	No
Observations	864	864	864	864	864	864	864	864	864	864

Notes: All regressions include a constant term. Robust standard errors, clustered at the country-level, are in parentheses. Instruments include public debt-to-GDP ratio, private credit-to-GDP ratio, credit rating, one-year lag of these variables, and number of debt restructurings in the past ten years. The number of observations are set so that all regressions include the same number of observations. Countries that experienced at least one debt restructuring events are included in the sample. The sample period is from 1970 to 2007. The debt restructuring dummies are based on the classifications from Asonuma and Trebesch (2016) and the sovereign default dummy is based on the data from Standard and Poor's (2006). ***, ** and * indicate that the corresponding coefficients are statistically significant at 1%, 5%, and 10% level, respectively. Larger negative impacts of sovereign defaults on start year (year 0) are due to a difference in sample of observations (due to required instruments) associated with application of IV estimation.

C. Local Projections

For the local projection estimates, we deal with the endogeneity issues by applying the Augmented Inverse Probability Weighted (hereafter AIPW) estimator. Instead of introducing multiple dummies for the endogenous types of restructuring, we apply a uniform dummy variable taking unity when a country implements any type of debt restructurings. Our approach is justified by the estimation results of a multinomial logit model which is conducted to assess whether instruments have enough classification power on the three types of debt restructurings. We consider three model specifications:¹⁵

1. *Three-type model*: treating post-default, weakly preemptive and strictly preemptive as different types of events
2. *Two-type model*: treating weakly and strictly preemptive restructurings as the same type of event and post-default restructurings as a second type of event
3. *One-type model*: treating all types of debt restructuring events as the same type of event (restructuring events)

Table 8 shows that the one-type model has a best fit among the three models. We contrast the performance of these three models based on the Akaike Information Criterion (hereafter AIC) and the Bayesian Information Criterion (hereafter BIC). These two measures quantify the degree of fitness of three models and the smallest statistics implies the best fit of the model. The one-type model with AIC and BIC of 763 and 792 outperforms both the two- and three-type models. This can be reconciled with Asonuma and Trebesch (2016)'s finding that preemptive restructurings are significantly more likely when macroeconomic fundamentals have deteriorated over the past years and when default risk is high. Despite the tendency of post-defaults being triggered by unexpected bad shocks, once they occur, macroeconomic fundamentals deteriorate severely and quickly.

¹⁵ A two-type model of treating post-default and strictly preemptive restructurings as the same type of event is excluded from the list because there exists no similarity between post-default and strictly preemptive restructurings which clearly differentiates from weakly preemptive episodes.

Table 8: Predicting Debt Restructuring Events, Multinomial Logit

	Three-type model			Two-type model		One-type model
	Post-default	Weakly preemptive	Strictly preemptive	Post-default	Weakly and strictly preemptive	Post-default, weakly preemptive and strictly preemptive
log debt-GDP ratio	0.606** (0.24)	0.417 (0.30)	0.51 (0.40)	0.600** (0.24)	0.440* (0.24)	0.528*** (0.18)
log private credit-GDP ratio	0.157 (0.22)	0.243 (0.29)	1.243*** (0.41)	0.158 (0.22)	0.583** (0.24)	0.358** (0.17)
log country's credit rating	-0.301 (0.36)	0.264 (0.49)	-1.202** (0.56)	-0.304 (0.36)	-0.272 (0.37)	-0.284 (0.27)
GDP growth rate	-0.109*** (0.02)	-0.122*** (0.03)	-0.0436 (0.06)	-0.109*** (0.02)	-0.102*** (0.03)	-0.105*** (0.02)
Observations		2,372		2,372		2,372
Pseudo R-sq.		0.068		0.065		0.070
AIC		965.57		903.62		763.73
BIC		1052.14		961.34		792.59

Notes: All regressions include a constant term. Standard errors are in parentheses. The restructuring dummies take 1 at the start year of restructurings. Sample period is from 1970 to 2007 with some missing period for some countries. Sample countries are no longer restricted to countries that have ever experienced debt restructuring(s). See the main text for data sources. ***, ** and * indicate that corresponding coefficients are statistically significant at 1% level, 5% level, and 10% level, respectively.

We proceed in two steps to obtain the AIPW estimator.¹⁶ In the first step, the model estimates the policy propensity score in the sample, which corresponds to the probability that a debt restructuring event occurs. Reflecting the best fit of one-type model, we apply a probit model treating uniformly any type of restructuring strategies shown as follows:

$$P\{DebtRest\}_{i,t} = \Phi(\mathbf{Z}_{i,t}^m, \mathbf{Z}_{i,t-1}^m, \boldsymbol{\alpha}) \quad (5)$$

where $P\{DebtRest\}_{i,t}$ is the probability that a debt restructuring event occurs in country i in year t ; $\mathbf{Z}_{i,t}^m$ is a vector of contemporaneous instruments including public debt-to-GDP ratio, private credit-to-GDP ratio, countries' credit ratings, GDP growth rate, and other control variables employed in the second-stage regression. To denote a difference in the set of controls variables used in the second stage for imports and exports, $\mathbf{Z}_{i,t}^m$ includes a superscript m indicating "imports." $\mathbf{Z}_{i,t-1}^m$ is a vector of lagged instruments. Finally, $\boldsymbol{\alpha}$ indicates the vector of coefficients to be estimated.

¹⁶ For the sake of conciseness, we only explain the procedure to estimate the average treatment effect of debt restructurings on imports here. The same procedure is adopted to estimate the average treatment effect on exports and the other variables.

In the second step, we correct for bias in our sample by using the inverse of the estimated propensity score obtained in the first stage. This adjustment generates a hypothetical situation where debt restructuring events occur randomly contrary to the real world where restructurings are triggered by some common features. By assigning a weight, i.e., the inverse of the estimated propensity score, $1/\hat{P}\{DebtRest\}_{i,t}$, the share of observations that are less likely associated with restructurings (for instance, those with a low debt-to-GDP ratio and high GDP growth rate) accounts for a large portion in the AIPW estimates.

With the AIPW estimates obtained through this bias correction process, we interpret the estimated coefficients as the average treatment effect. This corresponds to a difference in average debt restructuring effects between observations that actually experience debt restructurings and those that do not experience. To acquire the average effect for the treatment and control groups, we estimate local projections similar to (3) in Section 4.2:

$$100 * \frac{Import_{i,t+h} - Import_{i,t-1}}{GDP_{i,t-1}} = \alpha_i^h + \Lambda^{h,Post} D_{i,t}^{Post} + \Lambda^{h,Weak} D_{i,t}^{Weak} + \Lambda^{h,Strict} D_{i,t}^{Strict} + \mathbf{X}_{i,t-1}^m \boldsymbol{\beta}_{-1}^h + \mathbf{X}_{i,t-2}^m \boldsymbol{\beta}_{-2}^h + \varepsilon_{i,t+h} \quad (6)$$

for $h = 0, 1, \dots, 9$, where $D_{i,t}^{Post}$, $D_{i,t}^{Weak}$ and $D_{i,t}^{Strict}$ are dummy variables taking unity if there is a post-default, weakly preemptive, and strictly debt restructuring at year t in country i , respectively. $\Lambda^{h,Post}$, $\Lambda^{h,Weak}$ and $\Lambda^{h,Strict}$ are coefficients to be estimated. Other variables and coefficients are the same as equation (3). We denote the predicted dependent variable as

$$\hat{M}_{i,t+h} = \hat{\alpha}_i^h + \hat{\Lambda}^{h,Post} D_{i,t}^{Post} + \hat{\Lambda}^{h,Weak} D_{i,t}^{Weak} + \hat{\Lambda}^{h,Strict} D_{i,t}^{Strict} + \mathbf{X}_{i,t-1}^m \hat{\boldsymbol{\beta}}_{-1}^h + \mathbf{X}_{i,t-2}^m \hat{\boldsymbol{\beta}}_{-2}^h \quad (7)$$

for $h = 0, 1, \dots, 9$, where a hat indicates an estimated coefficient or a prediction and $\hat{M}_{i,t+h}$ denotes the predicted dependent variable from equation (6). Following Jordà et al., (2016) and Kuvshinov and Zimmermann (2016), we use a larger set of control variables for probit regression in the first stage (equation 4) than for the local projection in the second stage (equation 5). That is, $\mathbf{X}_{i,t}^m \subset \mathbf{Z}_{i,t}^m$. We assume that the set of exogenous variables included in the second stage (local projection) satisfies the exclusion restriction and take an advantage of using exogenous variations in these variables to estimate the policy propensity score in the first stage (probit regression).

The average treatment effect of debt restructurings on imports for h year-horizon is computed as follows:

$$ATE^m(\Lambda^{h,Type}) = \frac{1}{N_{DebtRest}^{Type}} \sum_i \sum_t \frac{\hat{M}_{i,t+h} D_{i,t}^{Type}}{\hat{P}\{DebtRest\}_{i,t}} - \frac{1}{N_{NonDebtRest}^{Type}} \sum_i \sum_t \frac{\hat{M}_{i,t+h} (1 - D_{i,t}^{Type})}{1 - \hat{P}\{DebtRest\}_{i,t}} \quad (8)$$

for $Type = \{Post\ default, Weakly\ preemptive, Strictly\ Preemptive\}$, where $N_{DebtRest}^{Type}$ and $N_{NonDebtRest}^{Type}$ indicate the number of observations experiencing debt restructurings and the number of observations without debt restructurings, respectively, for each type of debt restructurings; $\hat{P}\{DebtRest\}_{i,t}$ is the estimated probability of debt restructuring events for any types of debt restructurings; $\hat{M}_{i,t+h}$ is the predicted dependent variable from the second stage (local projection); and $D_{i,t}^{Type}$ is the debt restructuring dummy for $Type = \{Post\ default, Weakly\ preemptive, Strictly\ Preemptive\}$.

