

Appendix I. Database on debt restructurings with Chinese and other creditors

This appendix section presents a detailed overview on how the datasets on restructurings with private, Paris Club and Chinese creditors were constructed.

Restructurings with state-owned Chinese creditors: The starting point for our data compilation is our own work in Horn et al. (2021), which we cross-check, supplement, and update by drawing on a variety of new academic sources and policy reports. We make extensive use of AidData’s newly released Chinese Official Finance Database 2.0 (Custer et al. 2021, Malik et al. 2021) that provides data on Chinese debt restructurings between 2000 and 2017. To update the database until 2021, we draw on academic work by Acker et al. (2020 and 2021) on Chinese debt restructurings with African countries, on the case studies presented in Bon and Cheng (2021) and Gardner et al. (2020) as well as on two reports by the Rhodium Group (Kratz et al. 2019 and 2020). To verify and complement the information found in this literature, we also consult IMF and World Bank reports.

Rescheduling agreements under the Debt Service Suspension Initiative (DSSI): As part of the G20, China has joined the DSSI. In contrast to Paris Club members, however, it has not disclosed with which debtor countries it has concluded DSSI rescheduling agreements. To identify Chinese rescheduling agreements under the DSSI we therefore need to rely on information provided by the World Bank and the Paris Club. For 2020, the World Bank’s DSSI website provides detailed information on debt service payments deferred by each bilateral creditor. For 2021, no such data is available yet. To identify Chinese DSSI agreements in this year, we make use of the fact that the DSSI requires comparability of treatment from all bilateral creditors. More specifically, we assume that all eligible countries with debt service obligations towards China Ex-Im Bank or the Ministry of Commerce are granted a debt service suspension by China when they reach an agreement with the Paris Club.

Content of database: Whenever possible, we do not only construct dummy variables for the occurrence of a restructuring but use our sources to collect information on the Chinese creditor entity and on the restructuring terms. In contrast to other datasets, however, we do not provide estimates of the *scope of debt relief* associated with Chinese debt restructurings. The academic literature has defined debt relief as the reduction in the net present value of the

debtor's outstanding obligations due to the restructuring agreement (see Sturzenegger and Zettelmeyer 2007 or Cruces and Trebesch 2013 for details). Quantifying debt relief or haircuts in this net present value sense requires detailed information on discount rates and on the exact loan terms prior and after the restructuring, which are not available for most Chinese debt restructuring deals.¹

Dealing with small, “symbolic” restructurings and debt cancellations: As explained in the main text, we identify 149 cases of “symbolic” restructuring of Zero-Interest Loans with China's Ministry of Commerce, which are not included in the main analysis to avoid bias and noise.

