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# China's debt relief actions overseas and macroeconomic implications<sup>\*</sup>

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## Abstract

This paper explores a novel database of 140 cases of debt restructurings that China conducted between 2000 and 2019 in 65 debtor countries. It uncovers a number of salient features of the restructuring terms that China has offered and the ways in which China has interacted with other creditors and the International Monetary Fund (IMF). The majority of debt relief operations have been executed through debt forgiveness rather than debt rescheduling through maturity extension or/and interest rate reduction. Interestingly, a large number of Chinese debt relief operations took place within a two-year timeframe of debt relief agreements with Paris Club or private sector creditors and in the context of financial assistance from the IMF. Using local projections, this paper sheds light on the negative impact of China's debt relief operations on growth and development prospects in debtor countries, especially when China provides debt rescheduling and does not treat the stock of nominal debt. Subdued domestic fixed capital investment and fiscal policy tightening seem to be the main drag on economic growth in debtor countries after a restructuring.

*Keywords:* China, HIPC, Paris Club, Sovereign debt restructuring

*JEL classifications:* F33, F34, H63

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## 1. Introduction

Official credit from China<sup>1</sup> to developing countries has expanded quickly over the past decade, dwarfing the financing of any other creditors, including Paris Club and non-Paris club lenders, and multilateral institutions<sup>2</sup>. (Horn et al., 2019) estimate that 107 countries in the world owed China \$392 billion in 2017. In Latin America for instance, the outbound credit from the Chinese government, policy banks and commercial entities has exceeded the combined lending from the World Bank, the Inter-American Development Bank and the Development Bank of Latin America<sup>3</sup>. The growing Chinese lending overseas has also made the country an indispensable player when a debtor country faces financial strains and needs to renegotiate its external debt.

Despite its policy relevance, China's role as a debt relief provider has not received sufficient attention in the economic literature, mainly for lack of good-quality data on Chinese debt restructurings. Our paper aims at filling this gap and enriching the literature from three angles.

We first provide an updated database on China's debt relief actions overseas through a thorough review of past restructuring events since 2000. We include 140 cases between 2000 and 2019 that took place in 64 countries, although constructing an exhaustive database of all Chinese debt restructurings does not seem achievable given the opacity of the processes and non-disclosure requirements in some debt negotiations. As we will detail in Section 2, we build upon previous contributions from (Bluhm et al., 2018) and (Hurley et al., 2019) and we used extensively news search and scrutinised debt restructuring events in the light of official documents from the International Monetary Fund (IMF) and ministries of finance of China and debtor countries.

Second, based on this enriched database, we highlight a number of key stylised facts to illustrate the various restructuring strategies that China uses and the potential interaction between China and other creditors, as well as the IMF. It seems that China extended most debt relief out of its own initiative to African countries. The Forum on China-Africa Cooperation (FOCAC) constitutes a major platform to discuss and grant debt relief in this case. In terms of restructuring terms,

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<sup>1</sup>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)

<sup>2</sup>The Paris Club is an informal club of Sovereign creditors providing treatment of official bilateral debt to other Sovereign countries experiencing payment difficulties For know more about how the Paris Club functions, please see <https://clubdeparis.org/en> and (Cheng et al., 2018).

<sup>3</sup>Refer to <https://www.centralbanking.com/central-banks/economics/4738076/after-the-super-boom-china-in-the-lac-region>

China primarily offered debt forgiveness – cancelling arrears or providing a nominal haircut on 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 Highly Indebted Poor Countries (HIPCs). 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 offer.

Finally, we use local projections (([Jordà, 2005](#))) to analyse the macroeconomic implications of China’s relief measures for the recipient countries. We conclude that the growth effects of Chinese debt restructurings are generally not as strong as those of Paris Club agreements, but that different restructuring terms that China offers entail diverging macroeconomic implications. Real GDP growth does not seem to pick up after the restructuring and may even go down in instances of debt rescheduling. 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 continues to grow whereas countries benefiting from arrears cancellation enjoy 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.