Table 9 reports the results from the AIPW estimator, which confirm our benchmark results. As in the baseline (OLS) case, imports decline remarkably over a prolonged period after post-default restructurings. Both weakly preemptive and strictly preemptive restructurings experience a decline in imports over the first two years. On exports, post-default restructurings lead to a sizable and protracted decline, while neither weakly nor strictly preemptive restructurings experience a significant decline. Figure 7 reports cumulative responses showing a similar pattern for the dynamics as in Figure 4.¹⁷

Table 9: Local Projections with Baseline Specification, AIPW

Part A: Imports										
Dep. var. is 100 times the cumulative change in the import value from year $t - 1$ to year $t + h$ scaled by real GDP at year $t - 1$										
	$h = 0$	$h = 1$	$h = 2$	$h = 3$	$h = 4$	$h = 5$	$h = 6$	$h = 7$	$h = 8$	$h = 9$
Post-default	-5.407*** (0.96)	-7.312*** (1.52)	-7.709*** (2.04)	-4.791*** (1.88)	-4.395** (2.31)	-4.106* (2.43)	-2.311 (2.57)	-2.239 (2.85)	-1.307 (2.71)	-2.397 (2.69)
Weakly preemptive	-1.979** (0.99)	-2.215* (1.57)	-2.108 (2.10)	-1.442 (1.94)	-2.553 (2.36)	-0.901 (2.48)	0.511 (2.62)	2.379 (2.90)	1.040 (2.96)	2.171 (3.30)
Strictly preemptive	-2.847*** (0.98)	-2.309* (1.56)	-2.383 (2.09)	-1.143 (1.92)	0.245 (2.34)	3.766 (2.46)	4.327 (2.58)	5.418 (2.87)	0.200 (2.92)	2.520 (3.27)
Cyclical component of log GDP per capita at $h = -1$, the dependent variable ($h = -1, -2$), openness ($h = -1, -2$), population ($h = -1, -2$), the import price index ($h = -1, -2$), % change in investment ($h = -1, -2$), % change in the real exchange rate ($h = -1, -2$), and country fixed effects										
Number of countries	39	39	38	38	37	36	35	35	34	33
Number of observations	813	777	740	703	665	628	592	557	525	493

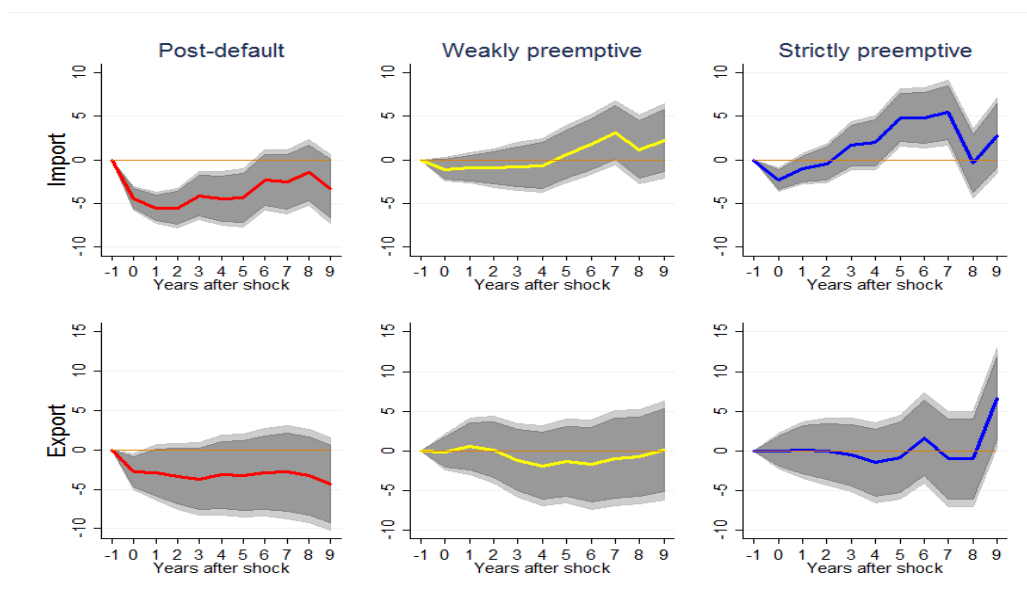
¹⁷ Results from the AIPW estimator for other variables are reported in Table A.2. in Appendix III.

Part B: Exports

Dep. var. is 100 times the cumulative change in the export value from year $t - 1$ to year $t + h$ scaled by real GDP at year $t - 1$										
	$h = 0$	$h = 1$	$h = 2$	$h = 3$	$h = 4$	$h = 5$	$h = 6$	$h = 7$	$h = 8$	$h = 9$
Post-default	-3.641***	-3.134***	-4.083**	-4.026	-3.877	-4.718	-4.653	-4.248	-3.523	-4.257
	(1.31)	(1.74)	(2.46)	(3.65)	(4.40)	(4.51)	(4.61)	(5.04)	(4.66)	(4.36)
Weakly preemptive	-0.561	-0.194	-0.779	-1.839	-2.926	-2.662	-3.205	-1.563	-1.272	-1.438
	(1.30)	(1.73)	(2.47)	(3.65)	(4.41)	(4.56)	(4.71)	(5.09)	(4.73)	(4.84)
Strictly preemptive	0.168	-0.322	-0.774	-1.521	-2.337	-1.230	1.421	-0.019	-0.311	4.989
	(1.29)	(1.71)	(2.45)	(3.63)	(4.40)	(4.54)	(4.70)	(5.08)	(4.70)	(4.79)
Cyclical component of log GDP per capita at $h = -1$, the dependent variable ($h = -1, -2$), openness ($h = -1, -2$), population ($h = -1, -2$), the export price index ($h = -1, -2$), % change in investment ($h = -1, -2$), % change in the real exchange rate ($h = -1, -2$), and country fixed effects										
Number of countries	39	39	38	38	37	36	35	35	34	33
Number of observations	813	777	740	703	665	628	592	557	525	493

Notes: The table shows estimated local projections of 100 times $(Import_{t+h} - Import_{t-1})/GDP_{t-1}$ for Panel A and 100 times $(Export_{t+h} - Export_{t-1})/GDP_{t-1}$ for Panel B where h indicates years after debt restructurings. Regressions include the same control variables from Table 3: cyclical components of log GDP per capita, lags of import (or export) growth, openness, population, import (export) price index, % change in investment, % change in the real exchange rates and country fixed effects. Robust standard errors, clustered at the country-level, are in parentheses. Sample countries are restricted to those that have experienced debt restructuring(s). Sample period is from 1970 to 2007 with some missing period for some countries. In the first stage, the dummy variable equal to 1 for any type of debt restructuring event is regressed on the public-debt GDP ratio, the private credit-GDP ratio, and the countries' ratings on risks. Then estimated propensities are employed as weights in the second stage. See the main text for the data sources. ***, ** and * indicate that corresponding coefficients are statistically significant at 1% level, 5% level, and 10% level, respectively.

Figure 7: Local Projections with Baseline Specification, AIPW



Notes: The figure plots local projections of 100 times $(Import_{t+h} - Import_{t-1})/GDP_{t-1}$ and 100 times $(Export_{t+h} - Export_{t-1})/GDP_{t-1}$ where h indicates years after debt restructurings. The solid line indicates the point estimates and the thinner band and the thicker band are 90% and 95% confidence intervals, respectively. The figure is based on the result presented in Table 9. See note in Figure 4 for presentation for point estimates and confidence intervals.

VI. ROBUSTNESS CHECK

A. Expanding Sample of Observations

First, we conduct an exercise to expand our sample by including countries without debt restructurings. Previous studies on sovereign defaults use a wider coverage of countries including those that have never defaulted: on defaults on private external debt, Zymek (2012) and Kuvshinov and Zimmermann (2016) use a sample of 100 countries and 114 countries, respectively.¹⁸ We set our sample to follow as close as possible the conventional approach in these studies. We exclude high income countries where the Purchasing Power Parity (PPP) adjusted GDP per capita higher than the 80 percentile of the entire sample in 2000 since we do not have any restructuring episodes for advanced economies. That leaves 122 countries in the sample, a similar number to that in Zymek (2012) and Kuvshinov and Zimmermann (2016).

Table 10 reports the results for the conventional panel regressions. The baseline results remain robust in this larger sample of countries that includes non-restructuring countries. Adding observations without restructuring episodes where restructuring dummies are set to zero does not virtually change the estimated coefficients.

For the local projection estimates we exclude the real exchange rate and investment from the control variables in order to prevent a sizable reduction in observations due to limited coverage of these variables in the larger sample. The results are reported in Table 11, and are quantitatively similar to those in Table 3, confirming the robustness of our baseline results.

¹⁸ A similar approach has been adopted for official external debt restructurings: Rose (2005) and Martinez and Sandleis (2011) apply the sample of 150 countries and 217 countries including those without restructuring experience, respectively.

Table 10: Conventional Model with Expanded Sample, OLS

		Import growth rate, $100*(\text{Import}_t - \text{Import}_{t-1})/\text{GDP}_{t-1}$						
		(1)	(2)	(3)	(4)	(5)	(6)	(7)
Post-default (lag 0)		-3.587*** (0.63)	-2.942*** (0.67)	-3.443*** (0.61)	-2.763*** (0.64)	-2.791*** (0.59)		
Post-default (lag 1)		-1.579*** (0.42)	-1.308*** (0.43)	-1.548*** (0.43)	-1.266*** (0.44)	-1.277*** (0.49)		
Post-default (lag 2)		-1.620** (0.66)	-1.703** (0.66)	-1.631** (0.66)	-1.717*** (0.66)	-1.702** (0.68)		
Weakly preemptive (lag 0)		-2.843*** (0.74)	-2.444*** (0.77)	-2.689*** (0.72)	-2.261*** (0.75)	-2.232*** (0.81)		
Weakly preemptive (lag 1)		-0.112 (0.67)	0.027 (0.65)	0.015 (0.66)	0.173 (0.64)	0.216 (0.75)		
Weakly preemptive (lag 2)		-0.441 (0.56)	-0.767 (0.57)	-0.436 (0.55)	-0.770 (0.56)	-0.678 (0.59)		
Strictly preemptive (lag 0)		-1.229** (0.48)	-0.849** (0.41)	-1.367*** (0.50)	-0.992** (0.43)	-1.073*** (0.36)		
Strictly preemptive (lag 1)		0.988* (0.56)	1.283** (0.50)	0.963* (0.54)	1.263** (0.49)	1.166** (0.48)		
Strictly preemptive (lag 2)		-0.578 (0.78)	-0.500 (0.80)	-0.443 (0.79)	-0.347 (0.80)	-0.451 (0.91)		
Any types of debt restructurings (Lag 0)							-2.306*** (0.46)	
Any types of debt restructurings (Lag 1)							-0.473 (0.35)	
Any types of debt restructurings (Lag 2)							-1.200*** (0.47)	
Sovereign default -- S&P (Lag 0)								-2.401*** (0.57)
Sovereign default -- S&P (Lag 1)								-1.914*** (0.52)
Sovereign default -- S&P (Lag 2)								-0.939* (0.57)
GDP growth rate			0.143*** (0.05)		0.147*** (0.05)	0.138*** (0.05)	0.147*** (0.05)	0.147*** (0.05)
Terms of trade, rate of change				0.0738*** (0.02)	0.0823*** (0.02)	0.0848*** (0.02)	0.0817*** (0.02)	0.0824*** (0.02)
Floating exchange rate regime dummy		0.346 (0.81)	0.195 (0.84)	0.322 (0.80)	0.164 (0.82)	0.624 (0.63)	0.074 (0.82)	-0.027 (0.81)
Commodity exporter dummy		-0.160 (0.29)	-0.109 (0.30)	-0.159 (0.29)	-0.106 (0.30)	0.295 (0.36)	-0.123 (0.30)	-0.130 (0.30)
Country fixed effect	No	No	No	No	Yes	No	No	
R-squared	0.006	0.034	0.012	0.042	0.039	0.041	0.04	
Number of countries	118	118	118	118	118	118	118	
Observations	3,936	3,936	3,936	3,936	3,936	3,839	3,839	

Notes: All regressions include a constant term. Robust standard errors, clustered at the country-level, are in parentheses. The number of observations are set so that all regressions (except (6) and (7)) include the same number of observations. The sample period is from 1970 to 2007. The debt restructuring dummies (post-default, weakly preemptive, strictly preemptive, and any restructuring) are based on the data from Asonuma and Trebesch (2016). The dummy for sovereign defaults is from Standard and Poor's (2006). ***, ** and * indicate that the corresponding coefficients are statistically significant at 1%, 5%, and 10% level, respectively.

