

China's debt relief actions overseas: patterns, interactions with other creditors and macroeconomic implications*

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Abstract

This paper explores a novel database of 140 Chinese debt restructurings overseas between 2000 and 2019. It uncovers a number of salient features of the restructuring terms that China has offered in the past and the ways in which China has interacted with other types of creditor and the International Monetary Fund (IMF). The majority of debt relief operations have been executed through directly forgiving debt rather than rescheduling with maturity extension and interest rate reduction. Interestingly, a large number of Chinese debt relief operations took place within a two-year timeframe of similar actions by Paris Club or private sector creditors and in the context of financial assistance from the IMF. The paper uses local projections to identify the macroeconomic implications of Chinese debt relief operations and finds that growth effects are not pronounced once debt relief by other creditors and IMF financing are controlled for. Finally, it shows that varying restructuring terms lead to different macroeconomic effects and sovereign debt trajectories.

Keywords: China, sovereign debt restructuring, Paris Club.

JEL classification: F33, F34, H63.

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1. Introduction

Sovereign debt crises and debt restructurings in developing economies have long attracted the attention in academia and the policy world. Today, the topic has become even more relevant in the context of the Covid-19 pandemic. External financing conditions for many low-income countries have worsened due to the economic and financial strains of the pandemic. The situation is worse for some countries that face debt overhang. In response, G20 countries, supported by the Paris Club, launched in mid-2020 a Debt Service Suspension Initiative (DSSI) to provide debt relief to low-income countries so that they can better address their healthcare crisis.

Historically, creditor countries of the Paris Club and international banking groups are the main financiers of developing countries, and thus are the main contributors to debt relief actions. Das et al (2012) documented 186 debt exchanges with foreign banks and bondholders, and 447 bilateral debt relief agreements with the Paris Club over six decades from 1950 to 2010. Since the 1990s, new actors have emerged and have changed the landscapes of sovereign debt restructurings. On the one hand, more and more countries have used international capital markets to secure external financing. Therefore, restructuring a sovereign state's commercial liabilities would require dealing with a myriad of bondholders rather than a handful of big banks. On the other hand, as regards sovereign states' bilateral official debt, the focus of our paper, some large emerging market economies have extended more sovereign credit to low- and middle-income countries, reducing the relative importance of Paris Club.³ The Paris Club has been in fact inactive since 2015. One needed to wait until March 2020 to see a cancellation of \$1.4 billion of Somali debt by the Paris Club under the debt relief initiative for Heavily Indebted Poor Countries (HIPCs).

This paper focuses on China's role as a bilateral official creditor and a provider of debt relief actions. The country stands out from two aspects. First, China is still not a permanent member of the Paris Club and only participated in Paris Club negotiation sessions or in monthly "Tours d'Horizon" on an ad hoc basis. It is thus not bound by the working method and principles of the Paris Club. In theory, China could be solicited to provide a country that has previously received debt relief from Paris Club creditors with a relief of a comparable size, via the comparability of treatment clause, one of the fundamental principles guiding Paris Club operations. As a non-member, China does not have the obligation to do so and can pick and choose. We are thus interested to explore whether China's decision to join or not a Paris Club operation could affect the restructuring terms that China offers and could affect the macroeconomic outcome of a restructuring. Our new dataset will allow us to understand and control for the dynamics between China, the Paris Club and other types of creditor through past restructuring events.

³ The 2004 debt restructuring in Iraq is a good example. Paris Club creditors as a group cancelled 80% of their claims on the country, but their total claims (\$38.9 billion) only represented about a third of the country's total sovereign debt estimated at nearly \$120 billion in 2004. About \$60 to \$65 billion of Iraqi external debt was owed to 26 countries that were not Paris Club members.

Second, official credit from China⁴ to developing countries has expanded quickly since a decade, dwarfing the financing of any other creditors, including Paris Club and non-Paris club lenders, and multilateral institutions. Horn et al (2019) estimated that 107 countries in the world owed China \$392 billion in 2017. The beneficiaries from Chinese outbound credit include some countries that traditional bilateral lenders are more reluctant to assist due to human rights, political considerations or debt sustainability concerns.⁵ Therefore, the literature on other types of restructurings only provides very limited insight into how China has dealt with debt relief measures. And lack of authoritative public information on Chinese official lending and debt restructuring operations has often been a common challenge that many researchers have faced (see Reinhart (2019), Horn et al (2019) and IMF (2020)).

Building upon the limited literature on Chinese debt restructurings overseas, we aim at polishing and enriching the data on China's debt relief effort in developing and less-developed countries from three angles. We first provide an updated database on sovereign debt restructurings involving China, building upon Bon and Cheng (2020) who stocktake most recent restructuring cases and a thorough review of past restructuring events since 2000, based on various sources. Our new database contains 140 cases between 2000 and 2019 that took place in 64 countries. In comparison, Bluhm et al (2018) offered 88 cases between 2001 and 2014 and Hurley et al (2018) extended this previous list to 2017 with 95 events. As detailed in Section 2, we used extensively news search and scrutinised debt restructuring events against IMF documentation. However, at the current stage, constructing an exhaustive database of all Chinese debt restructurings seems unachievable, given the opacity of the processes and non-disclosure requirements in some negotiations as regards the terms of the restructured facilities, in particular.

Based on this enriched database, we then generate insightful stylised facts on China's debt relief actions. Bon and Cheng (2020) already analysed eight case studies, which shed light on some characteristics of debt restructurings involving China in most recent years. Here, our scrutiny of a large number of historical events allows us to extract systematic evidence across countries. For instance, it seems that China mostly extended debt relief out of its own initiative. The Forum on China-Africa Cooperation (FOCAC) constitutes the major platform to discuss and grant debt relief to African countries. In terms of restructuring terms, China primarily offered debt forgiveness – cancelling arrears or principal value of the outstanding debt – more than debt rescheduling through maturity extension and interest rate adjustments. Half of China's relief measures were granted in the context of an IMF financial assistance programme, in particular the Poverty Reduction and Growth Facility (PRGT) for HIPC. In addition, 60 out of 140 restructuring events offered by China occurred within a four-year time window around a Paris Club operation (two years before and after). However, the total amount of debt relief granted by China is generally lower than what Paris Club agreements offered.

Finally, we used local projections (Jordà (2005)) to identify the macroeconomic effect of China's relief measures on recipient countries. We conclude that the growth effects of Chinese debt restructurings are generally not as strong as those of Paris

⁴ Throughout the paper, official credit from China includes loans extended by the Chinese central government and policy banks, such as the Export-Import Bank of China (China ExIm Bank) and China Development Bank (CDB).

⁵ China developed its own debt sustainability framework for the participating countries of the Belt and Road Initiative in April 2019. See: <http://m.mof.gov.cn/czxw/201904/P020190425513990982189.pdf>

Club agreements, but that different restructuring terms that China offers also entail diverging macroeconomic implications. Real GDP growth did not seem to pick up after the restructuring and it may even go down if China offers debt rescheduling instead of debt cancellation. Subdued domestic investment and fiscal policy tightening seem to be the main factors behind the unfavourable growth prospects. In the cases of debt rescheduling, public debt continued to grow whereas countries having benefitted from arrears cancellation enjoyed the most significant reduction in debt service payments. We also note that China is less likely to provide new credit when debt rescheduling is provided instead of debt forgiveness. Our empirical exercise is, however, constrained by the limited number of observations in our database, especially in comparison with 60 years of Paris Club operations.

Our work is closely related to a growing literature on Chinese outbound credit and sovereign debt sustainability in recipient countries. This strand of literature has mostly focused on development issues, and studied the reasons behind Chinese outbound credit and its impact. Gallagher and Myers (2017) examined Chinese lending to Latin America and noted that Argentina, Brazil, Ecuador and Venezuela have especially benefitted from Chinese financing since 2005. Ray et al (2014) looked at different projects, including infrastructure and commodities investment through which the Chinese money had been channelled to in Latin America. Brautigam and Hwang (2016) examined China's loans to African governments and state-owned enterprises, which amounted to \$86.3 billion between 2000 and 2014, according to the authors. Many recent papers put a particular emphasis on the Belt and Road Initiative (BRI), for instance Hurley et al (2018). From a political economy approach, Hurley et al (2018) assessed the likelihood for BRI borrowers to have debt problems and offered policy recommendations to China and multilateral lenders, for instance, increasing debt transparency.

Some authors examined Chinese debt restructurings overseas as we do. *Development Reimagined*, a Kenyan consultancy firm based in China, paired with Oxford China Africa Consultancy, a student-run society, and published in April 2019 a slide pack on China's debt cancellations⁶ and presented many insightful stylised facts on debt write-offs by China over 2000–2018. Their data mainly come from Dreher et al (2017) that are updated in Bluhm et al (2018), which we will also use. Wang (2014) reflected on the role of China in shaping sovereign debt restructuring globally. She highlighted two big concerns that China has in lending to developing countries, namely safeguarding the value of its overseas assets and managing political relations between developed and developing countries in the international financial system. These concerns may have shaped the way China designed debt relief terms. Bon and Cheng (2020) shed light on the role of China in recent debt restructurings and their magnitude by examining eight cases: Cuba (2011), Seychelles (2011), Chad (2017), Zambia (2018), Mozambique (2018), Cameroon (2019), Congo (2019) and Venezuela (2019). Similarly, Acker et al (2020) provided case studies of Chinese debt relief measures in Africa and documented that China had cancelled at least \$3.4 billion of debt in Africa.

Our work pays a special attention to the interaction between different types of creditor offering debt relief to the same group of countries. Our database also includes Paris Club agreements on debt relief that we extract from Cheng et al (2018)

⁶ <https://developmentreimagined.com/wp-content/uploads/2019/04/final-doc-china-debt-cancellation-dr-final.pdf>

and sovereign debt restructurings granted by private creditors from Cruces and Trebesch (2014) and Asonuma and Trebesch (2016). Some restructurings with China – a non-Paris Club official creditor – provided concrete examples to test whether the Paris Club Comparability of Treatment clause was at work in practice (Gelpern (2004)). In addition, the combination of different types of creditor enriches the literature on serial sovereign default and serial debt restructurings (Asonuma (2016) and Schröder (2014)), as debt relief measures taken by China largely increase the number of serial restructuring cases. The relative size of Chinese debt relief compared with Paris Club agreements also sheds light on the policy discussion that sovereign debt restructurings might have come “too little, too late” (IMF (2013)).

This paper is structured as follows. Section 2 presents the database we have constructed and stylised facts. Section 3 uses local projection methods to uncover the macroeconomic implications of China’s relief measures on recipient economies. Section 4 concludes and provides policy recommendations.

2. Chinese debt restructurings overseas: new database and stylised facts

Bon and Cheng (2020) document features of debt relief operations that China has carried out in recent years through eight country cases. Some of these debt relief operations offered face value reduction and others used net present value (NPV) treatments via maturity extension or interest rate rebates. Sometimes, China conducted debt restructurings in the context of broader collective effort for debt relief, whereas in other cases China acted on its own. We also see that a financial assistance programme from the IMF often accompanied China’s debt relief measures. We resort to our database to extract systematic evidence on the key characteristics of debt relief operations that China has conducted since 2000.