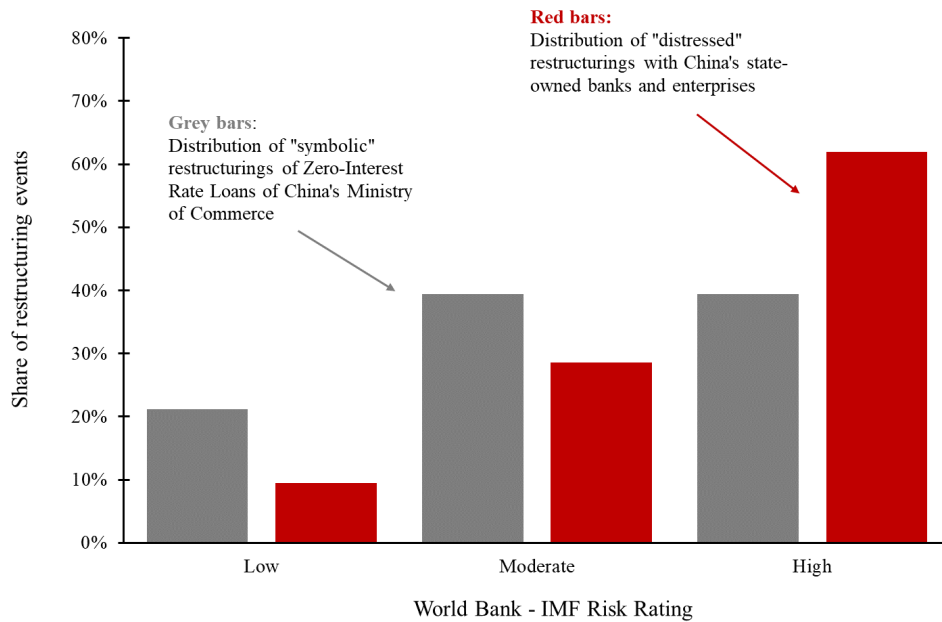
Debt restructurings of Zero-Interest Loans constitute a special aid program of the Chinese government and often entail nominal debt write-offs (Gardner et al. 2020; Acker et al. 2020). These debt cancellations by the Ministry of Commerce, however, are likely to offer little insights into the debt restructuring approaches of China's state-owned banks. First, Zero-Interest Loans tend to be very small: The average face value of a ZIL is 12.9 mn USD and on aggregate they constitute less than 0.5 percent of China's total foreign lending (Horn et al. 2021). This is in sharp contrast to the large loans extended by China Ex-Im Bank and CDB which account for around 75 percent of China's total overseas lending (Horn et al. 2021).

Furthermore, restructurings of Zero-Interest Loans are often linked to high-level diplomatic visits and occur in regular intervals, largely independent of the underlying macroeconomic fundamentals. This is confirmed in Figures A1 and A2 which show that restructurings of Zero-Interest Loans are only weakly related to macroeconomic fundamentals and sovereign risk. In contrast, distressed restructuring with Chinese creditors tend to occur when the debtor countries (i) are classified as risky by the IMF and World Bank's debt sustainability risk ratings and (ii) when they receive low sovereign ratings by international credit ratings agencies.

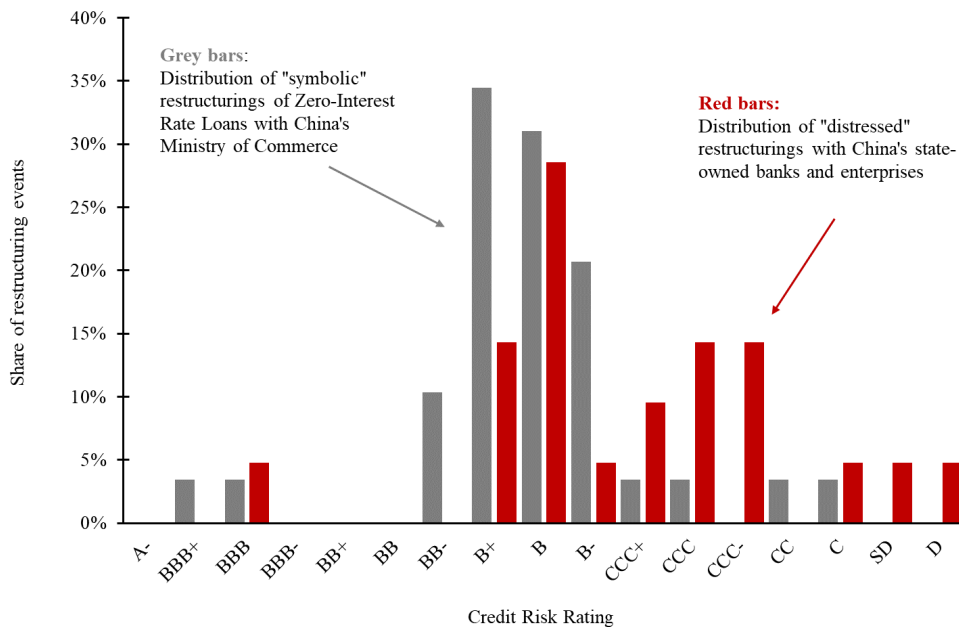
¹ See Gardner et al. (2020) and Bon and Cheng (2021) for haircut estimates in selected case studies.