Table 10: Conventional Model with Expanded Sample, OLS (Cont.)

		Export growth rate, $100*(\text{Export}_t - \text{Export}_{t-1})/\text{GDP}_{t-1}$						
		(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Post-default (lag 0)	-1.516*** (0.49)	-0.550 (0.50)	-1.630*** (0.49)	-0.650 (0.50)	-0.593 (0.58)		
	Post-default (lag 1)	-0.539 (0.57)	-0.134 (0.57)	-0.564 (0.57)	-0.158 (0.57)	-0.077 (0.62)		
	Post-default (lag 2)	-0.763* (0.41)	-0.887** (0.44)	-0.754* (0.40)	-0.878** (0.43)	-0.762* (0.39)		
	Weakly preemptive (lag 0)	-1.108** (0.54)	-0.510 (0.59)	-1.229** (0.55)	-0.612 (0.59)	-0.572 (0.59)		
	Weakly preemptive (lag 1)	-0.138 (0.51)	0.070 (0.53)	-0.238 (0.50)	-0.011 (0.52)	0.059 (0.60)		
	Weakly preemptive (lag 2)	-0.789 (0.48)	-1.277** (0.54)	-0.794 (0.49)	-1.275** (0.54)	-1.167** (0.50)		
	Strictly preemptive (lag 0)	-0.049 (0.47)	0.519 (0.54)	0.059 (0.54)	0.599 (0.59)	0.709 (0.60)		
	Strictly preemptive (lag 1)	-0.479 (0.50)	-0.038 (0.55)	-0.459 (0.52)	-0.027 (0.55)	0.094 (0.46)		
	Strictly preemptive (lag 2)	-1.100 (0.67)	-0.983 (0.66)	-1.206* (0.66)	-1.068 (0.66)	-0.917** (0.45)		
	Any types of debt restructurings (Lag 0)						-0.507 (0.37)	
	Any types of debt restructurings (Lag 1)						-0.099 (0.38)	
	Any types of debt restructurings (Lag 2)						-1.016*** (0.33)	
	Sovereign default -- S&P (Lag 0)							-1.542*** (0.58)
	Sovereign default -- S&P (Lag 1)							-0.602 (0.42)
	Sovereign default -- S&P (Lag 2)							-0.477 (0.39)
	GDP growth rate		0.213*** (0.06)		0.211*** (0.06)	0.201** (0.09)	0.211*** (0.06)	0.210*** (0.06)
	Terms of trade, rate of change			-0.0581*** (0.01)	-0.0460*** (0.01)	-0.0449*** (0.01)	-0.0473*** (0.01)	-0.0474*** (0.01)
	Floating exchange rate regime dummy	-0.265 (0.45)	-0.491 (0.56)	-0.246 (0.44)	-0.473 (0.56)	0.031 (0.49)	-0.491 (0.56)	-0.544 (0.55)
	Commodity exporter dummy	0.437* (0.23)	0.513** (0.23)	0.436* (0.23)	0.512** (0.23)	0.467 (0.34)	0.450* (0.23)	0.453** (0.23)
	Country fixed effect	No	No	No	No	Yes	No	No
	R-squared	0.002	0.102	0.009	0.106	0.099	0.106	0.106
	Number of countries	118	118	118	118	118	118	118
	Observations	3,936	3,936	3,936	3,936	3,936	3,839	3,839

Notes: All regressions include a constant term. Robust standard errors, clustered at the country-level, are in parentheses. The number of observations are set so that all regressions (except (6) and (7)) include the same number of observations. The sample period is from 1970 to 2007. The debt restructuring dummies (post-default, weakly preemptive, strictly preemptive, and any restructuring) are based on the data from Asonuma and Trebesch (2016). The dummy for sovereign defaults is from Standard and Poor's (2006). ***, ** and * indicate that the corresponding coefficients are statistically significant at 1%, 5%, and 10% level, respectively.

Table 11: Local Projections with Expanded Sample, OLS

(1) Imports										
Dep. var. is 100 times the cumulative change in the import value from year $t - 1$ to year $t + h$ scaled by real GDP at year $t - 1$										
	$h = 0$	$h = 1$	$h = 2$	$h = 3$	$h = 4$	$h = 5$	$h = 6$	$h = 7$	$h = 8$	$h = 9$
Post-default	-3.341*** (0.59)	-5.230*** (0.75)	-6.688*** (1.07)	-7.275*** (1.18)	-7.368*** (1.63)	-7.539*** (2.05)	-9.864*** (3.18)	-10.26*** (3.09)	-9.850*** (3.46)	-10.86** (4.94)
Weakly preemptive	-2.749*** (0.85)	-3.450*** (0.66)	-4.750*** (1.13)	-5.129*** (1.13)	-4.991*** (1.22)	-5.261*** (1.42)	-5.690*** (2.14)	-5.951** (2.61)	-6.598** (2.96)	-2.909 (2.09)
Strictly preemptive	-1.419*** (0.32)	-0.951 (0.80)	-1.377 (1.50)	-0.905 (2.00)	-1.104 (1.13)	1.713 (1.85)	-0.839 (1.69)	-0.19 (2.01)	-1.899 (2.51)	-1.194 (2.27)
Control variables	Cyclical component of log GDP per capita at $h = -1$, the dependent variable ($h = -1, -2$), openness ($h = -1, -2$), population ($h = -1, -2$), the import price index ($h = -1, -2$), and country fixed effects									
R-squared	0.106	0.122	0.168	0.171	0.193	0.208	0.26	0.301	0.335	0.367
Number of countries	118	118	118	118	118	118	118	118	118	117
Observations	3,585	3,467	3,349	3,231	3,113	2,995	2,877	2,759	2,641	2,523
<i>Differences in debt restructuring coefficients</i>										
Post-default - Weakly preemptive	-0.592 (1.00)	-1.780* (0.98)	-1.938 (1.45)	-2.146 (1.40)	-2.377 (1.98)	-2.278 (2.61)	-4.174 (3.53)	-4.309 (3.09)	-3.252 (3.39)	-7.948 (4.95)
Post-default - Strictly preemptive	-1.922*** (0.62)	-4.279*** (1.07)	-5.310*** (1.90)	-6.370*** (2.44)	-6.264*** (1.64)	-9.253*** (2.75)	-9.025** (3.76)	-10.07*** (3.86)	-7.952* (4.32)	-9.663* (5.35)
Weakly preemptive - Strictly preemptive	-1.33 (0.83)	-2.499*** (0.93)	-3.373** (1.57)	-4.224** (2.00)	-3.887** (1.51)	-6.974** (2.28)	-4.851* (2.63)	-5.761* (3.21)	-4.699 (3.75)	-1.716 (2.83)
(2) Exports										
Dep. var. is 100 times the cumulative change in the export value from year $t - 1$ to year $t + h$ scaled by real GDP at year $t - 1$										
	$h = 0$	$h = 1$	$h = 2$	$h = 3$	$h = 4$	$h = 5$	$h = 6$	$h = 7$	$h = 8$	$h = 9$
Post-default	-0.841* (0.46)	-0.774 (0.64)	-0.885 (0.86)	-0.736 (1.16)	-0.635 (1.47)	-2.009 (1.71)	-3.678 (2.23)	-5.117* (3.07)	-7.821* (4.27)	-11.11* (6.21)
Weakly preemptive	-1.116** (0.51)	-1.387** (0.57)	-2.159*** (0.74)	-2.314*** (0.87)	-2.139* (1.12)	-2.352 (1.57)	-3.581** (1.58)	-4.590** (2.10)	-6.362* (3.63)	-7.714 (5.36)
Strictly preemptive	0.0519 (0.56)	-0.184 (0.81)	-0.845 (0.66)	-0.946 (1.17)	-1.416 (1.82)	0.366 (2.02)	1.517 (2.74)	1.183 (3.36)	0.0889 (3.27)	0.865 (4.68)
Control variables	Cyclical component of log GDP per capita at $h = -1$, the dependent variable ($h = -1, -2$), openness ($h = -1, -2$), population ($h = -1, -2$), the export price index ($h = -1, -2$), and country fixed effects									
R-squared	0.043	0.109	0.207	0.286	0.251	0.228	0.253	0.282	0.296	0.298
Number of countries	118	118	118	118	118	118	118	118	118	117
Observations	3,585	3,467	3,349	3,231	3,113	2,995	2,877	2,759	2,641	2,523
<i>Differences in debt restructuring coefficients</i>										
Post-default - Weakly preemptive	0.275 (0.60)	0.614 (0.76)	1.273 (1.19)	1.578 (1.51)	1.504 (1.87)	0.343 (2.48)	-0.096 (2.78)	-0.526 (3.49)	-1.459 (4.65)	-3.397 (5.91)
Post-default - Strictly preemptive	-0.893 (0.63)	-0.589 (0.93)	-0.041 (1.03)	0.21 (1.70)	0.78 (2.41)	-2.374 (2.76)	-5.195 (3.70)	-6.299 (4.86)	-7.91 (5.53)	-11.976 (7.69)
Weakly preemptive - Strictly preemptive	-1.168 (0.73)	-1.203 (0.92)	-1.314 (0.94)	-1.368 (1.36)	-0.723 (1.93)	-2.718 (1.78)	-5.098* (2.94)	-5.773 (4.02)	-6.451 (4.58)	-8.579 (7.01)

Notes: The table shows estimated local projections of 100 times $(Import_{t+h} - Import_{t-1})/GDP_{t-1}$ for Panel A and 100 times $(Export_{t+h} - Export_{t-1})/GDP_{t-1}$ for Panel B where h indicates years after a debt restructuring.

Regressions include the similar set of control variables in Table 3: lagged cyclical components of log GDP per capita, lags of import (or export) growth, openness, population, the import (export) price index, and country fixed effects. Robust standard errors, clustered at country-level, are in parentheses. ***, ** and * indicate that corresponding coefficients are statistically significant at 1% level, 5% level, and 10% level, respectively.

B. Exchange Rate Regimes, Commodity Exporters, IMF-supported Program, and Paris Club Restructurings

In this subsection we check how the trade dynamics respond under the three different restructuring strategies once we take into account differences in the exchange rate regime, whether the exports consist mainly of commodities, and lastly whether the country has an IMF-supported program or an official debt (Paris Club) restructuring. In principle, the absence of the exchange rate's automatic stabilizer role under a fixed regime should amplify the vulnerability to the adverse effects on trade following a restructuring. The composition of exports should also affect the response, as commodity exports may be less sensitive to financial constraints than non-commodity exports (or may not be as easily absorbed by the domestic market as other non-commodity goods that are exported). Under an IMF-supported program, the availability of official (multilateral) financing can mitigate some of the adverse effects on trade (both exports and imports). Similarly, with official debt being restructured through Paris Club deals, receipts of new financing from bilateral creditors can also moderate the negative influence on both exports and imports.