As for the policy implications, our academic effort to uncover the characteristics of China’s debt relief actions overseas, especially in terms of China’s restructuring strategies and the inter-creditor dynamics, could provide useful insight for the ongoing G20 Debt Service Suspension Initiative (DSSI). Our database sheds light on a potential emulation between China and the Paris Club. For one-third of observations in our sample, China provided debt relief in a narrow timeframe around a Paris Club restructuring, and China almost exclusively provided nominal haircuts in these cases. Considering that many low-income countries hit by the Covid-19 face tightened external financing conditions and may request debt treatments, effective coordination among official creditors, in particular between China and the Paris Club, will be determinant for the success of future debt workouts.

Our work is closely related to a growing literature on Chinese outbound credit and sovereign

debt sustainability in recipient countries. This strand of literature mostly focuses on development issues, and studies the reasons behind Chinese outbound credit and its impact. [Gallagher and Myers \(2017\)](#) examine Chinese lending to Latin America and note that Argentina, Brazil, Ecuador, and Venezuela have especially benefitted from Chinese financing since 2005. [Ray et al. \(2015\)](#) look at different projects, including infrastructure and commodities investment through which the Chinese money had been channelled to in Latin America. [Brautigam and Hwang \(2016\)](#) examine 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. \(2019\)](#). From a political economy approach, [Hurley et al. \(2019\)](#) assess the likelihood for BRI borrowers to have debt problems and offered policy recommendations to China and multilateral lenders, for instance to increase debt transparency.

Some authors examine 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, to publish in April 2019 a slide pack on China's debt cancellation<sup>4</sup> and present 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 by [Bluhm et al. \(2018\)](#), which we will also use. [Wang \(2014\)](#) reflects on the role of China in shaping sovereign debt restructuring globally. She highlights 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 \(2020\)](#) document the role of China as a debt relief provider and the size of its actions by examining nine cases: Iraq (2004), Cuba (2011), Seychelles (2011), Chad (2017), Zambia (2018), Mozambique (2018), Cameroon (2019), Republic of Congo (2019), and Venezuela (2019) in recent years. Similarly, [Acker et al. \(2020\)](#) provide case studies of Chinese debt relief measures in Africa and documented that China has 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

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<sup>4</sup><https://developmentreimagined.com/wp-content/uploads/2019/04/final-doc-china-debt-cancellation-dr-final.pdf>

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. \(2018\)](#) and sovereign debt restructurings granted by private creditors from [Cruces and Trebesch \(2013\)](#) and [Asonuma and Trebesch \(2016\)](#). Some restructurings with China – a non-Paris Club official creditor – provide 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](#); [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 data and stylised facts**

[Bon and Cheng \(2020\)](#) document features of debt relief operations that China has carried out in recent years through nine 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. \(2019\)](#), itself being an update of the data used by [Bluhm et al. \(2018\)](#). [Hurley et al. \(2019\)](#) provide, in total, 95 events between 2000 and 2017. We first verify all occurrences in these two sources by checking any available news and press articles. We also refer 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 enrich the database by providing additional features (IMF programme, Paris club restructuring, for example) and extended it to 2019. For this, we conduct an extensive press review. We use specialised press, such as Debtwire,<sup>5</sup> and search keywords on Factiva.<sup>6</sup> The criteria we set for Factiva search are similar to those used in Enderlein et al. (2012). For instance, we carry out a search using “country name” + “debt” + “China” as keywords in both French and English and analysed all results obtained. An additional test of comprehensiveness was applied with the words “China debt restructuring/reprofiling/renegotiation” in both languages. We verify 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 go back to the website of the country’s ministry of finance and/or debt management agency to track any related documents. We also use some private-sector sources, such as data from Rhodium Group<sup>7</sup> (Kratz et al., 2019), to double-check the accuracy of the events we found.

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 consolidate 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 exclude nine events in which debt was refinanced through new financing, hence not being a conventional restructuring. Table 3.1 and Figure 3.1 provide an overview of these restructurings. Overall, the size of debt treated by China in the 125 cases ranges from \$5 million in 2000 to \$21340 million in 2015. On average, countries receive two debt relief operations from China with some countries receiving up to seven debt treatments from China.