2.1. Data

Our database builds upon the previous effort made by Hurley et al (2018), itself being an update of the data used by Bluhm et al (2018). Hurley et al (2018) provide, in total, 95 events between 2000 and 2017. We first verified all occurrences in these two sources by checking any available news and press articles. We also referred to IMF publications (Article IV and programme documents) and the documents available on the website of ministries of finance in both creditor and debtor countries. As a second step, we enriched the database by providing additional features (IMF programme and Paris club restructuring, for example) and extended it to 2019. For this, we conducted an extensive press review. We used specialised press, such as Debtwire,⁷ and searched keywords on Factiva.⁸ The criteria we set for Factiva search are similar to those used in Enderlein et al (2012). For instance, we carried out a search using “country name” + “debt” + “China” as keywords in both French and English, and analysed all results

⁷ Debtwire is a real-time news provider with a strong focus on debt market data and analysis worldwide: <https://www.debtwire.com/info/what-is-debtwire>

⁸ Owned by Dow Jones & Company, Factiva is a business information and research tool allowing news search from more than 32,000 sources, such as newspapers, journals, magazines, etc. <https://professional.dowjones.com/factiva/>

obtained. An additional test of comprehensiveness was applied with the words “China debt restructuring/reprofiling/renewed negotiation” in both languages. We verified our Factiva search results against a Google News search, given the lack of comprehensiveness of Factiva for local sources. We performed this keyword search for all countries with over \$3 billion of Chinese debt outstanding, according to China-Africa Loan Database of the Johns Hopkins University (SAIS-CARI (2020)), as well as for those countries having had Chinese or Paris Club debt restructurings in the past. Finally, for each restructuring identified, we went back to the website of the country’s ministry of finance and/or debt management agency to track any related documents. We also used some private-sector sources, such as data from Rhodium Group⁹ (Kratz et al 2019), to double-check the accuracy of the events we found.

Summary of China's debt restructurings, 2000–2019 Table 1

Year	Amount treated (USD million)	Number of deals	Average per deal (USD million)	Median (USD million)
2000	5.0	1	5.0	5.0
2001	818.4	19	43.1	37.8
2002	434.7	6	72.5	62.8
2003	848.7	7	121.2	40.0
2004	18.0	1	18.0	18.0
2005	136.6	5	27.3	11.0
2006	372.2	7	53.2	31.6
2007	918.9	24	38.3	31.0
2008	14.2	3	4.7	7.1
2009	-	-	-	-
2010	833.4	10	83.3	25.6
2011	3019.5	5	603.9	75.0
2012	323.1	2	161.5	161.5
2013	-	-	-	-
2014	1500.0	4	375.0	1500.0
2015	21340.0	2	10670.0	10670.0
2016	107.1	3	35.7	12.1
2017	2445.4	5	489.1	50.1
2018	9718.3	13	747.6	1600.0
2019	9578.0	8	1197.3	1000.0

Source: authors’ calculations based on their enriched dataset on China’s debt restructurings.

In total, our database counts 140 restructuring cases between 2000 and 2019 that took place in 64 countries. We use 125 cases for our stylised facts and empirical analysis below. In particular, we consolidated six cases where a country had two debt treatments in the same year to match other macroeconomic variables that have a country-year identification. We excluded nine events in which debt was refinanced through new financing, hence not being a conventional restructuring. Table 1 and Graph 1 (left-hand panel) provide an overview of these restructurings. Overall, the

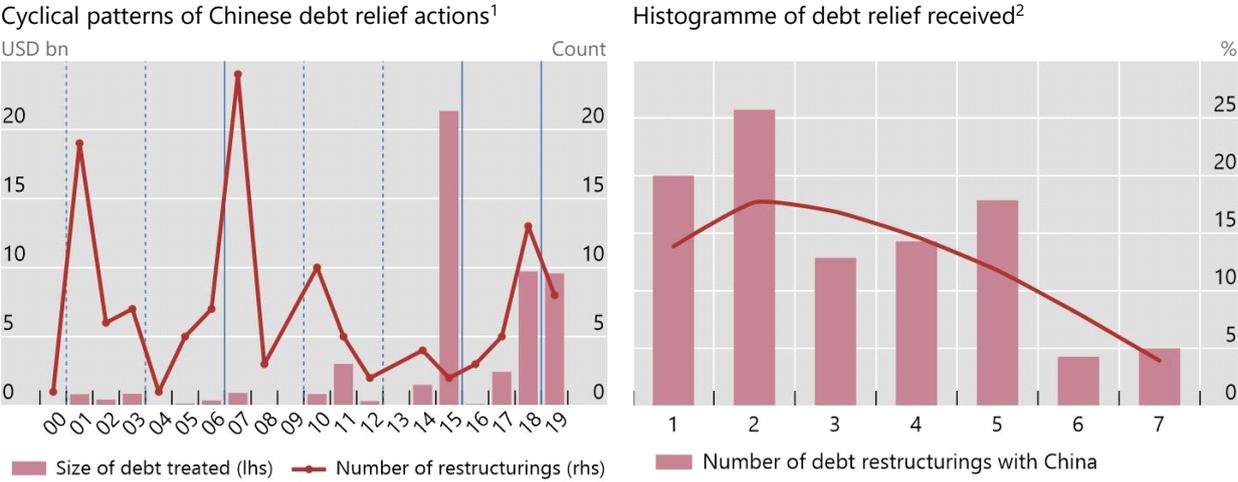
⁹ Founded in 2003, Rhodium Group is a New York-based advisory firm providing independent research and has a strong China team.

size of debt treated by China in the 125 cases ranges from \$5 million in 2000 to \$21,340 million in 2015.

Neither the size of the debt treated nor the number of restructuring events evolves in a linear manner. We observe some clusters or cycles over a time span of three to five years. These cycles could, for instance, coincide with some centralised events that China organises to discuss sovereign debt issues. We have plotted the instances of FOCAC meetings to see if those events coincided. In Graph 1 (left-hand panel), the vertical blue lines indicate the years when a FOCAC meeting took place. The dashed lines indicate the ministerial-level meetings that took place in 2000, 2003, 2009 and 2012, and the solid lines the FOCAC leaders’ summit in 2006, 2015 and 2018. We observe a surge in the occurrence of debt relief operations after the launch of the FOCAC in 2000 and around the leaders’ summit in 2006 and 2018. In terms of the size of debt treated, the largest number is observed in 2015 when China rescheduled \$21.3 billion of Angola’s sovereign debt.

Evolution of Chinese debt restructurings overseas

Graph 1



¹ Blue lines refer to the years when China hosted a meeting within the Forum on China-Africa Cooperation. Dash lines indicate meetings at the ministerial level whereas solid lines indicate FOCAC leaders’ summits. ² The histogramme uses the full sample of 140 events.

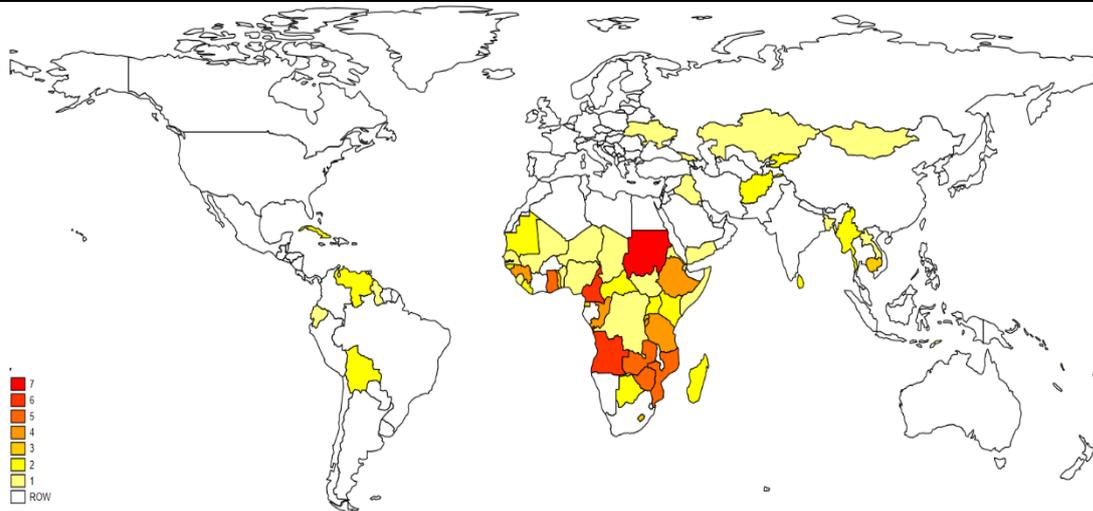
Source: authors’ calculations.

On average, countries received two debt relief operations from China. Some countries can receive up to seven debt relief actions from China in total, as the histogramme in Graph 1 (right-hand panel) and the map in Graph 2 illustrate. Chinese debt restructurings also spread out in different continents, including Africa, Central Asia, the Middle East, the Pacific islands and Southeast Asia, as shown in Graph 2. Ukraine is the only European country that has benefitted from China’s debt relief in the context of its 2015 economic crisis. African countries register on average the highest number of occurrences, with Sudan having received seven restructurings over two decades. However, Latin American countries benefitted from the largest size of the treated debt, as well as the largest face-value reduction. Cuba alone received Chinese rescheduling of \$2.8 billion debt in 2011. Table 2 indicates that on average face value reduction reached 8.6% of GDP in Latin America, versus 1.6% in Africa and 1.6% in the Pacific islands. Note that some cases in our database are dropped out in these stylised facts because of missing macroeconomic variables for the scaling purpose. We note also that among all Chinese debt restructurings in our sample, 70

cases were with HIPCs, which represent half of our full sample of 140 restructuring events.

Histogramme of debt restructurings received¹

Graph 2



¹ The number on the map indicates the number of restructuring events per country. The full sample of 140 events is considered.

Source: authors' calculations.

Our database provides, wherever possible, the following information concerning each restructuring event: the amount of debt treated, the year of deal conclusion, the type of restructuring (debt forgiveness or debt rescheduling), and whether the relief operation was decided in a particular policy forum, such as the FOCAC. For a limited number of cases, we also have information on the Chinese entity providing the relief, be it the Chinese central government or a policy bank.

We also complement our database with debt restructurings offered by two other types of creditor: Paris Club debt relief operations and private-sector interventions. Data on Paris Club restructurings come from Cheng et al (2018) whose data end in 2015. We updated this dataset with the Paris Club official website to confirm no new relief has been granted between end-2015 and end-2019 (our cut-off date), hence excluding the 2020 instances of debt relief through the Paris Club. Data on private sector restructurings mainly come from Cruces and Trebesch (2014) and Asonuma and Trebesch (2016). However, their data end in 2013. We thus searched for private sector debt external relief interventions concluded between 2013 and 2019 and included relevant information about the following seven new cases: Jamaica (2013), Grenada (2015), Ukraine (2015), Belize (2017), Congo (2017), Chad (2018) and Mozambique (2018). We are therefore able to control for restructurings offered by other creditors when identifying the macroeconomic effects of Chinese relief measures.

In addition, we also incorporate IMF programmes in our database, given the strong interconnection between debt restructurings and IMF financial assistance. Indeed, a debt restructuring could be required to close the financing gap in a country willing to solicit the IMF's assistance. Moreover, in the HIPC context, the IMF designed a specific instrument, the Poverty Reduction and Growth Facility (PRGF), to help eligible members to tackle debt overhang issues. We extract IMF programme data from the IMF Monitoring of Fund Arrangements (MONA) database. The relevant information includes starting and end years, and programme size.