In Panel A of Table 12, we report results when the dummies for each of the three types of restructuring are interacted with dummies for floating vs fixed exchange rate regimes (please note that changes in exchange rate regime during the restructuring period are relatively infrequent). The results indicate that countries under a fixed regime suffer a larger and more protracted decline in imports for both post-default and weakly preemptive restructurings than those under a floating regime. However, in most cases the difference is not statistically significant. The pattern is more mixed in the case of exports, where countries under a fixed regime experience a larger negative impact under post-default and strictly preemptive restructurings, but a smaller impact under weakly preemptive ones. For countries that succeed in maintaining a fixed regime during restructurings, shocks may be more benign and the countries may sustain high credibility for a fixed regime.

Panel B of Table 12 interacts the three restructuring dummies with a dummy for whether the country is a commodity exporter (following the IMF's World Economic Outlook classification). Commodity exporters are countries where most of their exports are primary products. We expect the decline in exports to be milder for commodity exporters because of more inelastic supply. As expected, exports tend to decline less following a restructuring among commodity exporters. The difference is particularly significant for weakly preemptive debt restructurings, where the decline among commodity exporters is 3–4 percent lower than that for non-commodity exporters.

Similarly, Panel C of Table 12 classifies observations into those with an IMF-supported program prior or during the debt restructuring and those without one.¹⁹ For exports, a decline following a post-default restructuring is substantially mitigated under a program. The result may suggest that a country does not face as severe a financial constraint under an IMF-supported program, which leads to a milder decline of exports (see, for example, Amiti and Weinstein, 2011 and Ahn et al., 2011, for the role of trade finance in international trade).

Panel D of Table 12 follows the same approach by classifying observations into those with Paris Club deals with official (bilateral) creditors before or during the private debt restructuring and those without Paris Club debt renegotiation.²⁰ Paris Club restructurings are accompanied by subsequent IMF-supported programs (with a single exception in our sample). Therefore, we expect a similar result as Panel C. Indeed, the result is similar to Panel C: for exports, a decline following a post-default restructuring is significantly moderated by the Paris Club restructurings. The result from Panels C and D suggest that relying on either IMF-supported program or Paris Club Official debt renegotiation (or both) help countries to avoid a substantial decline in exports.

¹⁹ The dummy for IMF-supported programs is set to 1 if a country reaches an agreement with an IMF-supported program within three years before and after the private debt restructuring, and set to 0 otherwise.

²⁰ The dummy for Paris Club restructurings is set to 1 if a country reaches an agreement with the Paris Club creditors within three years before and after the private debt restructuring, and set to 0 otherwise.

Table 12. Local Projections for Exchange Rate Regimes, Commodity Exporters, IMF-supported Programs, and Paris Club Restructurings, OLS

Panel A: Exchange Rate Regimes

(1) Imports

Dep. var. is 100 times the cumulative change in the import value from year $t-1$ to year $t+h$ scaled by real GDP at year $t-1$										
	$h=0$	$h=1$	$h=2$	$h=3$	$h=4$	$h=5$	$h=6$	$h=7$	$h=8$	$h=9$
Post-default, Floating regime	-3.267*** (1.19)	-4.494*** (1.20)	-4.754** (2.13)	-4.313* (2.54)	-3.909* (2.18)	-5.201 (3.49)	-6.641 (6.06)	-9.508 (6.55)	-11.600 (7.82)	-14.96* (8.04)
Post-default, Fixed regime	-2.833*** (0.58)	-4.330*** (0.79)	-7.105*** (1.32)	-7.271*** (1.29)	-7.010*** (1.32)	-6.476*** (1.36)	-6.620*** (1.34)	-6.467*** (1.32)	-3.771*** (1.39)	-4.239*** (1.42)
Weakly preemptive, Floating regime	-2.799*** (0.86)	-2.923** (1.15)	-3.446* (1.83)	-3.266* (1.81)	-5.407* (3.05)	-4.899 (3.66)	-4.497 (4.66)	-2.444 (3.55)	-1.620 (3.67)	2.699 (2.24)
Weakly preemptive, Fixed regime	-1.805*** (0.49)	-2.819*** (0.72)	-3.723*** (0.81)	-5.281*** (0.89)	-6.697*** (1.36)	-6.224*** (1.29)	-5.758*** (1.35)	-4.707*** (1.50)	-3.916*** (1.33)	-2.681* (1.41)
Strictly preemptive, Floating regime	-1.593*** (0.42)	-1.369 (0.89)	-0.985 (0.77)	1.629 (1.44)	2.484 (1.70)	4.792 (3.26)	1.787 (1.75)	1.201 (3.77)	2.064 (3.52)	0.442 (6.06)
Strictly preemptive, Fixed regime	-2.061*** (0.66)	-2.049 (1.48)	-2.049 (1.75)	-2.277 (2.22)	-5.413** (2.36)	-4.441* (2.41)	-3.050 (2.91)	-0.094 (3.13)	0.126 (2.54)	2.656 (1.72)
Cyclical component of log GDP per capita at $h=-1$, the dependent variable ($h=-1, -2$), openness ($h=-1, -2$), population ($h=-1, -2$), the import price index ($h=-1, -2$), % change in investment ($h=-1, -2$), % change in the real exchange rate ($h=-1, -2$), and country fixed effects										
R-squared	0.083	0.123	0.174	0.189	0.208	0.223	0.253	0.325	0.385	0.419
Number of countries	47	47	46	46	45	44	44	44	44	43
Observations	1,178	1,134	1,088	1,043	998	953	909	865	821	777
<i>Differences in debt restructuring coefficients</i>										
Post-default (Fixed regime minus Floating regime)	0.421 (1.36)	0.103 (1.55)	-2.096 (2.61)	-2.577 (2.84)	-3.056 (2.64)	-1.381 (3.75)	-0.143 (6.09)	2.914 (6.52)	8.179 (7.54)	11.330 (8.14)
Weakly preemptive (Fixed regime minus Floating regime)	1.167 (0.96)	0.356 (1.17)	0.097 (1.86)	-1.790 (1.89)	-0.753 (3.22)	-0.733 (3.91)	-0.537 (4.83)	-1.611 (4.63)	-1.683 (3.74)	-5.221** (2.46)
Strictly preemptive (Fixed regime minus Floating regime)	-0.455 (0.70)	-0.661 (1.68)	-1.039 (1.84)	-3.895 (2.51)	-7.842*** (2.88)	-9.176** (4.06)	-4.764 (3.43)	-1.222 (4.94)	-1.858 (4.34)	2.258 (6.42)

(2) Exports

Dep. var. is 100 times the cumulative change in the export value from year $t-1$ to year $t+h$ scaled by real GDP at year $t-1$										
	$h=0$	$h=1$	$h=2$	$h=3$	$h=4$	$h=5$	$h=6$	$h=7$	$h=8$	$h=9$
Post-default, Floating regime	-2.249 (2.04)	-1.367 (2.33)	-1.162 (1.86)	-1.519 (2.03)	-1.635 (2.27)	-5.206 (5.00)	-10.900 (9.82)	-16.830 (15.08)	-24.140 (17.81)	-28.600 (17.72)
Post-default, Fixed regime	-2.831** (1.33)	-2.306** (0.88)	-3.468*** (0.92)	-4.643*** (1.60)	-2.796* (1.63)	-4.799*** (2.12)	-5.455* (2.92)	-5.553* (2.89)	-5.824** (2.39)	-4.661** (1.96)
Weakly preemptive, Floating regime	-3.199** (1.42)	-5.210** (2.03)	-5.714*** (1.91)	-6.211*** (2.28)	-6.221*** (2.21)	-8.171** (3.71)	-9.334** (4.11)	-6.816* (3.84)	-6.057 (4.14)	-2.961 (4.53)
Weakly preemptive, Fixed regime	-2.127** (0.83)	-2.154** (0.99)	-3.028*** (1.03)	-4.262*** (1.05)	-4.527*** (1.05)	-6.364*** (1.50)	-7.059*** (1.85)	-6.599*** (1.77)	-5.869*** (1.55)	-4.092*** (1.50)
Strictly preemptive, Floating regime	-0.358 (0.98)	-0.454 (1.13)	-1.238 (1.24)	-0.237 (1.73)	-2.220 (1.82)	-1.444 (1.52)	-2.514* (1.32)	-2.690 (1.69)	-1.904 (1.98)	-2.879 (2.95)
Strictly preemptive, Fixed regime	-1.819 (1.14)	-3.987** (1.67)	-4.247* (2.22)	-5.301** (2.33)	-5.861** (2.63)	-4.710 (2.95)	-4.766 (3.46)	-6.160* (3.58)	-5.114 (3.33)	0.355 (1.88)
Cyclical component of log GDP per capita at $h=-1$, the dependent variable ($h=-1, -2$), openness ($h=-1, -2$), population ($h=-1, -2$), the export price index ($h=-1, -2$), % change in investment ($h=-1, -2$), % change in the real exchange rate ($h=-1, -2$), and country fixed effects										
R-squared	0.118	0.16	0.187	0.217	0.214	0.221	0.248	0.271	0.311	0.376
Number of countries	47	47	46	46	45	44	44	44	44	43
Observations	1,178	1,134	1,088	1,043	998	953	909	865	821	777
<i>Differences in debt restructuring coefficients</i>										
Post-default (Fixed regime minus Floating regime)	-0.814 (1.81)	-1.121 (1.82)	-2.399 (2.05)	-3.245 (2.68)	-1.247 (2.68)	0.152 (4.95)	5.179 (9.16)	11.080 (13.98)	18.200 (16.55)	24.210 (16.83)
Weakly preemptive (Fixed regime minus Floating regime)	1.161 (1.27)	3.442* (1.73)	3.021* (1.70)	2.315 (2.00)	2.013 (2.01)	2.624 (3.59)	3.140 (3.76)	0.892 (3.40)	1.063 (3.90)	0.016 (4.66)
Strictly preemptive (Fixed regime minus Floating regime)	-1.458 (1.25)	-3.509** (1.40)	-2.988* (1.68)	-5.041** (1.96)	-3.613 (2.23)	-3.195 (2.40)	-2.178 (2.92)	-3.415 (2.98)	-3.149 (3.15)	3.391 (3.53)

Notes: h indicates years after a debt restructuring. Robust standard errors, clustered at country-level, are in parentheses. Sample countries are restricted to countries that have experienced at least one debt restructuring. Sample period is from 1970 to 2007 with some years missing for some countries. See the main text for the data sources. Countries are classified to floating and fixed exchange rate regimes based on Ilzetzki, Reinhart and Rogoff (2015). Countries with “De factor peg,” “Crawling peg,” “Moving band,” and “Managed floating” are classified as countries with fixed exchange rate regimes. Countries with “Freely floating” and “Freely falling” are classified as countries with floating exchange rate regimes. ***, ** and * indicate that corresponding coefficients are statistically significant at 1% level, 5% level, and 10% level, respectively.