Figure A1. Chinese restructuring events and risk ratings

Panel A. IMF and World Bank Debt Sustainability Ratings



Panel B. Credit Rating Agency risk ratings

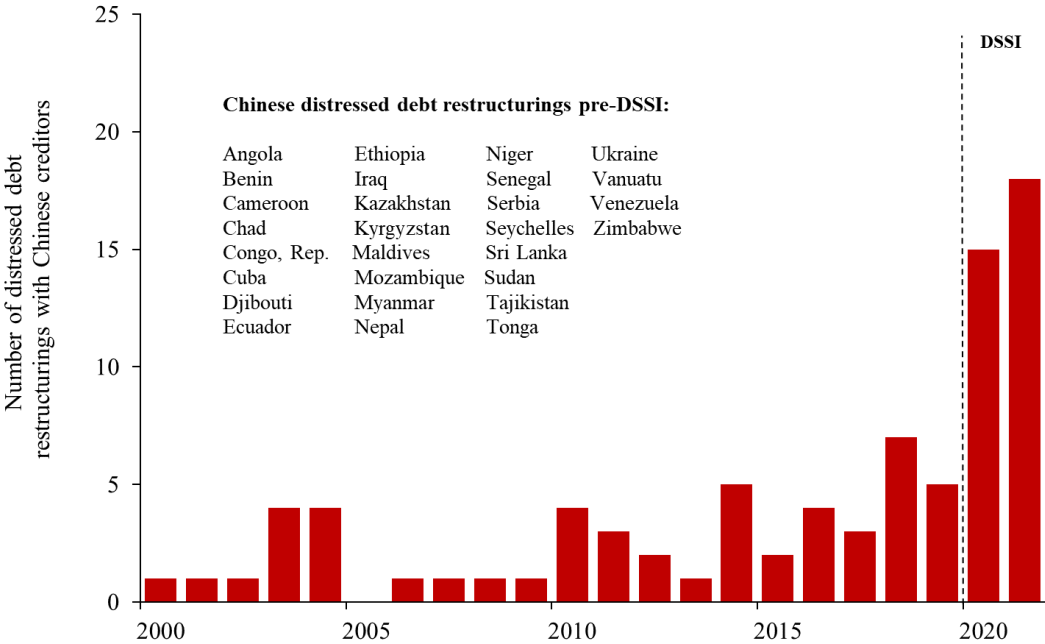


Note: This figure shows the incidence of Chinese debt restructurings across debtor country risk ratings. Red bars indicate the occurrence of “distressed” restructurings with Chinese state-owned banks and enterprises, whereas grey bars indicate the occurrence of “symbolic” debt restructurings with China’s Ministry of Commerce. Panel A shows the distribution across World Bank and IMF Risk Ratings for 54 restructuring cases in low-income countries between 2009 and 2019 for which the risk ratings are available. Panel B shows the distribution of events across rating agency credit risk ratings for 56 cases since 2002 for which rating data is available. Data on credit risk ratings is from Moody’s, Fitch and Standard & Poor’s. If more than one rating is available, we take an unweighted average. Countries participating in the DSSI in 2020 and 2021 are excluded from both panels.

Since restructurings of Zero-Interest Loans are largely inconsequential for debt sustainability in the recipient countries due to their small size and since they are not correlated to actual economic or financial distress in the recipient countries, we exclude these events from our main analysis.² Similarly, we also exclude 28 Chinese rescheduling events under the Debt Service Suspension Initiative that were agreed with countries that are not considered to be “in debt distress” or “at high risk of debt distress” according to the IMF and World Bank Debt Sustainability Framework to avoid inflating our measures of the incidence of restructuring activity.