Finally, we take relevant macroeconomic variables, such as real GDP growth, public debt and other fiscal variables, from the IMF International Financial Statistics and the World Bank World Development Indicators. For Cuba, we use public debt data of the country from Trading Economics.¹⁰

Size of debt forgiveness across regions¹

Table 2

	Africa	Asia	Latin America	Middle East & Central Asia	Pacific islands
Face value reduction (USD million)	150.80 (589.7)	94.08 (70.27)	1750.00 (1484.9)	22.98 (30.64)	7.17 (3.753)
Face-value reduction (% GDP)	1.62 (4.002)	1.23 (1.495)	6.35 (3.25)	0.29 (0.297)	1.59 (0.860)
Face-value reduction (% public debt)	4.44 (12.11)	3.20 (4.300)	15.99 (6.09)	0.34 (0.508)	4.38 (2.708)
Observations	73	8	2	6	3

¹ Mean coefficients with standard deviation in parentheses.

Source: authors' calculations.

2.2. Stylised facts

In this section, we document a few key features about debt restructurings involving China that we extract from our dataset. We will especially discuss restructuring terms, the dynamics between Chinese debt restructurings and relief measures from other creditors, and interaction between Chinese debt restructuring and IMF programmes.

Understanding differences between debt forgiveness and debt rescheduling

Creditors can propose different terms to deliver debt relief, as Buchheit et al (2019) highlight. The most direct way is for creditors to write off a loan, cancelling all or part of the principal amount that remains due. In other cases, creditors could choose to cancel accumulated arrears including both interest payment and principal amortisation. Creditors, especially private-sector creditors, also frequently use restructuring methods that do not involve nominal adjustment at the time of restructuring but offer maturity extension or interest rate reduction that would lower future debt servicing costs. This practice is referred in our paper as debt rescheduling or reprofiling. These three restructuring methodologies may have diverging macroeconomic effects for the recipient countries. Using different data, Reinhart and Trebesch (2016) and Cheng et al (2019) converge to the conclusion that that debt relief will only revive GDP growth when face-value reduction is provided. In Section 3, we will examine whether restructuring terms also matter when China is involved.

Bluhm et al (2018) in their database on Chinese financing overseas distinguish between debt forgiveness and debt rescheduling. We continue to use this classification and apply it to the new cases we found. Among the 125 consolidated cases that we retain for our analysis, China provided debt forgiveness in 100 cases. In the remaining 25 cases, China rescheduled recipient countries' debt via maturity extension or interest rate reduction.

¹⁰ Refer to <https://tradingeconomics.com/cuba/government-debt-to-gdp>

Table 3 gives an overall comparison between debt forgiveness and debt rescheduling cases. As expected, the total amount of debt treated is larger when sovereign debt was rescheduled than when reduction in the nominal amount of debt was offered. However, in the latter case, the entire amount of debt treated is forgiven. The size of sovereign debt that was forgiven averaged \$166 million or 1.59% of GDP in our sample. The size of debt rescheduled via maturity extension and interest treatment reached on average \$2465 million or 5% of the country's GDP. We are unable to calculate the Net Present Value (NPV) of debt rescheduling since the length of maturity extension and reduction in interest rate charges are mostly undisclosed. Table 3 also indicate that the size of debt treated is skewed towards a few very big restructurings (75th percentile) for both forgiveness and rescheduling cases.

Debt forgiveness cases merit a particular attention. In fact, hidden under this classification are two distinct typologies of debt relief, as highlighted by the case studies in Bon and Cheng (2020). The first case was exemplified in Cameroon in 2009 when it received debt relief though a nominal value debt reduction of \$78 million. However, the entire debt cancelled via a write-off of accumulated arrears. We will refer to this type of debt forgiveness as cases of arrears cancellation, which do not involve any relief on future principal payments. On the other hand, in 2010 China wrote off \$6.8 billion of Iraq's liability. In this case, debt stock is reduced with immediate effects on future debt amortisation and interest payment. We refer to this type of restructuring as principal haircut in our stylised facts and empirical analysis.

Summary statistics of debt forgiveness and rescheduling cases

Table 3

	Mean	St.dev.	Min	Max	p25	p50	p75	Obs.
Debt forgiveness								
Total debt treated (USD million)	166.16	595.02	1.37	6,800	11.48	32	71.4	93
Total debt treated (% GDP)	1.59	3.67	0	25.27	0.2	0.52	1.01	92
Total debt treated (% public debt)	4.28	11.04	0.01	76.1	0.26	0.78	1.75	91
Debt rescheduling								
Total debt treated (USD million)	2,465.26	5,368.23	0.24	21,300.00	44.21	1,000.00	2,200.00	15
Total debt treated (% GDP)	5.16	6.99	0.01	19.25	0.45	1.99	4.98	14
Total debt treated (% public debt)	6.46	9.21	0.01	32.11	0.78	3.64	7.14	12

Source: authors' calculations.

To distinguish between the cases involving principal haircut or arrears cancellation within the category of debt forgiveness, we analysed press releases on Chinese restructurings overseas to find indications, especially FOCAC press releases. For instance, our reading of FOCAC meeting statements suggests that China debt restructurings in Africa most likely offered cancellation of accumulated arrears from debt amortisation. In fact, the Eight-Point Plan China pledged at the FOCAC Beijing Summit in 2006 indicated that China would "[c]ancel the repayment of interest-free

government loans that had become due by the end of 2005 to China by Heavily Indebted Poor Countries (HIPC)s and Least Developed Countries (LDCs) in Africa.”¹¹ A similar statement with a cut-off date for debt cancellation immediately before the year of FOCAC meeting can be found in 2009,¹² 2010 and 2018.¹³ We accordingly code restructurings in African countries falling in these years as cases of arrears cancellation only.

Our database registers 28 cases of arrears cancellation and 72 cases of principal haircut among 100 cases of debt forgiveness. Table 4 shows that China treated a bigger amount of sovereign debt by cancelling arrears than reducing the principal amount of debt coming due, despite a lower number of occurrences. Note that the number of observations for both cases in Table 4 is slightly smaller than the number of occurrences stated above, as some cases did not indicate the size of the debt treated.

Summary statistics of three types of debt treatment

Table 4

	Mean	St.dev.	Min	Max	p25	p50	p75	Obs.
Principal haircut								
Total debt treated (USD million)	97.4	345.71	2.52	2,800	11	31.55	61	69
Total debt treated (% GDP)	1.2	1.87	0	10.36	0.17	0.57	1.3	68
Total debt treated (% public debt)	3.87	10.49	0.01	76.1	.24	0.76	1.88	67
Arrears cancellation								
Total debt treated (USD million)	363.86	1,003.94	1.37	4,400	14.07	38	88.43	24
Total debt treated (% GDP)	2.68	6.43	0.01	25.27	0.2	0.43	0.66	24
Total debt treated (% public debt)	5.43	12.62	0.01	53.33	0.37	0.82	1.29	24
Debt rescheduling								
Total debt treated (USD million)	2,465.26	5,368.23	0.24	21,300.00	44.21	1,000.00	2,200.00	15
Total debt treated (% GDP)	5.16	6.99	0.01	19.25	0.45	1.99	4.98	14
Total debt treated (% public debt)	6.46	9.21	0.01	32.11	0.78	3.64	7.14	12

Source: authors' calculations.

Graph 3 illustrates the evolution of Chinese restructuring cases involving principal haircut (dark blue), arrears cancellation (light blue) and debt rescheduling (rose) in our sample. In general, we observe that debt rescheduling gained influence in most recent years over debt forgiveness both in terms of the number of occurrence (left-hand panel) and the size of the debt treated (right-hand panel). Moreover, within

¹¹ Refer to <http://bw.china-embassy.org/eng/jmwl/t785012.htm>

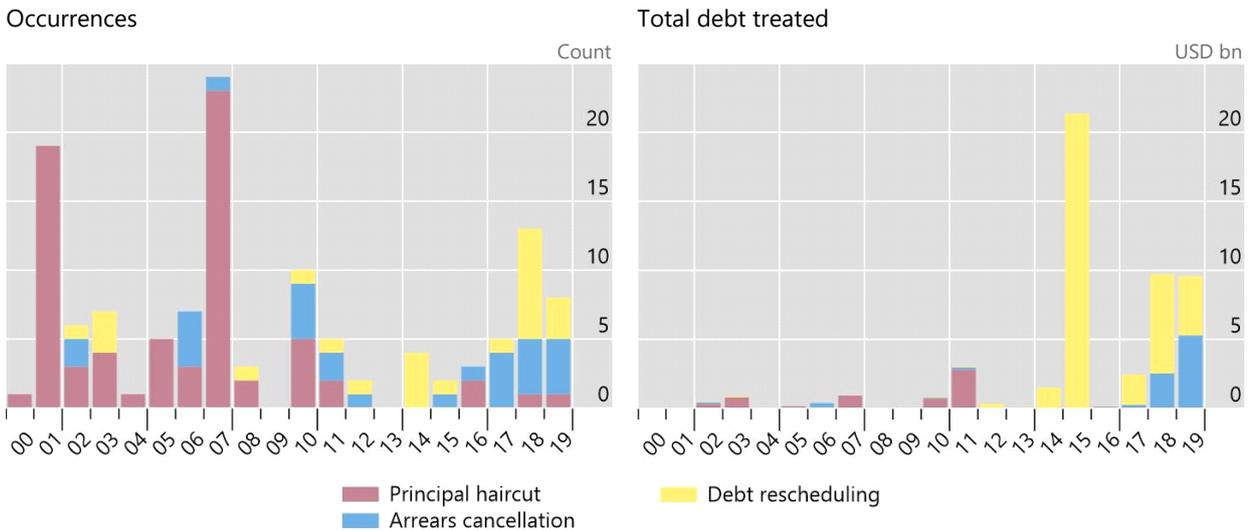
¹² Ibid.

¹³ Refer to https://www.focac.org/eng/zywx_1/zywj/

the category of debt forgiveness, China tended to provide principal haircut until 2011 and then more likely to offer arrears cancellation in most recent years. As we will see in the subsection below, the tendency for China to offer less outright cash relief could have coincided with the gradual disappearance of Paris Club interventions.

Evolution of different restructuring approaches

Graph 3



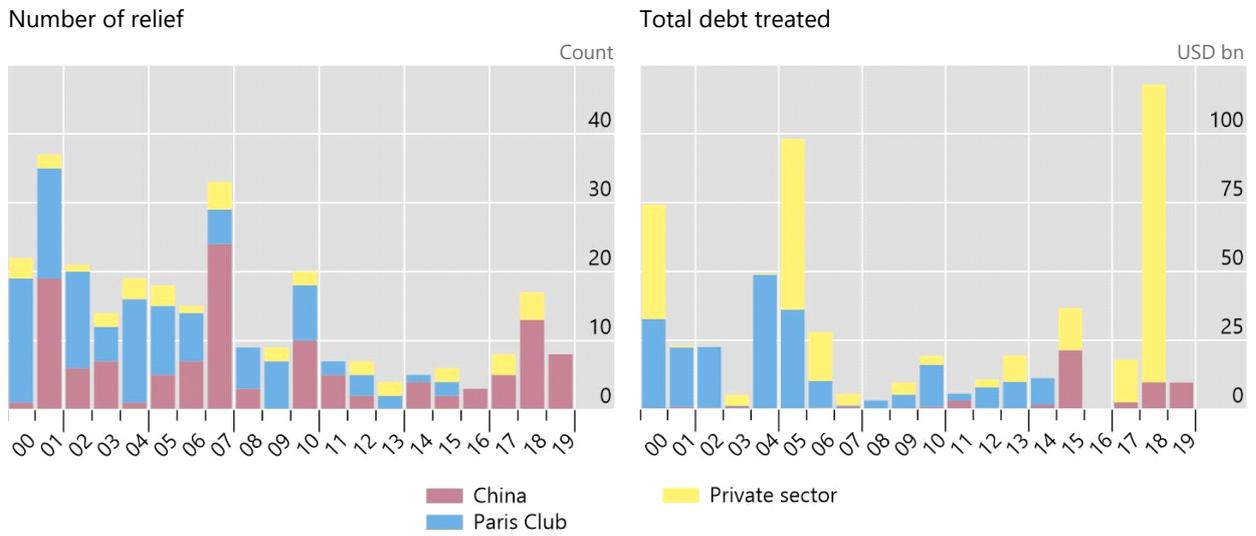
Source: authors' calculations.