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<sup>5</sup>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>

<sup>6</sup>Owned by Dow Jones & Company, Factiva is a business information and research tool allowing news search from more than 32000 sources, such as newspapers, journals, magazines, etc. <https://professional.dowjones.com/factiva/>

<sup>7</sup>Founded in 2003, Rhodium Group is a New York-based advisory firm providing independent research and has a strong China team.

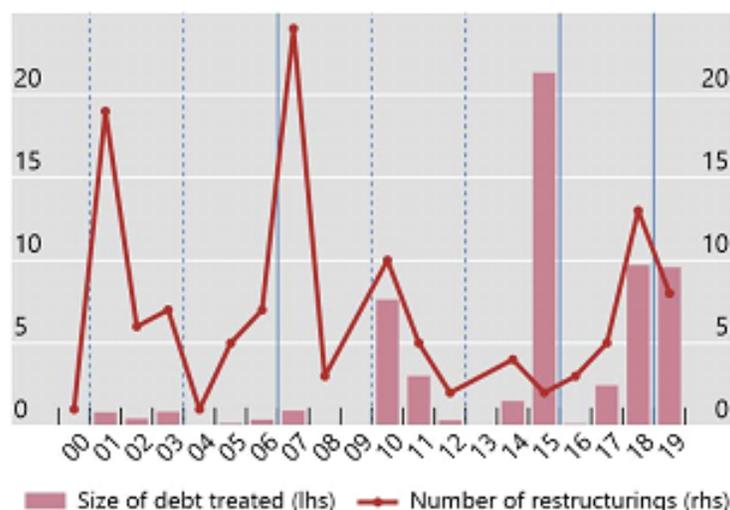
**Table 3.1:** *Summary of China's debt restructurings 2000-2019*

Year	Amount treated (US\$ million)	Number of deals	Average per deal (US\$ million)	Median (US\$ million)
2000	5.0	1	5.0	5.0
2001	818.36	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	7,626.6	10	726.6	42.3
2011	3,019.5	5	603.9	75.0
2012	323.1	2	161.5	161.5
2013	-	-	-	-
2014	1,500.0	4	375.0	1,500.0
2015	21,340.0	2	10,670.0	10,670.0
2016	107.1	3	35.7	12.1
2017	2,445.4	5	489.1	50.1
2018	9,718.3	13	747.6	1,600.0
2019	9,578.0	8	1,197.3	1,000.0
<b>Total</b>	<b>59,225.0</b>	<b>125</b>	<b>3,290.3</b>	<b>833.5</b>

*Source: Authors' calculations based on their enriched dataset on China's debt restructurings.*

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 have coincided with some centralised events that China organises to discuss sovereign debt issues, for instance FOCAC meetings. 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' summits 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 external debt.

**Figure 3.1:** *Evolution of Chinese debt restructurings overseas - Size and occurrences of debt restructurings per year*



*Source: Authors' calculations.*

*Note: 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.*

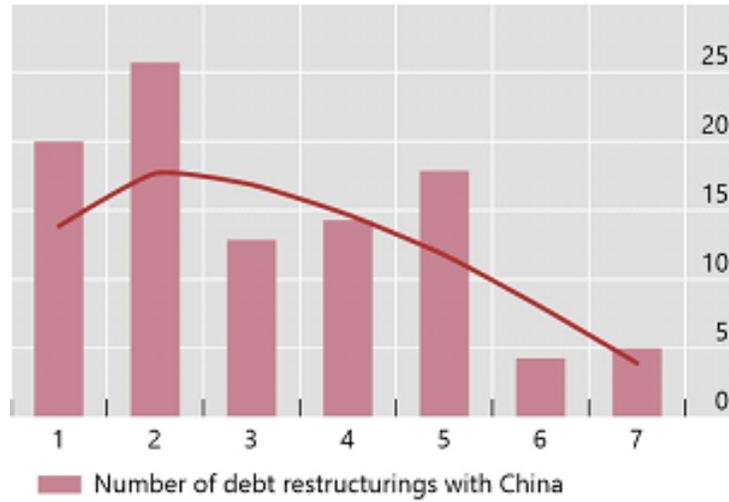
*LHS in USDbn and RHS in Number of occurrences*

On average, countries receive two debt relief operations from China. Some countries can receive up to seven debt relief actions from China in total, as the histogramme in Figure 3.2 illustrates. Chinese debt restructurings also spread out across different continents as the map in 3.3 illustrates. We find restructuring cases in Africa, Latin America, Central Asia, the Middle East, the Pacific islands and Southeast Asia. Ukraine is the only European country that benefitted from China's debt relief in the context of its 2015 economic crisis.