Panel B: Commodity Exporters

(1) Imports

Dep. var. is 100 times the cumulative change in the import value from year $t - 1$ to year $t + h$ scaled by real GDP at year $t - 1$										
	$h = 0$	$h = 1$	$h = 2$	$h = 3$	$h = 4$	$h = 5$	$h = 6$	$h = 7$	$h = 8$	$h = 9$
Post-default, Non-commodity exporters	-3.031*** (0.53)	-4.543*** (0.71)	-6.598*** (1.06)	-6.550*** (1.12)	-6.436*** (1.12)	-6.406*** (1.44)	-7.195*** (2.01)	-7.405*** (2.19)	-4.964* (2.85)	-5.595** (2.69)
Post-default, Commodity exporters	-2.381 (2.00)	-3.517** (1.32)	-4.613** (2.16)	-4.376*** (1.11)	-4.944*** (1.80)	-5.365** (2.27)	-3.774 (2.29)	-6.163* (3.60)	-6.172*** (2.27)	-6.768*** (1.91)
Weakly preemptive, Non-commodity exporters	-2.107*** (0.45)	-2.736*** (0.71)	-3.606*** (0.81)	-4.690*** (0.98)	-5.899*** (1.41)	-5.557*** (1.40)	-4.792*** (1.63)	-3.331* (1.88)	-2.259 (1.56)	-0.390 (1.63)
Weakly preemptive, Commodity exporters	-0.489** (0.19)	-2.023*** (0.53)	-1.951*** (0.63)	-4.303*** (1.00)	-6.121*** (1.98)	-4.396*** (1.33)	-5.255*** (1.74)	-5.603*** (1.57)	-6.563*** (1.18)	-6.439** (2.99)
Strictly preemptive, Non-commodity exporters	-2.010*** (0.46)	-2.211** (0.90)	-2.137** (1.02)	-0.829 (1.57)	-1.558 (2.07)	-0.026 (2.34)	-0.750 (2.07)	0.725 (2.58)	0.969 (2.35)	1.845 (3.23)
Strictly preemptive, Commodity exporters	0.047 (0.35)	3.737*** (0.65)	4.757*** (0.80)	2.760** (1.10)	-1.234 (1.13)	-2.950*** (0.97)	-3.682*** (1.00)	-1.527 (1.10)	0.925 (1.46)	0.655 (1.24)
Cyclical component of log GDP per capita at $h = -1$, the dependent variable ($h = -1, -2$), openness ($h = -1, -2$), population ($h = -1, -2$), the import price index ($h = -1, -2$), % change in investment ($h = -1, -2$), % change in the real exchange rate ($h = -1, -2$), and country fixed effects										
R-squared	0.084	0.124	0.174	0.188	0.206	0.222	0.253	0.325	0.383	0.414
Number of countries	47	47	46	46	45	44	44	44	44	43
Observations	1,178	1,134	1,088	1,043	998	953	909	865	821	777
<i>Differences in debt restructuring coefficients</i>										
Post-default (Commodity minus Non-commodity)	0.650 (2.08)	1.027 (1.49)	1.985 (2.39)	2.174 (1.56)	1.492 (1.95)	1.041 (2.65)	3.421 (2.93)	1.242 (4.26)	-1.207 (3.05)	-1.173 (3.26)
Weakly preemptive (Commodity minus Non-commodity)	1.617*** (0.51)	0.714 (0.71)	1.655* (0.85)	0.387 (1.20)	-0.222 (2.31)	1.161 (1.84)	-0.463 (2.32)	-2.272 (2.44)	-4.304** (1.89)	-6.049* (3.35)
Strictly preemptive (Commodity minus Non-commodity)	2.057*** (0.52)	5.948*** (1.05)	6.894*** (1.27)	3.590* (1.82)	0.324 (2.25)	-2.924 (2.52)	-2.932 (2.15)	-2.252 (2.84)	-0.044 (3.07)	-1.191 (3.69)

(2) Exports

Dep. var. is 100 times the cumulative change in the export value from year $t - 1$ to year $t + h$ scaled by real GDP at year $t - 1$										
	$h = 0$	$h = 1$	$h = 2$	$h = 3$	$h = 4$	$h = 5$	$h = 6$	$h = 7$	$h = 8$	$h = 9$
Post-default, Non-commodity exporters	-3.004** (1.41)	-2.159* (1.07)	-3.115*** (0.89)	-4.191*** (1.48)	-2.415 (1.62)	-5.436** (2.52)	-7.490* (4.40)	-8.707 (5.91)	-10.540 (6.59)	-9.620 (6.27)
Post-default, Commodity exporters	-1.944 (1.80)	-2.615 (2.24)	-2.208 (1.66)	-2.713 (1.68)	-3.760** (1.85)	-2.896 (2.08)	-3.265 (2.89)	-4.917 (3.08)	-5.062 (3.28)	-5.090** (1.96)
Weakly preemptive, Non-commodity exporters	-2.501** (0.99)	-2.926** (1.21)	-3.868*** (1.20)	-4.992*** (1.23)	-5.047*** (1.22)	-6.891*** (1.57)	-7.861*** (2.00)	-6.895*** (2.03)	-5.902*** (1.92)	-3.798** (1.83)
Weakly preemptive, Commodity exporters	-0.926** (0.42)	0.129 (0.67)	-0.375 (0.55)	-0.936 (0.67)	-2.322*** (0.55)	-1.607*** (0.58)	-1.310 (0.92)	-1.696 (1.02)	-1.770 (1.11)	0.784 (1.48)
Strictly preemptive, Non-commodity exporters	-1.535* (0.86)	-2.648* (1.46)	-2.937* (1.73)	-3.220 (2.06)	-4.070* (2.11)	-3.355 (2.19)	-4.356 (2.61)	-5.010* (2.93)	-4.291 (2.88)	-1.453 (1.95)
Strictly preemptive, Commodity exporters	3.175*** (0.57)	0.808 (0.81)	-2.377** (1.10)	-0.932 (1.43)	-4.145** (1.56)	-2.391 (1.85)	-0.298 (2.11)	-3.670* (1.92)	-0.966 (2.18)	1.932 (2.82)
Cyclical component of log GDP per capita at $h = -1$, the dependent variable ($h = -1, -2$), openness ($h = -1, -2$), population ($h = -1, -2$), the export price index ($h = -1, -2$), % change in investment ($h = -1, -2$), % change in the real exchange rate ($h = -1, -2$), and country fixed effects										
R-squared	0.118	0.16	0.187	0.217	0.214	0.222	0.248	0.268	0.302	0.361
Number of countries	47	47	46	46	45	44	44	44	44	43
Observations	1,178	1,134	1,088	1,043	998	953	909	865	821	777
<i>Differences in debt restructuring coefficients</i>										
Post-default (Commodity minus Non-commodity)	1.060 (1.73)	-0.456 (1.81)	0.907 (1.77)	1.478 (2.11)	-1.345 (2.20)	2.540 (2.48)	4.225 (3.80)	3.790 (4.84)	5.477 (5.46)	4.530 (5.79)
Weakly preemptive (Commodity minus Non-commodity)	1.575 (1.00)	3.054** (1.26)	3.493*** (1.15)	4.055*** (1.20)	2.725** (1.20)	5.283*** (1.51)	6.550*** (2.20)	5.200** (2.40)	4.132 (2.58)	4.583* (2.61)
Strictly preemptive (Commodity minus Non-commodity)	4.710*** (0.73)	3.455*** (1.21)	0.560 (1.24)	2.288 (1.72)	-0.075 (1.78)	0.964 (1.67)	4.059** (1.95)	1.341 (2.78)	3.325 (3.78)	3.385 (3.85)

Notes: h indicates years after a debt restructuring. Robust standard errors, clustered at country-level, are in parentheses. Sample countries are restricted to countries that have experienced at least one debt restructuring. Sample period is from 1970 to 2007 with some missing period for some countries. See the main text for the data sources. Countries are classified to commodity exporters and non-commodity exporters based on the data on the IMF World Economic Outlook (IMF, 2012). ***, ** and * indicate that corresponding coefficients are statistically significant at 1% level, 5% level, and 10% level, respectively.

Panel C: IMF-supported Programs

(1) Imports

Dep. var. is 100 times the cumulative change in the import value from year $t - 1$ to year $t + h$ scaled by real GDP at year $t - 1$										
	$h = 0$	$h = 1$	$h = 2$	$h = 3$	$h = 4$	$h = 5$	$h = 6$	$h = 7$	$h = 8$	$h = 9$
Post-default, with IMF-supported program	-3.847*** (0.57)	-5.356*** (0.75)	-7.341*** (1.09)	-7.534*** (1.30)	-7.003*** (0.86)	-7.647*** (1.57)	-8.771*** (1.83)	-9.152*** (2.30)	-6.911** (2.91)	-7.474** (3.16)
Post-default, without IMF-supported program	-2.723*** (0.57)	-4.317*** (0.78)	-6.657*** (1.33)	-6.538*** (1.36)	-6.316*** (1.33)	-5.804*** (1.43)	-6.370*** (1.60)	-6.955*** (1.47)	-4.782*** (1.72)	-6.194*** (2.00)
Weekly preemptive, with IMF-supported program	-2.604*** (0.38)	-3.126*** (0.39)	-3.435*** (0.56)	-4.836*** (0.67)	-5.467*** (0.78)	-5.538*** (0.92)	-5.447*** (0.92)	-4.377*** (0.93)	-3.524*** (1.11)	-2.280 (1.88)
Weekly preemptive, without IMF-supported program	-2.007*** (0.44)	-3.265*** (0.60)	-3.944*** (0.83)	-4.746*** (0.87)	-5.975*** (1.52)	-5.026*** (1.59)	-4.604** (1.87)	-3.421 (2.09)	-3.073* (1.77)	-1.426 (1.46)
Strictly preemptive, with IMF-supported program	-2.537 (1.74)	-3.106 (4.76)	-2.470 (4.90)	-4.226 (4.86)	-7.272 (4.36)	-7.166** (3.01)	-6.802*** (2.22)	-4.780** (2.13)	-0.882 (0.84)	3.098 (2.56)
Strictly preemptive, without IMF-supported program	-1.617*** (0.37)	-1.039 (0.69)	-0.707 (0.81)	0.618 (1.09)	-0.006 (1.41)	1.253 (1.82)	0.281 (1.43)	1.503 (2.17)	1.029 (2.01)	1.697 (2.81)
Cyclical component of log GDP per capita at $h = -1$, the dependent variable ($h = -1, -2$), openness ($h = -1, -2$), population ($h = -1, -2$), the import price index ($h = -1, -2$), % change in investment ($h = -1, -2$), % change in the real exchange rate ($h = -1, -2$), and country fixed effects										
R-squared	0.067	0.102	0.156	0.172	0.186	0.199	0.22	0.275	0.331	0.365
Number of countries	47	47	46	46	45	44	44	44	44	44
Observations	1,206	1,160	1,114	1,069	1,023	978	934	890	846	802
<i>Differences in debt restructuring coefficients</i>										
Post-default (Without IMF minus with IMF)	1.303 (0.92)	0.900 (1.29)	1.112 (1.92)	1.278 (2.07)	0.535 (1.95)	1.592 (2.36)	2.683 (2.28)	2.431 (2.26)	2.037 (2.47)	1.494 (2.93)
Weekly preemptive (Without IMF minus with IMF)	0.653 (0.46)	-0.073 (0.68)	-0.496 (1.00)	0.016 (0.96)	-0.645 (1.58)	0.457 (1.78)	1.048 (1.88)	1.203 (2.06)	0.600 (1.67)	0.975 (1.54)
Strictly preemptive (Without IMF minus with IMF)	0.791 (1.73)	1.653 (4.79)	1.314 (4.96)	4.700 (5.00)	7.433 (4.62)	8.941** (3.58)	7.624*** (2.60)	6.730** (3.14)	2.049 (2.48)	-1.205 (4.20)