Interaction between China and other creditors

Bon and Cheng (2020) classify their case studies by examining whether China acted jointly with other creditors – private or official creditors – or decided on debt relief out of its own initiative. We see a clear distinction between China’s actions in Africa and elsewhere. In Africa, many restructurings were decided in the FOCAC context, which is by nature a Chinese initiative. However, other cases in our database indicate that China’s effort may coincide with other creditors’ debt relief measures.

The Paris Club has been a primary platform for sovereign creditors to grant debt relief to indebted countries since 1956 (Cheng et al (2018)). During the period that we examine between 2000 and 2019, the Paris Club was mostly active in providing restructurings in the first decade, both in terms of the number of debt relief operations provided and the size of debt treated (Graph 4). In general, Paris Club creditors have also been more inclined to provide face-value reduction than private creditors, in particular from the 1990s with the HIPC initiative. However, they have ceased providing any relief from 2015 until the onset of the Covid-19 pandemic.

Private sector interventions are much less frequent, but the size of debt treated could surpass Paris Club and Chinese debt restructuring. In comparison, over the period that we examine between 2000 and 2019, the number of restructurings offered by China has become increasingly important, especially given the slowdown of relief provided by Paris Club creditors and the private sector (Graph 4, left-hand panel). By contrast, in terms of the size of debt treated, the relief that China has offered is largely dwarfed by that from other types of creditor (Graph 4, right-hand panel).



Source: authors' calculations.

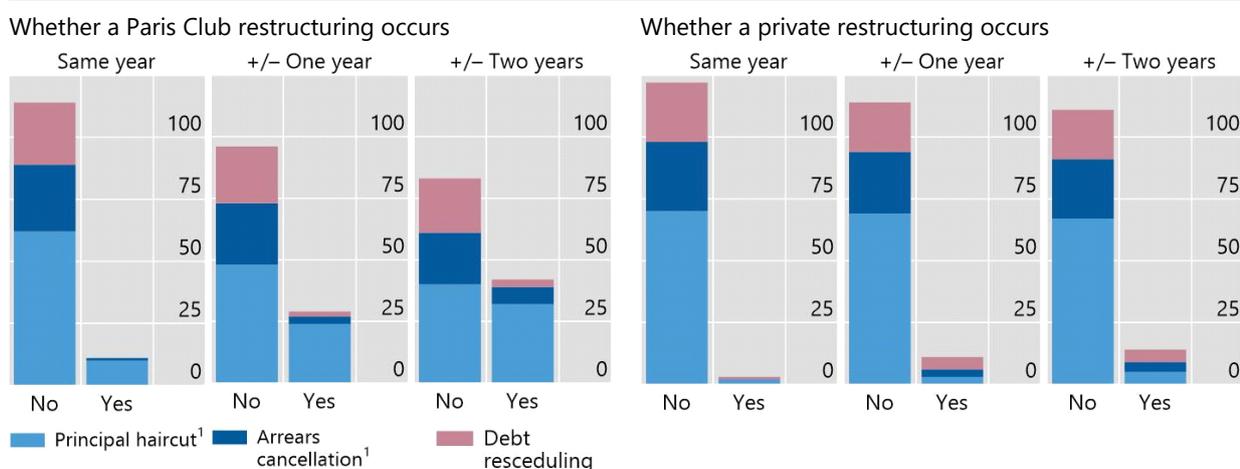
We would like to highlight in particular the cases where China intervened in a country when other creditors also provided relief measures in the same year or within a narrow time window. We first look at the dynamics between China and other sovereign creditors that are Paris Club members. Graph 5 (left-hand panel) shows that among the 125 Chinese restructuring cases, 11 cases took place in the same year as a Paris Club restructuring. 29 Chinese restructurings overseas occurred in a time window of two years in which a Paris Club relief took place. And 42 Chinese actions took place in a time window of four years in which we find a Paris Club restructuring. It thus seems that at least two thirds of our Chinese restructuring events took place independently of the Paris Club's actions, if we consider a four-year window for those events to be related. Of course, we need to point out one caveat that debt negotiations could take more than four years for some Paris Club cases or China's debt relief operations.

As regards restructuring terms, China tends to offer debt forgiveness, especially arrears clearance, over debt rescheduling, when the event is temporally related to a Paris Club restructuring. Our data also shows that debt forgiveness is more likely offered when a Chinese restructuring took place before a Paris Club operation than vice versa.

Occurrence of Paris Club and private restructurings around a Chinese debt relief

Count

Graph 5



¹ Principal haircut and arrears cancellation are considered as two forms of debt forgiveness in the scope of this paper.

Source: authors' calculations.

Table 5 compares the size of debt treated for debt forgiveness provided within or outside a four-year window around a Paris Club debt relief. On average, the haircut size that China offered is bigger when China intervened outside of a Paris Club context.

China's relief operations within a tight window of Paris Club restructurings Table 5

	Mean	St.dev.	Min	Max	p25	p50	p75	Obs.
China's action outside a 4-year window of a Paris Club action								
Total debt treated (USD million)	243.9	768.28	1.37	4400	10.1	38	75	54
Total debt treated (% GDP)	1.80	4.51	0.00	25.27	0.16	0.45	0.97	52
Total debt treated (% public debt)	5.78	14.06	0.01	76.10	0.23	0.80	3.86	51
China's action within a 4-year window of a Paris Club action								
Total debt treated (USD million)	54.49	114.58	2.52	700	11.48	22	50.08	39
Total debt treated (% GDP)	1.00	1.52	0.00	8.65	0.30	0.66	0.98	39
Total debt treated (% public debt)	1.67	3.34	0.01	17.79	0.39	0.76	1.31	39

Source: authors' calculations

We conduct the same exercise for the dynamics between China and private sector lenders (Graph 5 (right-hand panel)). In a clear contrast to Graph 5 (left-hand panel), there are far less cases of "joint" or "close" interaction between China and

private lenders in the same country from a temporal perspective. In addition, the restructuring terms proposed by China also seem more diverse when China's and private lenders' actions took place in the same country within a defined time window. To some extent, China tends to offer more debt rescheduling when private sector lenders are also mobilised. Thus, there seems to be a degree of concerted actions between China and other types of creditors as regards restructuring terms when they provide debt relief to a given country in a closely defined time window.

Chinese debt relief and new cash financing from the IMF

Most debt relief measures come as an emergency rescue plan for a country, which encounters financing difficulties. When a country cannot close the financing gap with its own fiscal resources and adjustment, official sector financing from the IMF or other financing sources could be solicited. Therefore, it is important to examine Chinese debt relief in relation to official sector financing. For the countries in our sample, we consider only official sector financing from the IMF.¹⁴

We observe that in 65 out of 125 events, namely slightly more than half of the sample, an IMF programme was approved in either the same year as China's restructuring or one year after the restructuring. This definition of IMF intervention is motivated by the fact that the IMF Board's approval on financial assistance normally takes place after a debt restructuring is concluded or good progress has been made where debt restructuring was necessary. In our empirical tests, we will test numerous ways of defining the interaction between a Chinese restructuring and an IMF assistance. Table 6 shows that an IMF programme is more frequently associated with a debt forgiveness case (54 events), in particular with a principal haircut than with a Chinese debt rescheduling case. In addition, disparities also emerge across different IMF facilities. In particular, 38 out of 54 debt forgiveness cases benefitted from the IMF's debt relief programme for HIPC's. Debt rescheduling seems more often associated with the IMF long-term facilities for balance of payments financing, such as the Extended Fund Facility (EFF) or the Extended Credit Facility (ECF) for low-income countries. Moreover, the IMF Policy Support Instrument (PSI) accompanied seven debt forgiveness cases and one debt rescheduling case.

Chinese debt restructurings and IMF financial assistance

Number of cases

Table 6

	Debt forgiveness		Debt rescheduling
	Principal haircut	Arrears cancellation	
Extended Credit Facility (ECF)	1	5	2
Extended Fund Facility (EFF)	0	0	6
Poverty Reduction and Growth Facility (PRGF)	34	4	2
Policy Support Instrument (PSI)	2	5	1
Stand-By Arrangement (SBA)	3	0	0
Total	40	14	11

Source: authors' calculations.

¹⁴ Bolivia, Ecuador and Venezuela could get regional financing from the Latin American Reserve Fund. Regional development banks in Africa, Asia and Latin America could also provide policy-based lending to support member countries' budget and balance of payments. We do not include this third-party official sector financing in our analysis.

Table 7 further details the average size of relief – total treated debt and face-value reduction – across different IMF programmes. Two IMF facilities requiring longer-term structural reforms – ECF and EFF – are associated with the biggest total amount of treated debt. However, debt treatment in these cases come through rescheduling rather than debt cancellation. This explains the relatively low face-value reduction. Stand-By Arrangements (SBAs), on the other hand, register the highest face-value reduction from China, on average 3.06% of GDP. This indicates that SBAs are more often associated with the cases where China provide debt forgiveness as treatment.

Size of debt relief and IMF programmes¹ Table 7

	Total sample	with IMF	PRGF	ECF&EFF	SBA	PSI
Total debt treated (% GDP)	1.95 (4.320)	1.57 (3.323)	0.91 (1.044)	3.98 (5.826)	3.06 (4.847)	2.83 (6.104)
Face-value reduction (% GDP)	1.15 (3.217)	0.79 (1.368)	0.91 (1.046)	0.07 (0.168)	3.06 (4.847)	0.28 (0.216)
Observations	115	62	40	18	3	6

¹ Mean coefficients with standard deviation in parentheses. PRGF = Poverty Reduction and Growth Facility; ECF = Extended Credit Facility; EFF = Extended Fund Facility; SBA = Stand-By Arrangement; PSI = Policy Support Instrument.

Source: authors' calculations.

3. Empirical analysis

We assess the macroeconomic implications of China's past relief measures on the recipient countries' economic performance in this section. We first present our methodology and address the endogeneity concern. Then we present our empirical results, showing how debt restructurings offered by China affected GDP growth in the beneficiary countries, the economic channels of transmission and debt trajectories. We end this section by presenting different robustness checks we have conducted.

3.1. Methodology

Local projection specifications

To establish a causal relationship between debt restructurings and economic performance in recipient countries in the aftermath is a difficult task, as the endogenous factors that affect macroeconomic variables in a recipient country may well have triggered the debt restructuring, subjecting our exercise to reverse causality.

Jordà and Taylor (2016) first combined local projections and propensity score weighting to identify the impact of the UK government's fiscal austerity measures in 2010 on economic growth afterwards. Since this seminal paper, many researchers have adopted this empirical strategy to study the causal impact of debt default or restructuring. Similar to VAR models, local projection generates impulse responses to a shock. Instead of approximating the data globally like in a VAR, local projection makes local approximations over each forecast horizon of interest and provides simple, analytic, joint inference for impulse response coefficients, which are also more robust to model misspecification.