The summary statistics in Table 3.2 highlights some regional heterogeneities in terms of the occurrence of China's relief actions and their size. Africa receives the highest number of debt relief actions from China, over 70% of the total observations in our sample. However, compared to other continents, only 24% of African cases benefit from a nominal debt reduction. Driven by a few cases, i.e. Cuba and Iraq, Latin America and the Middle East register the highest amounts of debt treated, of which more than half is dealt by China with principal debt reductions. We note 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. We note that a few cases are dropped out in our stylised facts because of missing macroeconomic variables for the scaling purpose.

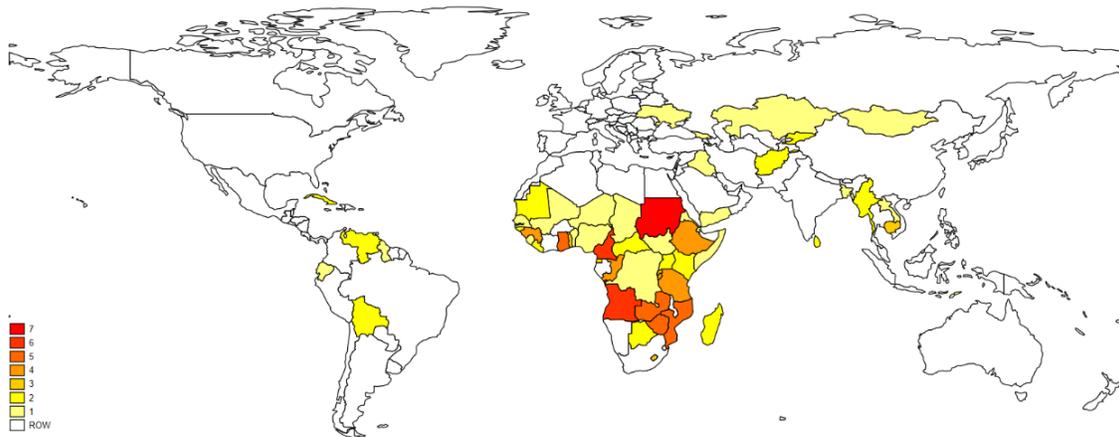
**Figure 3.2:** *Evolution of Chinese debt restructurings overseas - Histogramme of debt restructurings received*



Source: Authors' calculations.

Note: The histogramme uses the full sample of 140 events. Right hand side in percentage

**Figure 3.3:** *Geographical disparities*



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

Source: Authors' calculations.

**Table 3.2:** *Debt treatments across regions*

	Africa	Asia	Latin America	Middle East & Central Asia	Pacific islands
Total debt treated (US\$ million)	524.16 (2448.4)	205.97 (293.5)	1126.80 (1190.4)	1141.42 (2410.3)	7.17 (3.75)
Total debt treated (% GDP)	2.04 (4.47)	1.14 (1.34)	4.54 (3.89)	3.24 (6.67)	1.59 (0.86)
Nominal debt reduction (US\$ million)	126.91 (542.3)	75.27 (73.58)	583.33 (1121.5)	770.12 (2261.4)	4.30 (4.73)
Nominal debt reduction (% GDP)	1.36 (3.71)	0.98 (1.42)	2.54 (3.84)	0.74 (1.59)	0.95 (1.06)
Nominal debt reduction / Total debt treated	24.2%	36.5%	51.8%	67.5%	59.9%
Observations	87	10	6	9	5

*Note: Mean coefficients; standard deviation in parentheses.  
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 update this dataset with the Paris Club official website to confirm no new relief has been granted between 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 \(2013\)](#) and [Asonuma and Trebesch \(2016\)](#). However their data ends 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 will hence be 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 growth and public debt in Cuba, we extract data from Trading Economics.<sup>8</sup>

## *2.2. Stylized facts*

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

### *2.2.1. 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 the restructuring methods that do not involve nominal debt reduction, namely they prefer offering 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 for the macroeconomic effects of China's debt relief measures.