(2) Exports

Dep. var. is 100 times the cumulative change in the export value from year $t - 1$ to year $t + h$ scaled by real GDP at year $t - 1$										
	$h = 0$	$h = 1$	$h = 2$	$h = 3$	$h = 4$	$h = 5$	$h = 6$	$h = 7$	$h = 8$	$h = 9$
Post-default, with IMF-supported program	-1.107 (1.16)	-0.499 (0.77)	-1.913** (0.83)	-2.217** (1.06)	-1.428 (2.34)	-2.806 (2.94)	-3.364 (3.91)	-4.974 (4.89)	-7.029 (5.61)	-8.021 (6.02)
Post-default, without IMF-supported program	-2.755** (1.37)	-2.357*** (0.53)	-3.539*** (0.87)	-5.143*** (1.38)	-3.849*** (0.86)	-6.537*** (2.14)	-7.762*** (2.78)	-8.323** (3.50)	-8.310** (3.77)	-8.174* (4.27)
Weekly preemptive, with IMF-supported program	-1.987*** (0.53)	-1.640* (0.86)	-2.070* (1.11)	-3.852*** (1.21)	-4.330*** (1.20)	-4.359*** (1.40)	-4.968*** (1.48)	-4.882*** (1.53)	-5.450*** (1.36)	-2.549** (1.17)
Weekly preemptive, without IMF-supported program	-1.904** (0.79)	-2.068*** (0.59)	-3.422*** (0.81)	-4.372*** (0.72)	-3.993*** (0.72)	-5.392*** (1.03)	-5.964*** (1.17)	-4.864*** (1.16)	-4.297*** (1.20)	-4.130*** (1.43)
Strictly preemptive, with IMF-supported program	-0.233 (2.71)	-3.162 (3.11)	-4.069** (1.53)	-4.111* (2.37)	-6.349*** (1.43)	-5.215*** (1.89)	-2.930* (1.64)	-6.188*** (1.41)	-3.915** (1.85)	1.468 (1.76)
Strictly preemptive, without IMF-supported program	-0.801 (0.91)	-1.677 (1.34)	-2.298 (1.50)	-2.382 (1.96)	-3.385* (1.89)	-2.717 (1.84)	-3.633 (2.25)	-4.575* (2.49)	-3.643 (2.42)	-1.380 (1.52)
Cyclical component of log GDP per capita at $h = -1$, the dependent variable ($h = -1, -2$), openness ($h = -1, -2$), population ($h = -1, -2$), the export price index ($h = -1, -2$), % change in investment ($h = -1, -2$), % change in the real exchange rate ($h = -1, -2$), and country fixed effects										
R-squared	0.085	0.118	0.164	0.191	0.167	0.176	0.21	0.229	0.253	0.283
Number of countries	47	47	46	46	45	44	44	44	44	44
Observations	1,206	1,160	1,114	1,069	1,023	978	934	890	846	802
<i>Differences in debt restructuring coefficients</i>										
Post-default (Without IMF minus with IMF)	-2.398 (2.34)	-2.334** (1.03)	-1.974 (1.36)	-3.684* (1.97)	-3.019 (2.33)	-5.002 (3.72)	-5.814 (3.90)	-5.175 (4.09)	-3.367 (3.51)	-1.504 (3.74)
Weekly preemptive (Without IMF minus with IMF)	0.134 (0.91)	-0.530 (0.78)	-1.627 (1.01)	-0.589 (0.94)	0.269 (1.01)	-1.111 (1.60)	-1.091 (1.64)	-0.018 (1.87)	1.218 (1.71)	-1.562 (1.69)
Strictly preemptive (Without IMF minus with IMF)	-0.967 (2.71)	1.246 (3.10)	1.793 (1.51)	1.598 (2.76)	3.091 (2.06)	2.499 (2.24)	-1.007 (2.30)	1.651 (2.79)	0.047 (3.55)	-3.108 (2.81)

Notes: h indicates years after a debt restructuring. Robust standard errors, clustered at country-level, are in parentheses. Sample countries are restricted to countries that have experienced at least one debt restructuring. Sample period is from 1970 to 2007 with some missing period for some countries. See the main text for the data sources. Countries are classified to those with IMF-supported programs and without IMF-supported programs based on various IMF Staff Reports. ***, ** and * indicate that corresponding coefficients are statistically significant at 1% level, 5% level, and 10% level, respectively.

Panel D: Paris Club Restructurings

(1) Imports

Dep. var. is 100 times the cumulative change in the import value from year $t - 1$ to year $t + h$ scaled by real GDP at year $t - 1$										
	$h = 0$	$h = 1$	$h = 2$	$h = 3$	$h = 4$	$h = 5$	$h = 6$	$h = 7$	$h = 8$	$h = 9$
Post-default, with Paris Club	-3.893*** (0.89)	-5.028*** (0.88)	-5.196*** (1.64)	-5.497*** (1.37)	-5.712*** (1.10)	-7.669*** (1.22)	-9.249*** (1.62)	-9.221*** (1.93)	-7.126*** (2.50)	-6.597** (3.12)
Post-default, without Paris Club	-2.903*** (0.60)	-4.833*** (0.81)	-7.318*** (1.36)	-7.356*** (1.30)	-7.080*** (1.30)	-6.509*** (1.55)	-6.701*** (1.88)	-7.449*** (2.10)	-5.441** (2.36)	-6.806** (2.56)
Weekly preemptive, with Paris Club	-2.020*** (0.54)	-3.327*** (0.37)	-3.245*** (0.71)	-4.541*** (0.64)	-5.651*** (1.14)	-5.155*** (0.96)	-5.398*** (1.14)	-4.816*** (1.26)	-4.249*** (1.43)	-3.889* (2.10)
Weekly preemptive, without Paris Club	-2.234*** (0.43)	-3.113*** (0.60)	-3.962*** (0.80)	-4.910*** (0.87)	-5.892*** (1.45)	-5.157*** (1.58)	-4.403** (1.83)	-2.987 (2.06)	-2.639 (1.68)	-0.685 (1.37)
Strictly preemptive, with Paris Club	-1.846* (1.05)	0.0572 (0.88)	0.622 (1.49)	0.362 (2.71)	-6.019 (5.03)	-7.642 (6.18)	-4.975 (7.15)	-1.538 (7.41)	-1.743 (8.34)	2.198 (2.64)
Strictly preemptive, without Paris Club	-1.879*** (0.47)	-2.042** (1.00)	-1.758 (1.07)	-0.389 (1.45)	-0.632 (1.45)	0.949 (2.05)	-0.156 (1.69)	0.947 (1.95)	1.094 (1.95)	2.198 (2.64)
Cyclical component of log GDP per capita at $h = -1$, the dependent variable ($h = -1, -2$), openness ($h = -1, -2$), population ($h = -1, -2$), the import price index ($h = -1, -2$), % change in investment ($h = -1, -2$), % change in the real exchange rate ($h = -1, -2$), and country fixed effects										
R-squared	0.066	0.102	0.157	0.172	0.185	0.198	0.219	0.274	0.331	0.365
Number of countries	47	47	46	46	45	44	44	44	44	44
Observations	1,206	1,160	1,114	1,069	1,023	978	934	890	846	802
<i>Differences in debt restructuring coefficients</i>										
Post-default (Without Paris Club minus with Paris Club)	0.990 (1.10)	0.195 (1.30)	-2.122 (2.39)	-1.859 (2.09)	-1.368 (1.91)	1.161 (2.05)	2.547 (2.02)	1.772 (2.30)	1.685 (2.17)	-0.209 (2.47)
Weekly preemptive (Without Paris Club minus with Paris Club)	-0.214 (0.66)	0.214 (0.64)	-0.717 (1.05)	-0.369 (0.97)	-0.241 (1.67)	-0.002 (1.75)	0.994 (1.88)	1.829 (2.08)	1.610 (1.77)	3.204* (1.85)
Strictly preemptive (Without Paris Club minus with Paris Club)	-0.034 (1.05)	-2.100* (1.23)	-2.380 (1.75)	-0.751 (2.91)	5.387 (5.32)	8.592 (6.50)	4.819 (7.36)	2.485 (7.79)	2.837 (8.59)	None

(2) Exports

Dep. var. is 100 times the cumulative change in the export value from year $t - 1$ to year $t + h$ scaled by real GDP at year $t - 1$										
	$h = 0$	$h = 1$	$h = 2$	$h = 3$	$h = 4$	$h = 5$	$h = 6$	$h = 7$	$h = 8$	$h = 9$
Post-default, with Paris Club	-1.820*** (0.54)	1.657 (2.28)	0.623 (2.26)	0.092 (2.70)	-1.172 (3.19)	-4.418 (3.93)	-4.798 (5.37)	-6.373 (5.87)	-9.234 (6.98)	-9.791 (7.55)
Post-default, without Paris Club	-2.556* (1.31)	-2.934*** (0.85)	-4.224*** (1.02)	-5.663*** (1.40)	-3.662*** (1.06)	-5.767** (2.19)	-6.965** (3.03)	-8.040* (4.17)	-8.559* (4.47)	-8.375 (5.00)
Weekly preemptive, with Paris Club	-1.859*** (0.48)	-1.284 (0.95)	-1.460 (1.24)	-3.623*** (1.21)	-4.318*** (1.23)	-4.322** (1.63)	-4.465*** (1.59)	-4.633*** (1.58)	-5.267*** (1.40)	-3.359*** (1.08)
Weekly preemptive, without Paris Club	-1.911** (0.79)	-2.250*** (0.63)	-3.767*** (0.85)	-4.447*** (0.92)	-4.060*** (0.88)	-5.319*** (1.13)	-6.134*** (1.26)	-4.934*** (1.23)	-4.379*** (1.20)	-3.560** (1.46)
Strictly preemptive, with Paris Club	-1.690 (1.25)	-3.391 (2.71)	-4.639 (3.76)	-6.582 (4.45)	-6.623 (7.59)	-9.092 (9.35)	-11.270 (12.14)	-12.440 (15.03)	-13.840 (16.35)	-1.048 (1.43)
Strictly preemptive, without Paris Club	-0.917 (0.95)	-1.880 (1.33)	-2.204* (1.19)	-2.049 (1.62)	-3.488** (1.53)	-2.531** (1.25)	-2.935** (1.22)	-4.015*** (1.25)	-2.751** (1.05)	-1.048 (1.43)
Cyclical component of log GDP per capita at $h = -1$, the dependent variable ($h = -1, -2$), openness ($h = -1, -2$), population ($h = -1, -2$), the export price index ($h = -1, -2$), % change in investment ($h = -1, -2$), % change in the real exchange rate ($h = -1, -2$), and country fixed effects										
R-squared	0.084	0.119	0.166	0.192	0.167	0.174	0.208	0.228	0.253	0.283
Number of countries	47	47	46	46	45	44	44	44	44	44
Observations	1,206	1,160	1,114	1,069	1,023	978	934	890	846	802
<i>Differences in debt restructuring coefficients</i>										
Post-default (Without Paris Club minus with Paris Club)	-0.735 (1.28)	-4.591 (2.81)	-4.848* (2.81)	-5.755* (3.27)	-2.490 (2.82)	-1.349 (3.67)	-2.167 (4.12)	-1.667 (3.59)	0.675 (3.67)	1.416 (3.62)
Weekly preemptive (Without Paris Club minus with Paris Club)	-0.052 (0.86)	-0.967 (0.94)	-2.308* (1.30)	-0.824 (1.21)	0.258 (1.17)	-0.997 (1.89)	-1.669 (1.94)	-0.302 (1.97)	0.888 (1.73)	-0.201 (1.56)
Strictly preemptive (Without Paris Club minus with Paris Club)	0.774 (1.07)	1.511 (2.24)	2.435 (3.02)	4.533 (3.78)	3.134 (6.89)	6.561 (8.67)	8.336 (11.35)	8.429 (14.26)	11.090 (15.75)	None