Once we exclude symbolic debt restructurings, we are left with 84 Chinese restructuring events that are linked to periods of financial distress in 39 different borrowing countries (Figure A2). All episodes entail the restructuring of liabilities owed to Chinese state-owned banks and enterprises, most importantly China Export-Import Bank and China Development Bank.

Figure A2. Distressed debt restructurings with Chinese lenders, 2000 - 2021



Note: This figure shows the number of countries that have completed debt restructurings with Chinese state-owned entities and banks according to our database. See text for sources and details.

²See section 5 in Acker et al. (2020) for a detailed discussion of ZIL restructurings and cancellations.

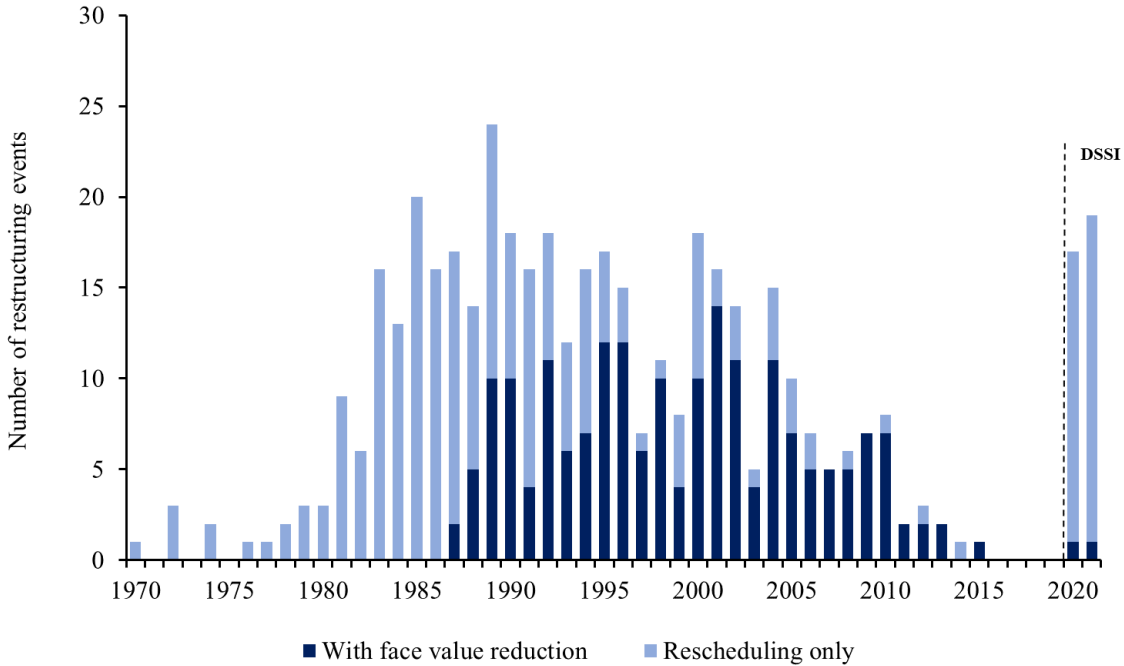
Caveats: Given the lack of a standardized official source on Chinese credit events, our tally of Chinese debt restructurings is likely to be incomplete. An omission that deserves particular attention are restructurings of recipient country SOEs and SPVs for which hardly any data is publicly available and which constitute an increasingly important share of China's outbound lending (Horn et al. 2021; Malik et al. 2021). In the same way that off-balance sheet debt of these entities often remains "hidden" from official debt statistics, debt restructurings with these entities are also likely to go unreported. Our tally for credit events with the Chinese government and its state-owned entities therefore needs to be regarded as a lower bound.³

Data on credit events with Paris Club creditors: To add restructurings with the Paris Club, we use data from Cheng et al. (2019) until 2015 and update their database by using the Paris Club website and World Bank information on the implementation of the DSSI. As for Chinese creditors, we also exclude Paris Club reschedulings with DSSI eligible countries that are not considered to be "in debt distress" or "at high risk of debt distress" under the World Bank and IMF debt sustainability framework. To distinguish between Paris Club agreements that entailed only rescheduling and agreements that also implemented face value reductions, we draw on the dataset by Das et al. (2012), which we again update using the Paris Club website. Figure A3 shows our tally of Paris Club restructurings between 1970 and today.