[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

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<sup>8</sup>Refer to <https://tradingeconomics.com/cuba/government-debt-to-gdp>

debt forgiveness in 100 cases. In the remaining 25 cases, which also happen to be the most recent cases, China rescheduled recipient countries' debt via maturity extension or interest rate reduction.

Table 3.3 compares 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 \$239.21million or 1.63% of GDP in our sample. The size of debt rescheduled via maturity extension and interest treatment reached on average \$2,465 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. The summary statistics table also indicate that the size of debt treated is skewed towards a few very big restructurings (75<sup>th</sup> percentile) for both forgiveness and rescheduling cases.

**Table 3.3:** *Summary statistics of debt forgiveness and rescheduling cases*

	Mean	St.dev.	Min	Max	p25	p50	p75	Obs.
<b>Debt forgiveness</b>								
Total debt treated (US\$ million)	239.21	909.25	1.37	6800.00	11.48	33.38	71.40	93
Total debt treated (% GDP)	1.63	3.68	0.002	25.27	0.19	0.53	1.01	92
Total debt treated (% public debt)	4.38	11.04	0.01	76.10	0.27	0.80	1.87	91
<b>Debt rescheduling</b>								
Total debt treated (US\$ million)	2465.26	5368.23	0.24	21300	44.21	1000	2200	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.*

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 through a nominal value debt reduction of \$78 million. However, this operation only writes off the accumulated arrears, namely the amount of repayments that the country has already missed vis-à-vis China at the time of debt renegotiation. We 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.

To distinguish between the cases involving principal haircut or arrears cancellation within the category of debt forgiveness, we analyse 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 offered more often cancellation of accumulated arrears from debt amortisation.

In fact, the Eight-Point Plan China pledged at the FOCAC Beijing Summit in 2006 indicate 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 (HIPCs) and Least Developed Countries (LDCs) in Africa<sup>9</sup>. A similar statement with a cut-off date for debt cancellation immediately before the year of FOCAC meeting can be found in 2009,<sup>10</sup> 2010, and 2018.<sup>11</sup> We accordingly code restructurings in African countries falling in these years as cases of arrears cancellation. Our database registers 28 cases of arrears cancellation and 72 cases of principal haircut among 100 cases of debt forgiveness. Table 3.4 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 3.4 are slightly smaller than the number of occurrences stated above, as some cases did not indicate the size of the debt treated.

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<sup>9</sup>Refer to <http://bw.china-embassy.org/eng/jmwl/t785012.htm>

<sup>10</sup>Ibid.

<sup>11</sup>Refer to [https://www.focac.org/eng/zywx\\_1/zywj/](https://www.focac.org/eng/zywx_1/zywj/)

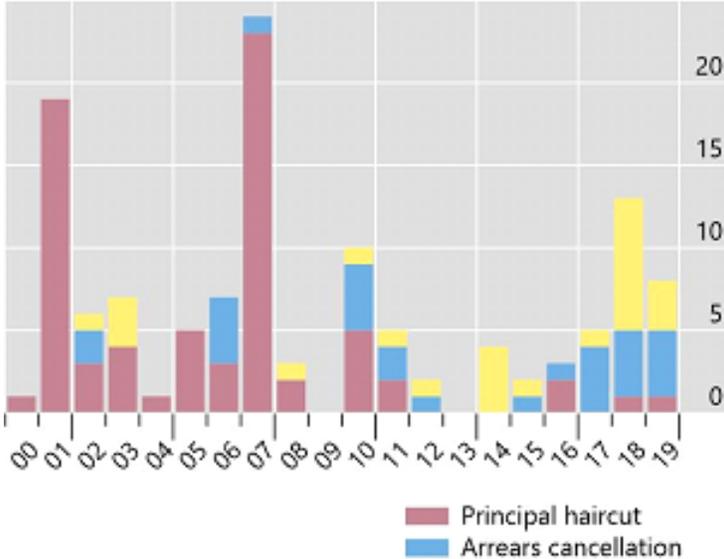
**Table 3.4:** *Summary statistics of three debt treatments*