Kuvshinov and Zimmermann (2016) followed this methodology to study the growth impact of sovereign default and found that default generated on average a 2.9% of GDP loss in the immediate aftermath and 4.4% five years after. In addition to a panel regression approach, Asonuma et al (2016) adopted local projections to examine how pre-emptive and post-default restructurings may entail different costs in international trade for the beneficiary country. The authors argued that local projections explicitly controlled for the endogenous feedback inherent to the dynamic relation between debt restructuring and macroeconomic developments in the recipient country. Cheng et al (2018) and Cheng et al (2019) applied local projections and propensity score weighting to a database of historical Paris Club restructurings to understand their macroeconomic and development consequences, respectively.

We follow this empirical approach and present below our local projection specifications. Propensity score weighting will be used as an additional way to control for endogeneity alongside other robustness checks in the last subsection.

The local projection method (Jordà (2005)) consists in estimating a number h of single equations using Ordinary Least Squares and then providing joint inference for impulse response coefficients. It thus allows us to project directly the behavioural responses of selected variables to a Chinese debt restructuring by computing estimates of the h -step ahead cumulative average treatment effect, while controlling for a host of factors and lagged terms. In practice, local projections are regression-adjusted difference-in-difference estimates that collapse the time-series information in a pre- and a post-period for each step ahead.

Our baseline identification is specified in the following equation:

$$\begin{aligned} \Delta Y_{i,t+h} = & \alpha_{i,h} + \beta_h \text{China}_{i,t} + \Phi_h(L) \Delta Y_{i,t} + \Psi_h(L) X_{i,t} + \theta_h \text{IMF}_{i,t\pm s} \\ & + \eta_h \text{Paris}_{i,t\pm s} + \zeta_h \text{Private}_{i,t\pm s} + \mu_{i,t,h} \end{aligned} \quad (1)$$

where $\Delta Y_{i,t+h} = Y_{i,t+h} - Y_{i,t}$, represents the accumulated change in our variables of interest at time $t+h$ relative to time t . Time t is the year when a Chinese restructuring is concluded. Our dependent variables $Y_{i,t}$ include macroeconomic, fiscal and external sector variables: real GDP growth, fixed investment, change in public debt, change in debt owed to China, fiscal balance, debt service, trade balance, etc. $\text{China}_{i,t}$ is a country-year dummy variable, which takes the value 1 when a restructuring with China is concluded. This is the shock that we focus on in this empirical exercise. The lag polynomial $\Phi_h(L)$ represents two lags and aims at controlling for the dynamics of the dependent variables and the endogeneity of control variables $X_{i,t}$. In our robustness checks, we extend the number of lags for these control variables to four. $X_{i,t}$, the set of control variables, include nominal GDP growth, public debt, inflation and global factors, such as US 10-year yields, the Volatility Index (VIX) and world real GDP growth. $\alpha_{i,h}$ refers to a set of country-year dummies. Finally and most importantly, the stylised facts presented in the previous section highlight the need to control for the interaction between China and other creditors and crisis-time financing from the IMF. We explicitly control for the potential influence of debt relief provided by the Paris Club ($\text{Paris}_{i,t\pm s}$), private sector restructurings ($\text{Private}_{i,t\pm s}$) and IMF financial assistance programme ($\text{IMF}_{i,t\pm s}$). In the baseline specification, these dummy variables take the value 1 if there is an intervention within a two-year window around a Chinese restructuring, namely s takes the value 1. We use robust Driscoll and Kraay (1998) standard errors to correct for potential heteroscedasticity, autocorrelation in the lags and error correlation across panels.

Moreover, in line with our stylised facts and the existing literature (such as Asonuma (2016) and Cheng et al (2019)), we estimate the macroeconomic implications of different restructuring terms following the classification we presented in Section 2, namely between debt rescheduling and debt forgiveness. Debt forgiveness will also be further divided into arrears cancellation and principal haircut. When different terms are analysed, we use the following disaggregated specification:

$$\Delta Y_{i,t+h} = \alpha_{i,h} + \sum_{k=1}^K \beta_h^k (China_{i,t} \cdot D_{i,t}^k) + \Phi_h(L)\Delta Y_{i,t} + \Psi_h(L)X_{i,t} + \theta_h IMF_{i,t+s} + \eta_h Paris_{i,t+s} + \zeta_h Private_{i,t+s} + \mu_{i,t,h} \quad (2)$$

where $D_{i,t}^k$ takes the value one if the restructuring experienced by country i at time t featured the restructuring characteristic k (arrears cancellation, principal haircut or rescheduling). We build the impulse response functions from the β_h^k coefficients.

Reflections on endogeneity

As explained at the beginning of this section, endogeneity is a fundamental challenge we face when assessing the causal impact of debt restructurings on economic performance. Local projections largely help attenuate endogeneity stemming from model misspecification. To deal with the reverse causality issue, researchers have, however, used three other strategies in the literature. First, Reinhart and Trebesch (2016) and Cheng et al (2018) used a narrative approach to address the endogeneity issue. They argue that if donors and creditors offer debt relief to a group of countries, restructurings are less dependent on the characteristics of individual countries. The Brady plan and the HIPC initiative examined by these two papers are considered as centrally orchestrated events. They are more related to the common objective of creditor countries to address debt overhang, for instance triggered by the Sustainable Development Goals for the HIPC initiative, than to economic development in individual debtor countries. In line with this approach, more than half of the Chinese restructurings overseas (73 out of 125) that we examine took place in Africa and were decided mostly in the FOCAC context, where China offered financing and development projects to all African countries having diplomatic relationship with China. We will run robustness checks using the subsample of African countries only and the baseline result remains robust.

Second, Jordà and Taylor (2016) used inverse propensity score weighting to identify the causal effects of fiscal consolidation events. This technique is often used to control for selection biases in non-experimental studies. Forni et al (2016) and Kuvshinov and Zimmerman (2016) adopted an Augmented Inverse Probability Weighting (AIPW) estimator in their studies on sovereign debt default and restructurings. We adopt the same strategy as a robustness test in subsection 3.3. AIPW proceeds in two steps. First, we derive a propensity score of the likelihood for a country to receive a Chinese restructuring using a simple panel regression model. As a second step, we apply once again local projection method but assign a greater weight to the observations that are less likely to receive a Chinese debt treatment. In this way, we attenuate the chances that our empirical results are driven by the factors that affect both the probability for a country to have a debt treatment and macroeconomic conditions in the same country in the aftermath.

Finally, Asonuma et al (2016) used instrumental variables to tackle endogeneity. This provides us with a third avenue to deal with the issue for future research. For this paper, we focus on the first two approaches.

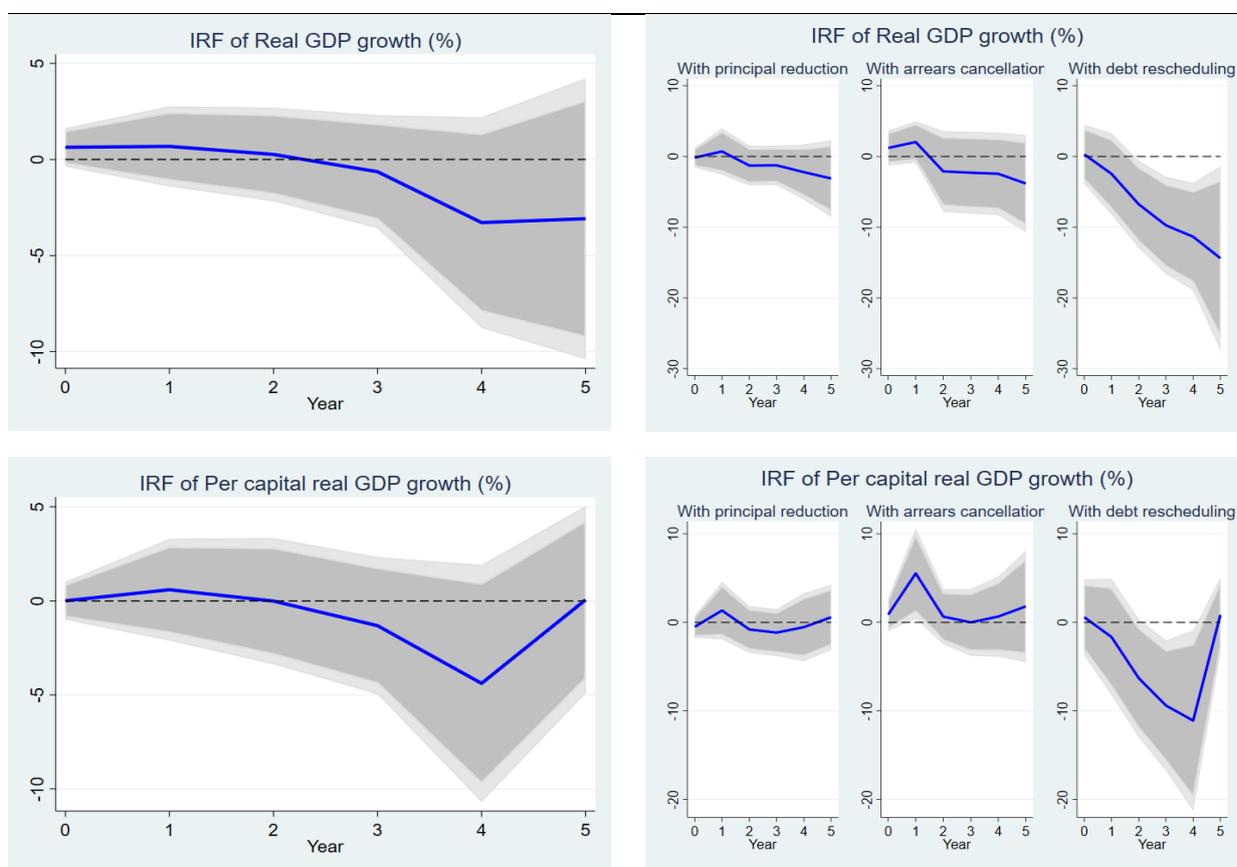
3.2. Empirical results

Growth effects of Chinese debt restructurings

Graph 6 shows the impact of a debt restructuring on real GDP growth and real GDP per capita in the recipient country, using the specification in equation (1). The summary statistics of the dependent variables and independent variables are provided in Annex 1. In all impulse response graphs, the blue solid line traces the estimated evolution of a given variable over a period of five years after a shock at time 0, which corresponds to the year when China grants a restructuring. The dark and light grey areas represent the 90% and 95% confidence intervals, respectively.¹⁵

Growth effects of Chinese debt restructurings¹

Graph 6



¹ The blue line traces the estimated evolution of a given variable over a period of five years after a shock at time 0, which corresponds to the year when a restructuring is granted by China. The dark and light grey areas represent the 90% and 95% confidence intervals, respectively.

In general, growth and development prospects in the recipient countries are not promising. Both real GDP growth and per capita real GDP growth improved slightly in the immediate aftermath of a Chinese restructuring or one year after but quickly deteriorate. They bottomed out four years after the restructuring. However, these results are not statistically significant. This is in stark contrast with Reinhart and

¹⁵ Regression tables of our local projection exercises are available upon request. We excluded regression tables in the main text to save space, as there are six stepwise regressions per variable.