Data on debt restructurings with private creditors: To identify restructurings with private external creditors (foreign bondholders and banks) we use the database by Asonuma and Trebesch (2016). Since 1975, their data identifies a total of 192 debt restructurings with 74 developing and emerging countries. To assess the scope of debt relief, we add information from Cruces and Trebesch (2013) and from the updated dataset of Asonuma et al. (2017) and Asonuma and Trebesch (2016). Specifically, we use their dummy variable on whether debt restructurings involved face value debt reductions in contrast to agreements that only reschedule debt payments. Figure A4 shows the resulting data and depicts the number of countries that completed a debt restructuring with private creditors in any given year since 1975.

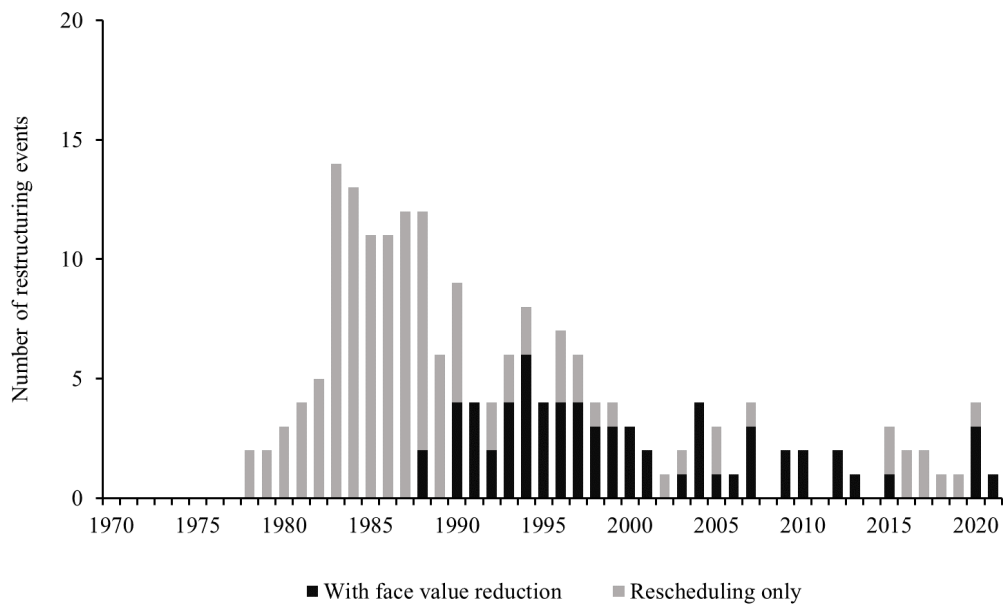
³ Data on principal and interest arrears from the World Bank's International Debt Statistics offers corroborative evidence: In several countries that have large bilateral debts to China, arrears to official creditors have been rising sharply, although no credit events or restructuring agreements have been made public.

Figure A3. Rescheduling vs Debt Write-Offs: Paris Club



Note: This figure shows the number of countries that restructured debt with Paris Club creditors between 1970 and 2021. Deals that implemented a face value reduction are shown in dark blue, agreements that only rescheduled payments are shown in light blue. See text for sources and details.