	Mean	St.dev.	Min	Max	p25	p50	p75	No.
<b>Principal haircut</b>								
Total debt treated (US\$ million)	195.85	877.62	2.51	6,800.0	11.48	31.55	66.00	69
Total debt treated (% GDP)	1.27	1.91	0.002	10.36	0.21	0.60	1.47	68
Total debt treated (% public debt)	4.01	10.45	0.01	76.10	0.26	0.78	1.91	67
<b>Arrears cancellation</b>								
Total debt treated (US\$ million)	363.86	1,003.94	1.37	4,400.0	14.07	38.00	88.43	24
Total debt treated (% GDP)	2.68	6.43	0.01	25.27	0.20	0.43	0.44	24
Total debt treated (% public debt)	5.43	12.62	0.01	53.33	0.37	0.82	1.29	24
<b>Debt rescheduling</b>								
Total debt treated (US\$ million)	2,465.26	5,368.23	0.24	21,300	44.21	1,000	2,200	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.*

Figure 3.4 and Figure 3.5 illustrate the evolution of Chinese restructuring cases involving principal haircut (red), arrears cancellation (blue) and debt rescheduling (yellow) 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 the category of debt forgiveness, China tend to provide principal haircut until 2011 and then 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 coincides with the gradual disappearance of Paris Club interventions.

**Figure 3.4:** Evolution of different restructuring approaches - Occurrence of debt relief actions



Source: Authors' calculations.

**Figure 3.5:** Evolution of different restructuring approaches - Total debt treated (in US\$ billion)



Source: Authors' calculations.

### 2.2.2. Interaction <sup>12</sup>between China and other creditors

Bon and Cheng (2020) classify their case studies by examining whether China acted with other creditors – private or official creditors – in a defined timeframe 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 suggest that China’s effort may temporally coincide with other creditors’ debt relief measures.

The Paris Club has long been a primary platform for the renegotiation of bilateral official debt. The Paris Club started to provide nominal debt reduction from 1996 under its Cologne terms for HIPC eligible countries. This period also coincides with the emergence of China as a new sovereign lender. Figure 3.6 shows that the Paris Club has been the major debt relief provider between 2000 and 2010. Its actions were complemented by China and private sector. Graph 4 right-hand panel further demonstrates that the magnitude of Paris Club debt treatments is large and all these operations include a large scale of nominal haircut, up to 90% of the initial stock for the sovereign debt that is not classified as official development aid (ODA)<sup>13</sup>. In comparison, China’s contribution to the total debt treated seems negligible until 2014 as highlighted in Figure 3.7 .

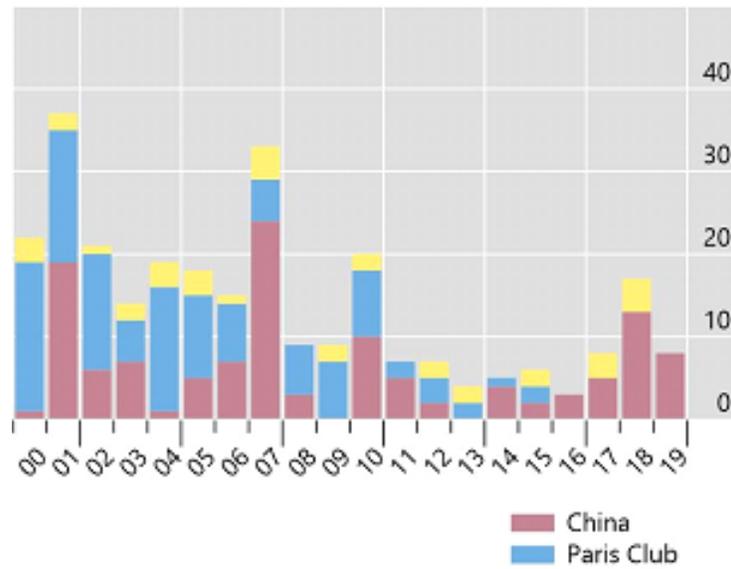
However, the Paris Club ceased to provide restructurings from 2015. For one thing, the part of sovereign debt owed to the Paris Club creditors was significantly reduced after the HIPC initiative, even to zero in many countries. At the same time, outbound credit from China has increased swiftly, thus calling China to contribute more to debt relief in the countries facing debt overhangs. China thus seems to replace the Paris Club as a main contributor to debt restructuring overtime, in particular after 2015. During the same timeframe, we still observe sporadic participation of private sector creditors in debt restructurings. In specific cases, for instance in Puerto Rico in 2018, the total debt treated by private creditors could be very large (Figure 3.7).