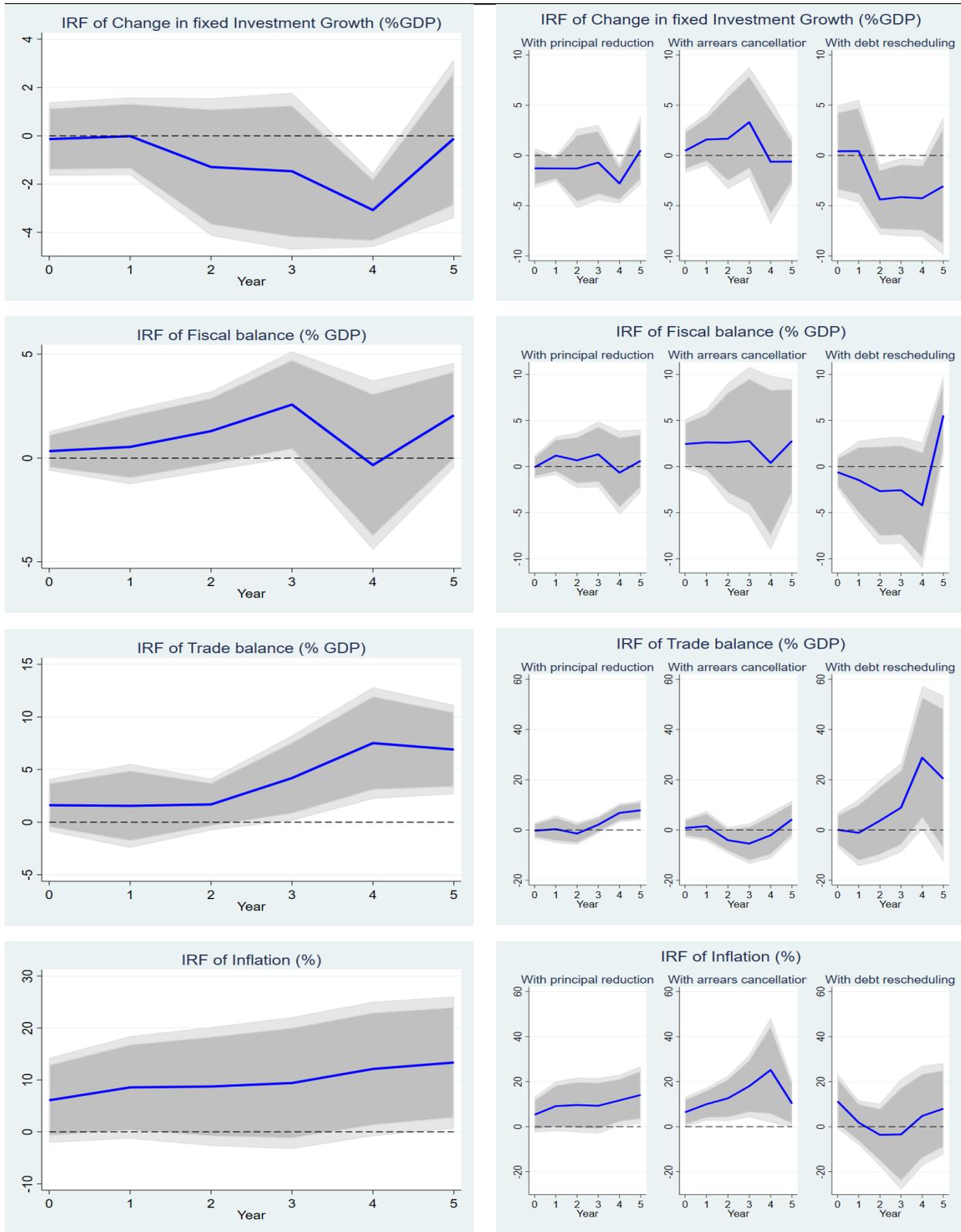
Trebesch (2016) and Cheng et al (2018, 2019). One possible explanation could be the relatively smaller size of exposure to Chinese loans and that of debt relief offered by China in some treated countries, in comparison with the historical operations by the Paris Club and private sector creditors.

When looking at the effects of different restructuring terms, the deteriorating growth prospects seem to be driven by countries having received debt rescheduling from China. With statistical significance, real GDP contracted by 15% five years after a debt rescheduling case, and real GDP per capita bottomed out from a contraction of more than 10% in the fourth year after a rescheduling. In contrast, real GDP growth is not statistically different from zero for the countries having received debt forgiveness from China, be it principle reduction or arrears cancellation. In the case of arrears cancellation, we observe a short-lived improvement in economic growth and development in the first year following debt forgiveness. We provide in the following subsection a potential rationale for this evolution.

Exploration of possible economic channels

Now, we turn to different channels of transmissions that could have led to these macroeconomic results. Asonuma et al (2020) examine the macroeconomic costs of sovereign defaults and find the credit-investment channel most prevalent, especially in post-default restructurings. According to the authors, after a debt restructuring, bank credit diminishes, affecting directly and indirectly investment and GDP growth. We will also focus on the credit-investment channel. In addition, we also look at other GDP components such as fiscal balance (a proxy for government consumption) and net exports. We also keep track of the evolution of inflation. Graph 7 illustrates the impulse responses of these variables.

The deterioration in real GDP growth in the cases of debt rescheduling could be related to a real drain on domestic investment, proxied here by the year-on-year change in gross capital formation. In fact, debt rescheduling cases are associated with two years of investment contraction, which is statistically significant. In comparison, the investment contraction in the countries having received principle reduction was short-lived and investment was largely improved during the first three years following a treatment with arrears cancellation. Why do we see such a stark contrast between debt rescheduling and debt forgiveness cases? One thing we observe with our database and case studies (Bon and Cheng (2020)) is the difficulty of tracking whether and how debt rescheduling was actually delivered and rescheduling cases often involved a much larger initial debt stock. Therefore, these countries could have faced prolonged debt overhang situations before nominal treatments were offered. In addition, in some cases, we see that in parallel or after a debt relief programme of the Chinese government, Chinese firms may be willing to invest in the beneficiary country for project financing, contributing to the growth of fixed capital investment. Second, we see some degrees of fiscal tightening, as measured by sustained fiscal surplus after a debt restructuring. In rescheduling cases, fiscal surplus surged to 5% of GDP in year five, with statistical significance. Net exports seem to be the only factor that positively contributes to economic growth after a Chinese debt restructuring action. Countries having received principal haircut registered a persistent trade surplus from year three onward and it surged in year four for the debt rescheduling cases. Finally, the beneficiary countries could have well suffered from inflation after restructurings, especially for debt forgiveness cases. For countries that have benefitted from arrears cancellation, CPI inflation rate reached as high as 20%.



¹ The blue line traces the estimated evolution of a given variable over a period of five years after a shock at time 0, which corresponds to the year when a restructuring is granted by China. The dark and light grey areas represent the 90% and 95% confidence intervals, respectively.

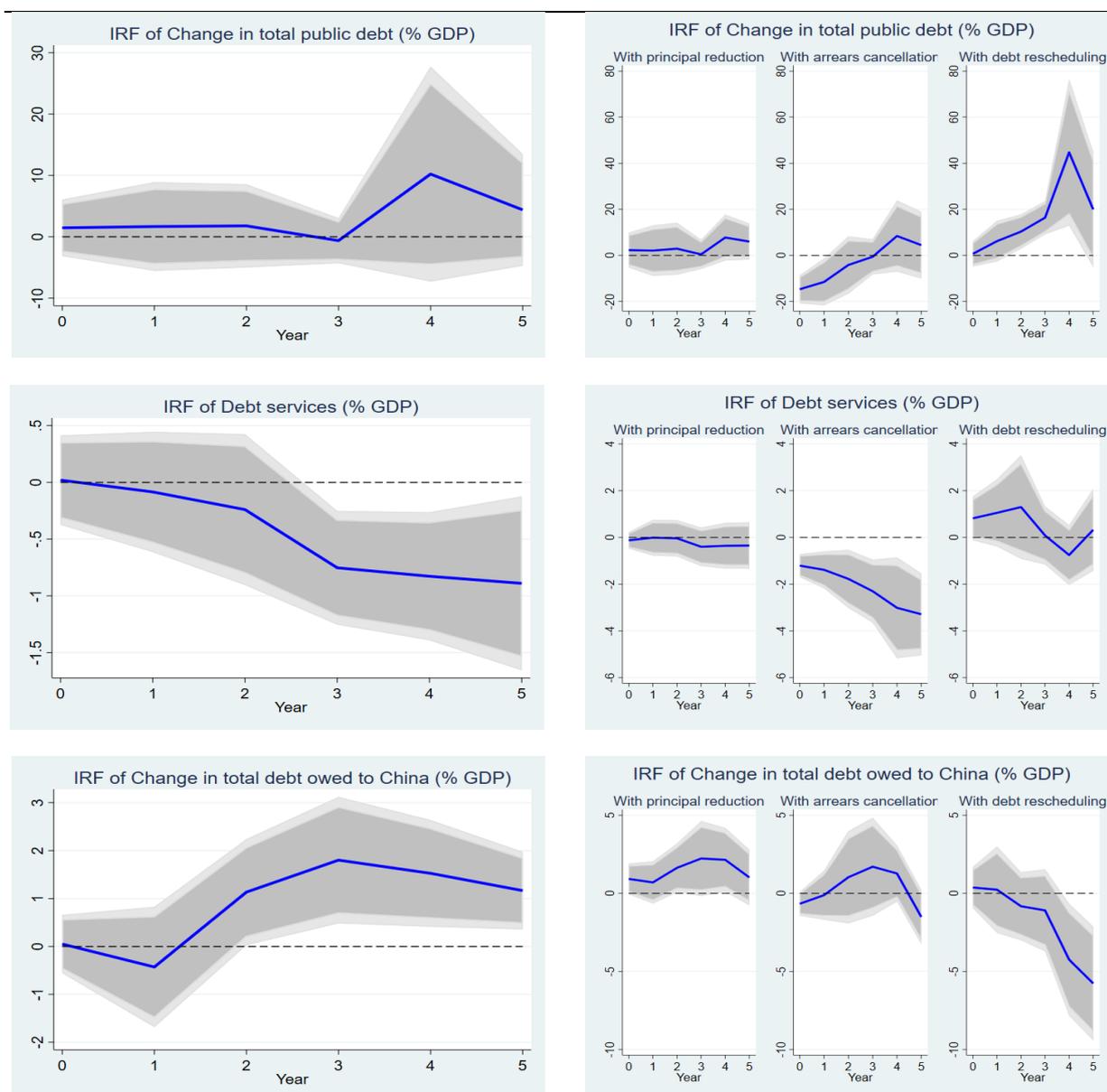
Debt trajectories

Finally, we look at how debt in the recipient countries evolved after a debt restructuring. We trace here two sources of debt: total public debt (both debt stock and debt flow in terms of debt service payments) using World Bank data and total debt owed to China (including private sector debt) using data from Horn et al (2019).

As regards the evolution of total public debt, we observe in Graph 8 that changes in total public debt relative to GDP remained on the positive side, thus the total debt stock continued to grow in the cases where China offered rescheduling as debt treatment. Public debt increased by 40% of GDP four years after a rescheduling action.

Debt trajectories¹

Graph 8



¹ The blue line traces the estimated evolution of a given variable over a period of five years after a shock at time 0, which corresponds to the year when a restructuring is granted by China. The dark and light grey areas represent the 90% and 95% confidence intervals, respectively.