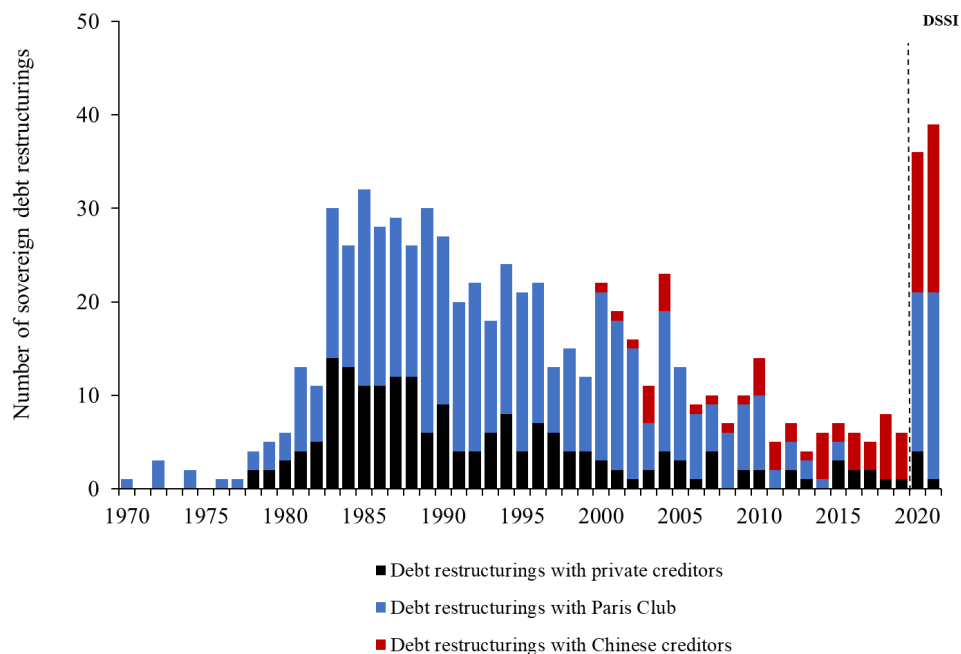
Figure A4: Rescheduling vs Debt Write-Offs: Private creditors



Note: This figure shows the number of countries that restructuring debt with private creditors (bonds and banks) between 1970 and 2021. Deals that implemented a face value reduction are shown in black, agreements that only rescheduled payments are shown in grey. See text for sources and details.

Appendix II. Additional figures and results

Figure A5. Sovereign debt restructurings with official and private creditors, 1970 - 2020