Notes: h indicates years after a debt restructuring. Robust standard errors, clustered at country-level, are in parentheses. Sample countries are restricted to countries that have experienced at least one debt restructuring. Sample period is from 1970 to 2007 with some missing period for some countries. See the main text for the data sources. Countries are classified to those with Paris Club restructurings and without Paris Club restructurings based on Das et al. (2012). ***, ** and * indicate that corresponding coefficients are statistically significant at 1% level, 5% level, and 10% level, respectively.

VII. CONCLUSION

The current paper shows that debt restructurings that take place after the country stops making payments to creditors (post-default) are associated with larger declines in exports and imports than those where the restructuring takes place preemptively, without missing payments (or only temporarily missing them). While not the main focus of this paper, we also show that post-default restructurings are associated with sharper and more prolonged declines in GDP, investment and the real exchange rate. The results are supported by panel regressions and local projections estimates, and remain robust across a range of specifications and strategies to deal with endogeneity.

An important policy implication from our findings is that a country's choice of how to restructure its debt can be as consequential as the choice of whether or not to restructure. This adds to a growing body of evidence that cooperative, market-friendly restructurings are associated with better outcomes than less cooperative and more confrontational ones. In fact, many of our specifications suggest that countries that succeed in restructuring without missing payments to creditors are largely able to avoid, or at least attenuate, the costs associated with restructuring. Moreover, results indicate that missing a payment to creditors, even temporarily and while in the midst of an ongoing negotiation, can already lead to significant losses to the debtor in terms of trade and other key outcomes. In practice, countries can face several constraints regarding this choice of how to restructure. For example, they may be hit by the sudden realization of a shock, or in a multiple-equilibria context realize that the "bad" equilibrium just materialized. Depending on the magnitude of these shocks, they may not be able to continue servicing their debt without some immediate relief. Our findings also have implications for the design of official financing—is found to mitigate the adverse impacts following a post-default restructuring on exports—, suggesting that where feasible, long-run costs can be attenuated if this financing (and creditor cooperation) allows countries to restructure without missing payments. It also highlights the costs that countries can face for trying to delay adjustment (and requests for official support) until a default becomes inevitable. These should be important considerations in the design of future debt restructuring strategies, particularly among countries that are more open and reliant on international trade.

Appendix I. Data

I.1. Data Sources

Variable	Data source
• Aggregate trade data	IMF Direction of Trade Statistics
• Private external debt restructuring events and duration	Asonuma and Trebesch (2016)
• Export price level	PWT 8.0 (Feenstra et al., 2015)
• Import price level	PWT 8.0 (Feenstra et al., 2015)
• Terms of trade	PWT 8.0 (Feenstra et al., 2015)
• Population	WDI (World Bank, 2016a)
• Openness	Authors' calculation based on the data from PWT 8.0
• Net exports	PWT 8.0 (Feenstra et al., 2015)
• Investment	PWT 8.0 (Feenstra et al., 2015)
• Real exchange rate	IMF International Financial Statistics
• Real GDP	PWT 8.0 (Feenstra et al., 2015)
• Real GDP per capita, PPP adjusted	PWT 6.3 (Heston et al., 2009)
• Real GDP growth rate	Authors' calculation based on the data from PWT 8.0
• Cyclical component of real GDP per capita	Authors' calculation based on the data from PWT 8.0
• GDP deflator (US)	WDI (World Bank, 2015a)
• Exchange rate regime classification	Ilzetzki, Reinhart and Rogoff (2015)
• Commodity exporter classification	IMF (2012) <i>World Economic Outlook</i>
• Sovereign default S&P data	Standard and Poor's (2006)
• Financial crisis data	Laeven and Valencia (2012)
• Public debt-GDP ratio	<i>Global Financial Development Database</i> (World Bank, 2016b)
• Private credit-GDP ratio	<i>A IMF Historical Public Debt Database</i> (Abbas et al., 2010)
• Countries' credit ratings	the <i>Institutional Investor Magazine</i>
• IMF-supported programs	Various IMF Staff Reports
• Official external (Paris Club) debt restructurings	Das et al., (2012) and Paris Club.

Notes: PWT and WDI stand for the Penn World Table from Feenstra et al., (2015) and the World Development Indicators, respectively.

I.2. Sample countries

The dataset includes only countries experienced debt restructurings. 60 countries experienced 111 episodes of post-default debt restructuring. The list of countries is as follows.

Albania, Argentina, Algeria, Bulgaria, Bosnia and Herzegovina, Bolivia, Brazil, Cote d'Ivoire, Cameroon, Zaire, Congo, Rep., Costa Rica, Cuba, Dominican Republic, Ecuador, Ethiopia, Gabon, Guinea, Gambia, Guyana, Honduras, Croatia, Iraq, Jamaica, Jordàn, Kenya, Liberia, Morocco, Moldova, Madagascar, Macedonia (FYR), Mozambique, Mauritania, Malawi, Niger, Nigeria, Nicaragua, Pakistan, Panama, Panama, Peru, Philippines, Poland, Paraguay, Romania, Russian Federation, Sudan, Senegal, Sierra Leone, Serbia and Montenegro, Sao Tome and Principe, Slovenia, Seychelles, Togo, Turkey, Tanzania, Uganda, Venezuela, Vietnam, Yemen.

26 countries experienced 45 episodes of weakly preemptive debt restructuring. The list of countries is as follows.

Argentina, Belize, Brazil, Chile, Dominica, Ecuador, Grenada, Jamaica, Morocco, Mexico, Malawi, Niger, Panama, Peru, Philippines, Romania, Romania, Senegal, Trinidad and Tobago, Turkey, Ukraine, Uruguay, Venezuela, Yugoslavia, South Africa, and Nigeria.

13 countries experienced 23 episodes of strictly preemptive debt restructuring. The list of countries is as follows.

Algeria, Chile, Dominican Republic, Jamaica, Moldova, Mexico, Nicaragua, Pakistan, Peru, Ukraine, Uruguay, Yugoslavia, and South Africa.

I.3. Sample Events

Sample events of debt restructurings by types i.e., post-default, weakly preemptive and strictly preemptive are summarized in Table A1.

Table A1: Debt Restructuring Events (continues to the next page)

No.	ISO	Country name	Debt restructuring events		
			Post-default	Weakly preemptive	Strictly preemptive
1	ALB	Albania	1991-1995		
2	ARG	Argentina	1982-1985, 1988-1993, 2001-2005	1985-1987	
3	BGR	Bulgaria	1990-1994		
4	BIH	Bosnia and Herzegovina	1992-1997		
5	BLZ	Belize		2006-2007	
6	BOL	Bolivia	1980-1988, 1988-1993		
7	BRA	Brazil	1986-1988, 1989-1992, 1989-1994	1982-1983, 1983-1984, 1984-1986	
8	CHL	Chile		1983, 1983-1984, 1984-1986	1986-1987, 1990
9	CIV	Cote d'Ivoire	1983-1998, 2000-2010		
10	CMR	Cameroon	1985-2003		
11	COD	Zaire (Congo, Demo. Rep.)	1975-1980, 1982-1983, 1983-1984, 1984-1985, 1985-1986, 1986-1987, 1987-1989		
12	COG	Congo, Rep.	1983-1988, 1988-2007		
13	CRI	Costa Rica	1981-1983, 1984-1985, 1986-1990		
14	CUB	Cuba	1983, 1984, 1985		
15	DMA	Dominica		2003-2004	
16	DOM	Dominican Republic	1982-1986, 1987-1994, 2004-2005 (Bank debt)		2004-2005
17	DZA	Algeria	1993-1996		1990-1992
18	ECU	Ecuador	1986-1995, 1999-2000, 2008-2009	1982-1983, 1983-1984, 1984-1985	
19	ETH	Ethiopia	1990-1996		
20	GAB	Gabon	1986-1987, 1989-1994, 1989-1994		
21	GIN	Guinea	1985-1988, 1991-1998		
22	GMB	Gambia, The	1984-1988		
23	GRD	Grenada		2004-2005	
24	GUY	Guyana	1982-1992, 1993-1999		
25	HND	Honduras	1981-1989, 1990-2001		
26	HRV	Croatia	1992-1996		
27	IRQ	Iraq	1986-2006		
28	JAM	Jamaica	1990	1986-1987	1977-1978, 1978-1979, 1980-1981, 1983-1984, 1984-1985
29	JOR	Jordan	1989-1993		
30	KEN	Kenya	1992-1998		
31	LBR	Liberia	1980-1982		
32	MAR	Morocco	1983-1986	1985-1987, 1989-1990	
33	MDA	Moldova	2001-2004 (Gazprom debt)		2002 (Eurobond)
34	MDG	Madagascar	1981, 1982-1984, 1985-1987, 1987-1990		
35	MEX	Mexico		1982-1983, 1984-1985, 1986-1987, 1988-1990	1987-1988
36	MKD	Macedonia, FYR	1992-1997		
37	MOZ	Mozambique	1983-1991		
38	MRT	Mauritania	1992-1996		
39	MWI	Malawi	1987-1988	1982-1983	
40	NER	Niger	1986-1991	1983-1984, 1984-1986	

Notes: The data is from Asonuma and Trebesch (2016).