In contrast, public debt seems to have decreased when China cancelled accumulated debt arrears. We see the same patterns when looking at annual debt service payments. Countries having received arrears cancellations were better off than countries treated by debt rescheduling. For one thing, debt rescheduling did not reduce the stock of debt burden, which continues to require interest payments and in the medium to long term refinancing by new debt. In addition, compared with principal haircut, arrears cancellation treated a larger share of sovereign debt in its nominal value (Table 4), thus releasing fiscal space for more productive production in the country. In fact, arrears cancellation is also associated with a significant decline in debt service costs.

Did China continue to lend to countries that had previously benefitted from Chinese relief measures? Data from Horn et al (2019) allow us to trace the evolution of a debtor country's exposure to China – public and commercial debt all combined. Overall, China still lends to countries having benefitted from its relief actions; the changes in the total debt owed to China remain in the positive territory from the second year after a restructuring event. However, we note that the magnitude of debt inflows from China is not large, only 1-2% of GDP per year. We highlight that the dramatic decrease in new Chinese debt in these countries benefitted from debt rescheduling. Debt flows from China are on a decreasing path and contract by more than 5% of GDP in year five. Considering that debt rescheduling has been the prevalent form of Chinese debt relief in recent years, it is likely that China has been reducing its new credit to countries whose debt has been recently rescheduled.¹⁶

3.3. Robustness checks

Augmented Inverse Probability Weighting (AIPW)

In this subsection, we run several exercises to test the robustness of our results. As mentioned in the methodology subsection, we use the AIPW to further control for endogeneity. Following the procedure in Jordà and Taylor (2016), we first derive the AIPW estimator by regressing Chinese debt restructurings on a number of regressors that will be then used for local projections. We assign a greater weight to observations that are less likely to be associated with Chinese debt restructuring. This re-weighting aims at randomising restructuring events as opposed to being triggered by underlying economic variables in the recipient country. We then use the AIPW estimator for local projections. The first-step regression, which allows us to re-weigh the observations in order to estimate the local projections, shows that overall the probability of having a Chinese restructuring is not related to the regressors we used in our local projection exercise, as most regressors used do not have a statistically significant coefficient.¹⁷ This indicates that the endogeneity and the resulting reverse causality is less an issue in our empirical analysis. Given that some variables, such as public debt and gross capital formation, have a statistically significant coefficient when time and spatial dummies are not included, we still perform the second step of the AIWP as a robustness check and the results are shown in Graph A1 in the Annex.

¹⁶ One caveat in interpreting this result is that debt forgiveness and debt-rescheduling cases have different sample sizes (100 and 25 respectively) and may concern countries of very different natures.

¹⁷ The first-step regression table is available upon request.

The results do not differ from our baseline results, confirming once again that endogeneity is properly treated.

Other robustness checks

To test the robustness of our empirical results, we proceed with various additional specifications of our model or using subsamples.

In our baseline analysis, we controlled for the occurrence of Paris Club and private sector restructurings, which took place within a two-year window around a Chinese restructuring. As a first robustness check, we test alternative definitions of interactions between China and other types of creditors. We include here any restructuring events by other creditors that took place in a four-year time window around a Chinese restructuring, thus taking into account both any events that took place within two years before and after a Chinese debt relief action.

Second, we re-estimate the model using the sub-sample of African countries, which represent the biggest share in our database. Most of Chinese restructurings in Africa were also decided under the common framework of the FOCAC, which is a centralised platform for sovereign debt restructurings and other forms of development aid from China to the African countries having diplomatic relationship with China. Finally, we extend the number of lags in our local projections from two to four to further control for serial dynamics.

The results from these three sets of exercises are presented in Annex 2 (Graphs A2–A4). The empirical results remain unchanged compared to the baseline results.

4. Conclusion

Using an updated database on Chinese debt restructurings overseas since 2000, this paper uncovers a number of salient features about the terms that China offered in past debt restructurings and how China interacted with other types of creditor and the IMF. We observe that debt forgiveness dominates debt-rescheduling cases in terms of the number of occurrences despite the generally low face-value reduction. Moreover, in one quarter of debt forgiveness cases, China cancelled accumulated arrears rather than reducing the principal value of the outstanding debt.

A third of Chinese restructurings took place within a four-year time window in which the Paris Club also conducted debt relief in the same country. In these cases, China was more likely to offer debt forgiveness, especially principal haircut. The common timeframe between China and private sector creditors in a given country looks much looser. China is also more likely to intervene in the countries that solicit the IMF financial assistance, with over 50% of country cases in our dataset under an IMF programme at the time of China's debt relief treatment. The majority of these events are associated with the IMF's poverty reduction instrument (PRGF).

Our empirical study shows that the macroeconomic effects of Chinese debt restructurings are mild once Paris Club agreements and IMF financial are controlled for. Their growth effects are not statistically significant. However, terms of the restructuring matter. Debt rescheduling cases seem to generate the worse growth perspective due to contracted domestic investment and fiscal policy tightening. In these countries, new public debt is needed to refinance the rescheduled old debt.

Moreover, it seems that China is less willing to reinvest in these countries, both Chinese government lending and private lending combined.

Our study highlights some benefits for China to work closely with the Paris Club as long as the macroeconomic effect on the receiving countries are concerned. On the one hand, China is more likely to offer debt forgiveness when the Paris Club is present. On the other hand, the comparative reading of the empirical results from our exercise and Cheng et al (2019) suggests that macroeconomic benefits of a debt restructuring are more likely to come from the Paris Club.

Our current empirical results are very much limited by the publicly available data on Chinese restructurings. Therefore, disclosure of relevant information on Chinese debt restructurings overseas will greatly improve academic research in this field. With more data disclosure, we may be able to analyse the impact of new financing as a way to complement debt forgiveness and rescheduling. It is possible that the Covid-19 pandemic will give an additional push for China to coordinate with Paris Club creditors and the G20 to enhance collaboration and transparency in the field of sovereign debt restructuring. This also goes in line with the G20 recommendation on debt transparency.

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Annex

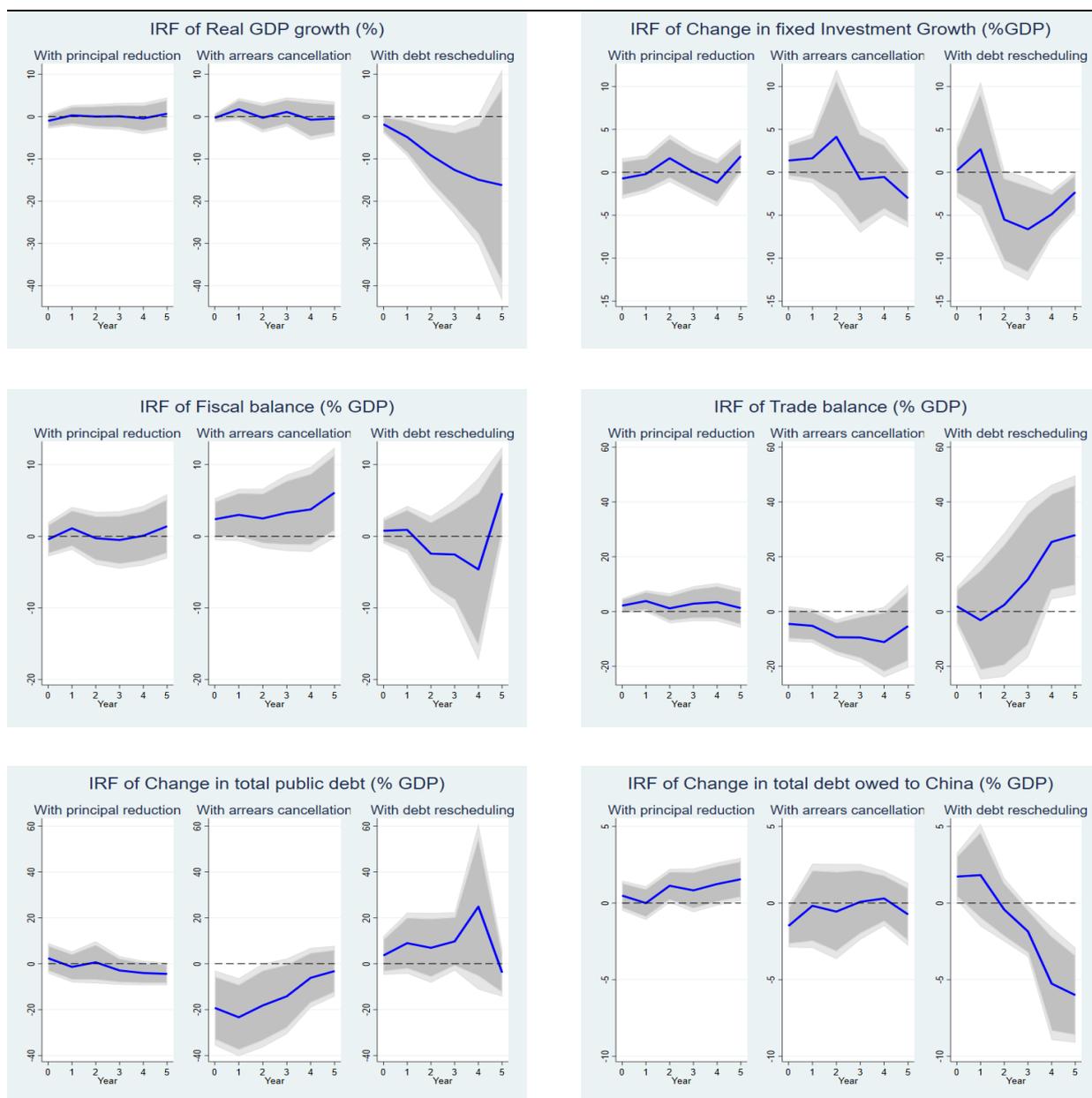
A.1. Summary statistics of variables used in local projections

	Mean	St.dev	min	max	Median	Obs.
Real GDP growth (%)	4.64	7.04	-52.43	110.49	4.75	1,271
Per capital real GDP growth (%)	2.60	6.34	-54.05	61.35	2.74	1,199
Gross capital formation (% GDP)	23.44	10.19	-3.74	76.76	22.42	1,123
Public debt (% GDP)	60.78	54.39	0.00	514.92	46.63	1,191
Primary balance (% GDP)	-1.40	5.66	-35.31	40.60	-1.43	1,226
Debt services (% GDP)	0.63	2.06	-14.56	11.11	0.70	1,226
Current account balance (% GDP)	-4.62	11.41	-84.11	63.39	-4.87	1,273
Int'l reserves/GDP (%)	16.33	16.41	0.03	239.26	12.76	1,187
Trade balance (% GDP)	-11.05	21.47	-161.43	69.19	-9.18	1,145
Int'l reserves/GDP (%)	16.33	16.41	0.03	239.26	12.76	1,187
World real GDP growth (%)	3.83	1.29	-0.10	5.60	3.60	1,320
US 10y treasury rate (%)	3.28	1.10	1.78	5.12	3.17	1,320
VIX index	19.66	6.97	11.04	40.00	18.26	1,320