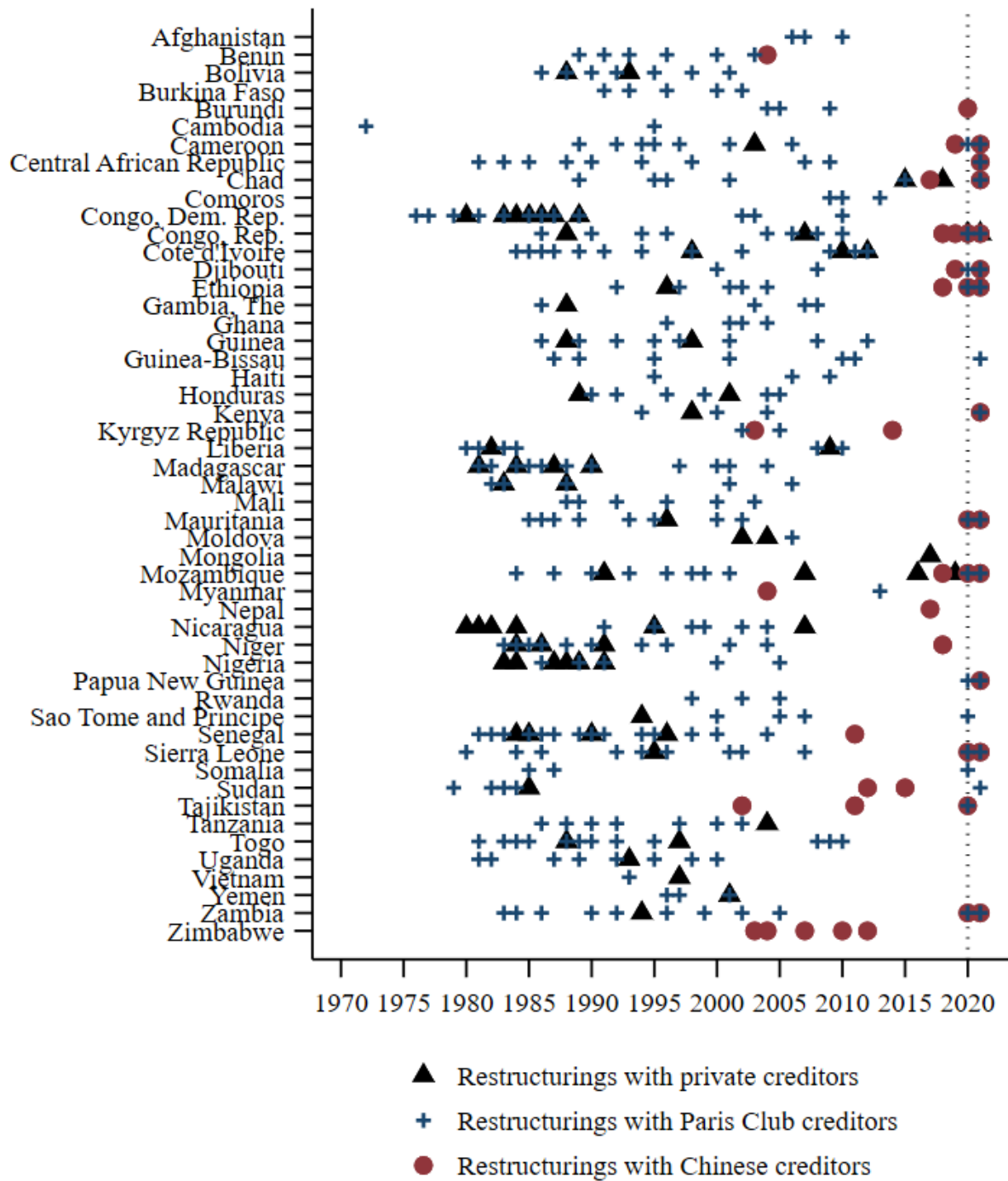
Note: This figure shows the number of developing and emerging market countries that restructured with private creditors (black bars), Paris Club creditors (blue bars) and Chinese state-owned entities (red bars; data available since 2000). We exclude “symbolic” restructurings with the Chinese Ministry of Commerce and DSSI reschedulings with countries that are not in or at high risk of debt distress. See text for a discussion of details and sources.

Table A2. Incidence of credit events by creditor over time

	<u>Average number of debt restructurings per year</u>				
	1980 - 1989	1990 - 1999	2000 - 2009	2010 - 2019	2020 & 2021
Private creditors	9.1	5.6	2.2	1.4	2.5
Paris Club	14	13.8	10.3	1.8	18.5
China			1.5	3.6	16.5