Table A1: Debt Restructuring Events (continued from the previous page)

No.	ISO	Country name	Debt restructuring events		
			Post-default	Weakly preemptive	Strictly preemptive
41	NGA	Nigeria	1982-1983 (x2), 1983-1984, 1986-1987, 1987-1988, 1989-1991	1988-1989	
42	NIC	Nicaragua	1978-1980, 1983-1984, 1985-1995		1981, 1982
43	PAK	Pakistan	1998-1999 (Bank debt)		1999 (Bonds)
44	PAN	Panama	1987-1994 (Bond exchange, add-on deal), 1987-1996	1984-1985	
45	PER	Peru	1984-1997	1983	1979-1980
46	PHL	Philippines	1983-1986	1983-1986, 1988-1990, 1990-1992	
47	POL	Poland	1982, 1981-1982, 1982-1983, 1983-1984, 1986, 1986-1988, 1988-1989, 1989-1994		
48	PRY	Paraguay	1986-1993		
49	ROM	Romania	1981-1982	1983, 1986	
50	RUS	Russian Federation	1991-1997, 1998-1999 (GKO), 1998-2000 (London Club, PRINs & IANs), 1999-2000 (MinFin3)		
51	SDN	Sudan	1975-1985		
52	SEN	Senegal	1981-1984, 1992-1996	1985, 1990	
53	SLE	Sierra Leone	1980-1995		
54		Serbia and Montenegro	1992-2004		
55	STP	Sao Tome and Principe	1984-1994		
56	SVN	Slovenia	1992-1996		
57	SYC	Seychelles	2008-2010		
58	TGO	Togo	1987-1988, 1991-1997		
59	TTO	Trinidad and Tobago		1988-1989	
60	TUR	Turkey	1976-1979 (x2)	1981, 1981-1982	
61	TZA	Tanzania	1981-2004, 1979-1993		
62	UKR	Ukraine		1999 (ING debt/Merill Lynch), 2000 (Global exchange)	1998 (OVDPs, non-residents), 1988 (Chasee loan)
63	URY	Uruguay		1983, 1985-1986	1987-1988, 1989-1991, 2003
64	VEN	Venezuela, RB	1983-1986, 1989-1990	1986-1987	
65	VNM	Vietnam	1982-1997		
66	YEM	Yemen, Republic of	1983-2001		
67		Yugoslavia		1983, 1984-1985, 1987-1988	1983-1984
68	ZAF	South Africa		1985-1987	1989, 1992-1993
69	ZMB	Zambia	1983-1994		

Notes: The data is from Asonuma and Trebesch (2016).

Appendix II. Exports and Imports in Restructuring Countries

Figure A.1: Trade Dynamics around Preemptive Debt Restructuring

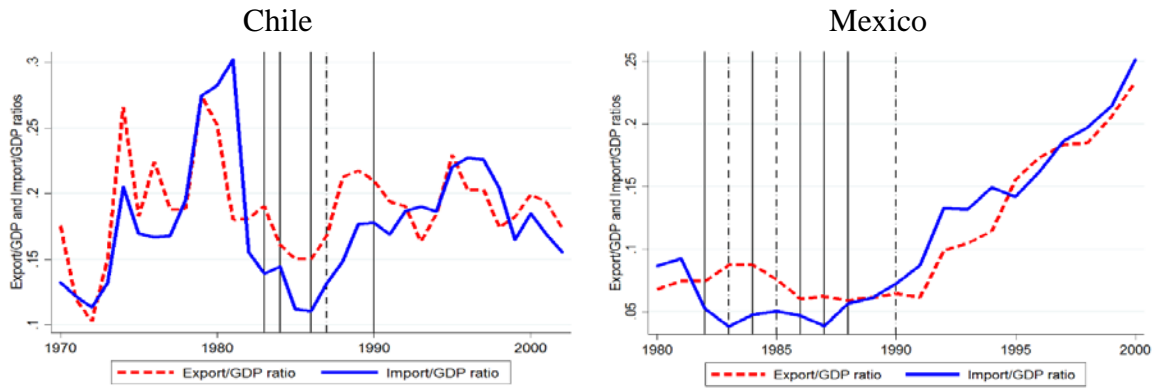
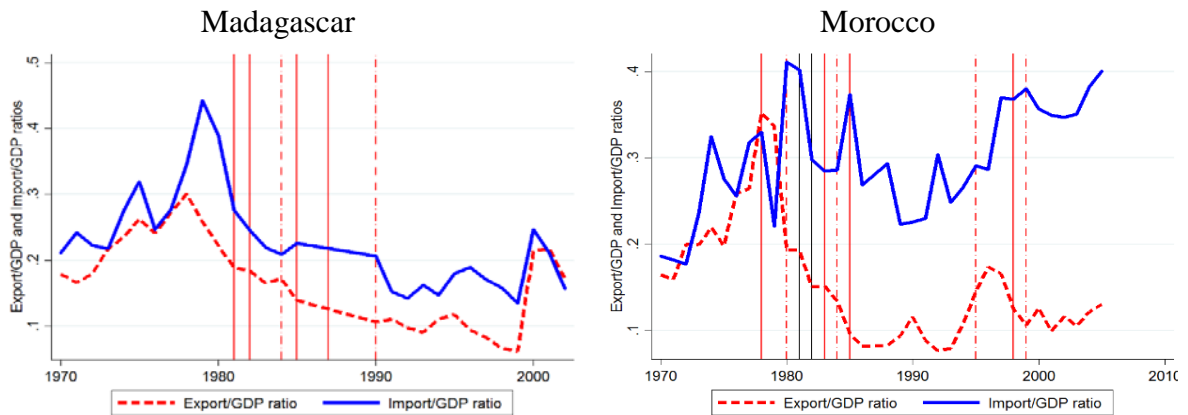


Figure A.2: Trade Dynamics around Post-Default Debt Restructuring



Notes: Solid red lines and dashed red lines indicate starting and ending years of post-default debt restructurings. Solid black lines and dashed black lines indicate starting and ending years of preemptive debt restructurings.

Sources: Asonuma and Trebesch (2016, restructurings), IMF DOT (exports, imports) and World Bank World Development Indicators (US-dollar denominated GDP).

Appendix III. Local Projections for Other Variables using AIPW Methods

Table A.2. reports results from the AIPW estimator for net exports, investment and GDP, respectively. The results confirm robustness of our benchmark results (Table 4) with dealing with endogeneity issues. Similar to baseline (OLS) case, net exports improve substantially after post-default restructurings over prolonged period. This is consistent with estimation results on imports and exports. On the contrary, countries with post-default restructurings suffer a severe and protracted decline in both investment and GDP.

Table A.2: Local Projections of Other Variables, AIPW

Panel A: Net exports										
Dep. var. is 100 times the cumulative change in the net export value from year $t - 1$ to year $t + h$ scaled by real GDP at year $t - 1$										
	$h = 0$	$h = 1$	$h = 2$	$h = 3$	$h = 4$	$h = 5$	$h = 6$	$h = 7$	$h = 8$	$h = 9$
Post-default	0.380 (0.78)	2.350*** (0.92)	2.676*** (1.14)	2.611** (1.34)	3.510*** (1.33)	2.627** (1.18)	1.365 (1.43)	-0.858 (1.58)	-2.623** (1.44)	-3.051** (1.69)
Weakly preemptive	1.025* (0.76)	1.954** (0.91)	1.365 (1.12)	2.012* (1.30)	2.300** (1.33)	1.908** (1.15)	2.072* (1.39)	1.367 (1.57)	1.505 (1.50)	0.950 (1.69)
Strictly preemptive	1.205* (0.75)	0.639 (0.88)	1.203 (1.11)	0.004 (1.30)	-0.827 (1.32)	-0.992 (1.14)	-0.826 (1.38)	-2.51 (1.56)	-0.675 (1.50)	-1.124 (1.68)
Number of countries	47	47	47	47	47	47	46	46	45	44
Observations	1077	1032	987	941	894	847	801	755	712	671

Panel B: Investment										
Dep. var. is 100 times the cumulative change in investment from year $t - 1$ to year $t + h$ scaled by real GDP at year $t - 1$										
	$h = 0$	$h = 1$	$h = 2$	$h = 3$	$h = 4$	$h = 5$	$h = 6$	$h = 7$	$h = 8$	$h = 9$
Post-default	-3.007*** (0.32)	-4.607*** (0.46)	-4.652*** (0.55)	-4.515*** (0.64)	-4.422*** (0.76)	-4.111*** (0.84)	-5.510*** (0.93)	-6.363*** (1.00)	-6.107*** (0.98)	-5.578*** (0.90)
Weakly preemptive	-1.045*** (0.32)	-1.654*** (0.49)	-1.609*** (0.56)	-1.757*** (0.65)	-2.367*** (0.78)	-3.553*** (0.86)	-2.968*** (0.95)	-3.924*** (1.01)	-3.322*** (1.02)	-1.363* (0.93)
Strictly preemptive	-0.192 (0.31)	-0.229 (0.46)	0.054 (0.55)	2.051*** (0.65)	2.107*** (0.76)	3.758*** (0.86)	5.465*** (0.96)	7.073*** (1.02)	1.774** (1.00)	7.282*** (0.90)
Number of countries	47	47	47	47	47	47	46	46	45	44
Observations	1077	1032	987	941	894	847	801	755	712	671

Panel C: GDP										
Dep. var. is 100 times the cumulative change in real GDP from year $t - 1$ to year $t + h$ scaled by real GDP at year $t - 1$										
	$h = 0$	$h = 1$	$h = 2$	$h = 3$	$h = 4$	$h = 5$	$h = 6$	$h = 7$	$h = 8$	$h = 9$
Post-default	-1.048*** (0.34)	-2.406*** (0.46)	-2.533*** (0.55)	-2.096*** (0.72)	-2.257*** (0.94)	-3.362*** (1.17)	-3.446*** (1.34)	-5.274*** (1.53)	-4.858*** (1.71)	-5.514*** (1.72)
Weakly preemptive	-1.404*** (0.34)	-0.324 (0.45)	0.748* (0.55)	0.970* (0.73)	-0.309 (0.96)	-1.686 (1.17)	-0.748 (1.35)	-1.533 (1.53)	-0.645 (1.70)	1.173 (1.72)
Strictly preemptive	-1.875*** (0.34)	-3.301*** (0.43)	-2.445*** (0.54)	-0.665 (0.72)	-2.036** (0.94)	-1.075 (1.14)	2.014* (1.33)	3.348** (1.52)	-0.438 (1.69)	4.922*** (1.67)
Number of countries	47	47	47	47	47	47	46	46	45	42
Observations	1059	1014	969	923	876	829	783	737	694	653

Notes: Panels A, B and C show local projections of 100 times $(NetExport_{t+h} - NetExport_{t-1})/GDP_{t-1}$, 100 times $(Investment_{t+h} - Investment_{t-1})/GDP_{t-1}$, and 100 times $(GDP_{t+h} - GDP_{t-1})/GDP_{t-1}$, respectively, where h indicates years after the start of debt restructurings. The set of control variables is the same with Table 3: a constant term, country fixed effects, lags of import (or export) growth rates, lags of real GDP growth rates, and cyclical component of real GDP. Robust standard errors, clustered at country-level, are in parentheses. Sample countries are restricted to countries that have ever experienced debt restructuring(s). Sample period is from 1970 to 2007 with some missing period for some countries. See the main text for the data sources. ***, ** and * indicate that corresponding coefficients are statistically significant at 1% level, 5% level, and 10% level, respectively.

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