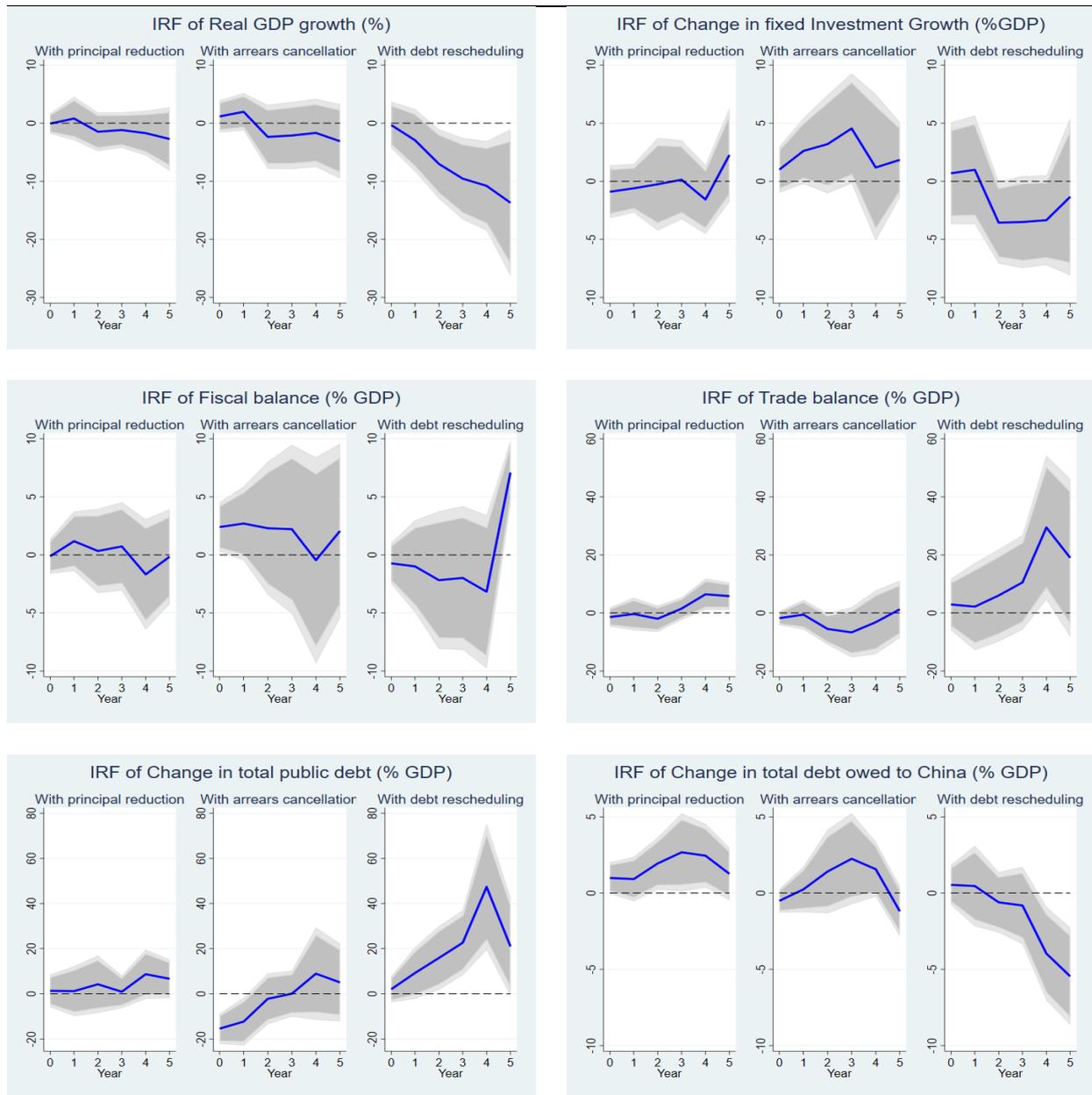
A.2. Results from robustness tests

AIPW¹

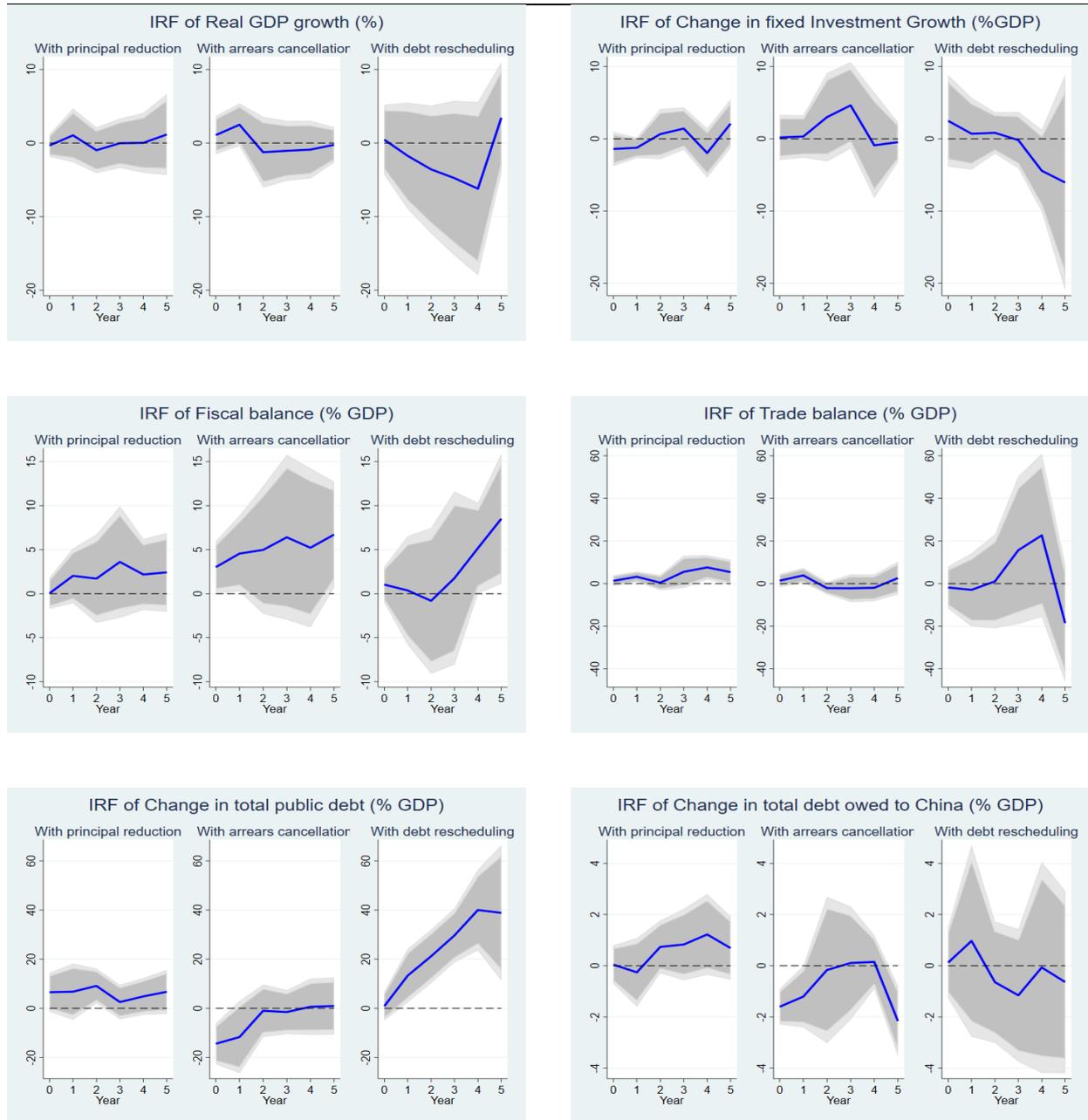
Graph A1



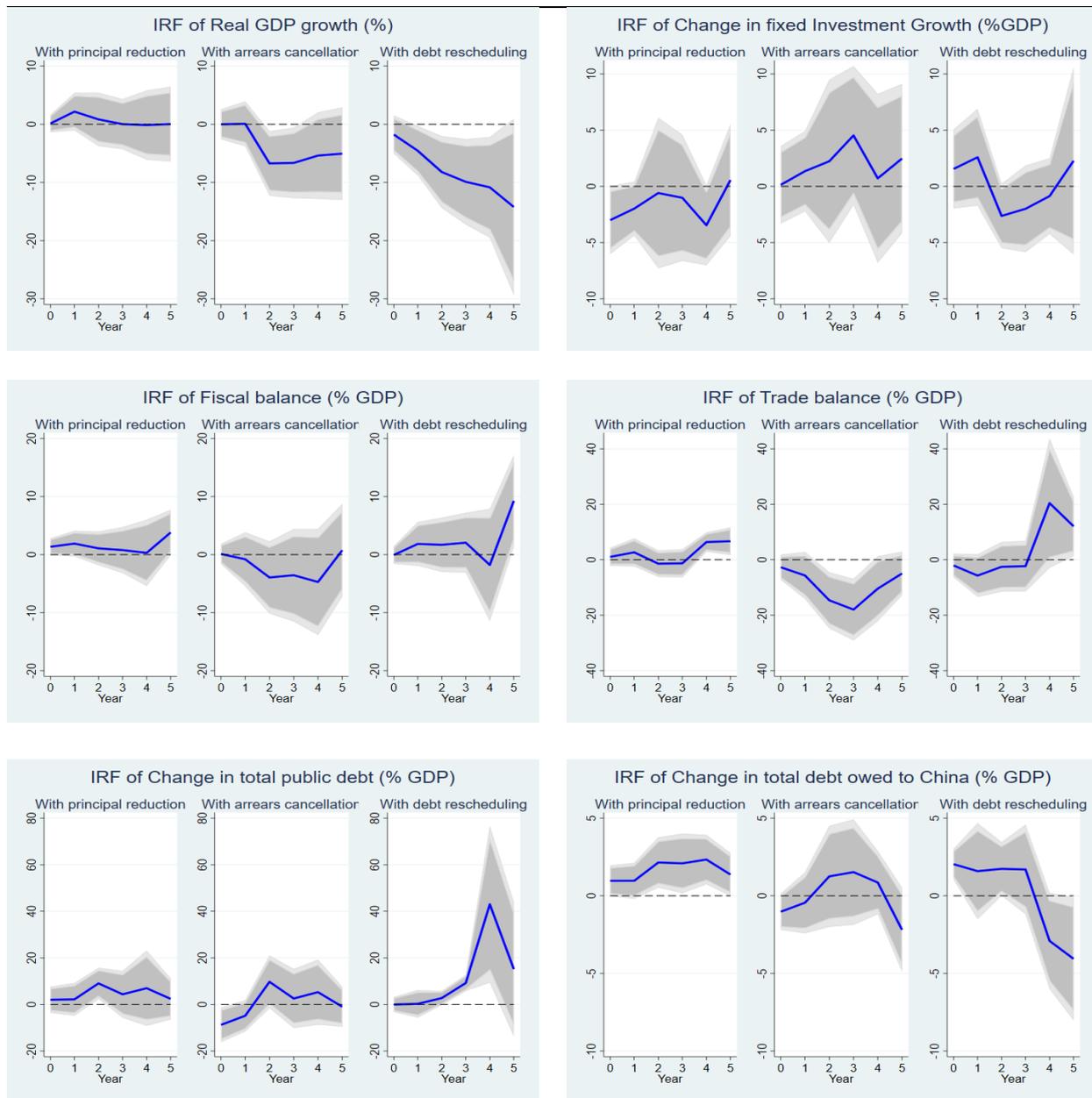
¹ The blue solid line traces the estimated evolution of a given variable over a period of five years after a shock at time 0, which corresponds to the year when a restructuring is granted by China. The dark and light grey areas represent the 90% and 95% confidence intervals, respectively.



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