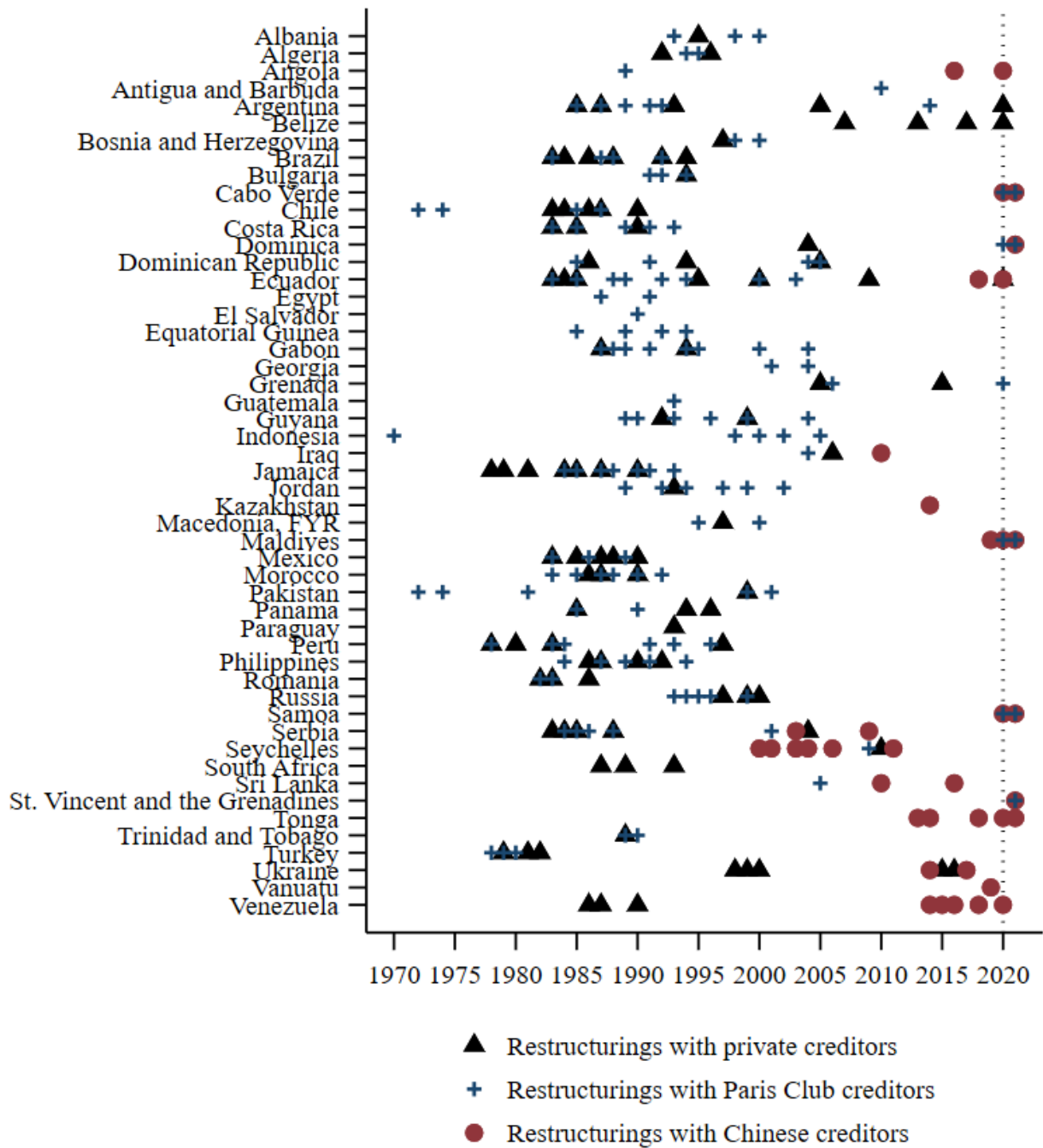
Note: This table shows the average number of countries per year that completed debt restructurings with private creditors, Paris Club creditors and with Chinese state-owned banks and enterprises across different decades. Incidence numbers presented in the table exclude “symbolic” debt restructurings of Zero-Interest Loans with the Chinese Ministry of Commerce and DSSI reschedulings with countries that are not in or at high risk of debt distress. See text for a discussion of details and sources.

Figure A6. Country profiles, 1970-2021, all low-income developing countries



Note: This figure shows completed debt restructuring events. Data on Chinese restructurings starts in 2000. The sample consists of all low-income developing countries. The dotted line marks the onset of the DSSI.

Figure A7. Country profiles, 1970-2021, all emerging market countries



Note: This figure shows completed debt restructuring events. Data on Chinese restructurings starts in 2000. The sample consists of all emerging market economies. The dotted line marks the onset of the DSSI.

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