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<sup>12</sup>Throughout this section, we talk about the interaction between China and other creditors temporally, namely whether restructurings offered by different creditors take place within a given year or in a closely defined time window. It does not imply any form of ex ante coordination among creditors nor that the comparability of treatment clause is at work.

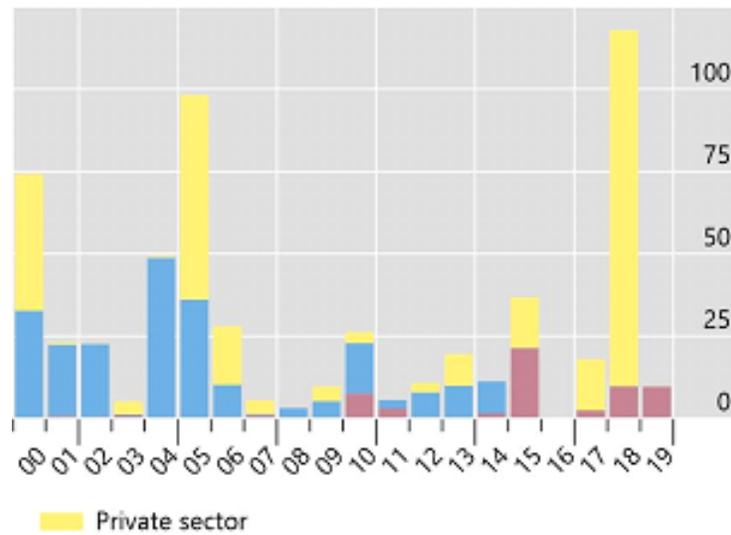
<sup>13</sup>Defined by the OECD, ODA debt refers to flows of official financing administered with the promotion of the economic development and welfare of developing countries as the main objective, and which are concessional in character with a grant element of at least 25% (using a fixed 10% rate of discount).

**Figure 3.6:** Interaction between China, Paris Club creditors and private creditors - Occurrences of debt relief actions



Source: Authors' calculations, excluding other official debt relief.

**Figure 3.7:** Interaction between China, Paris Club creditors and private creditors - Total debt treated (in US\$ billion)



Source: Authors' calculations.

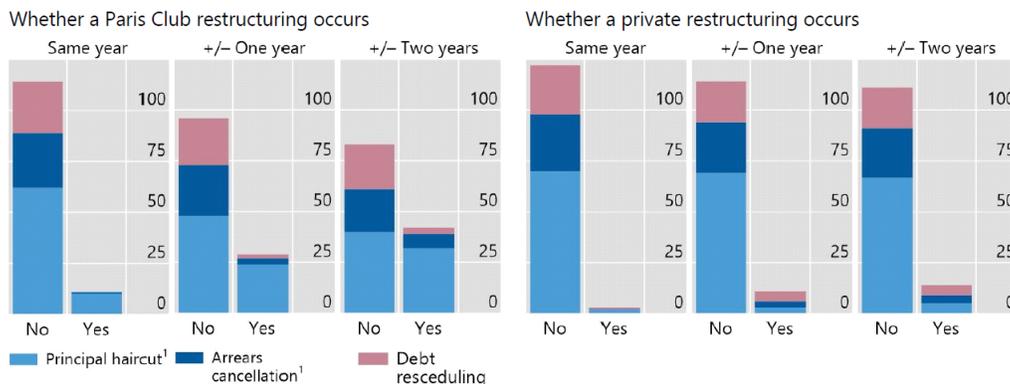
Now, let us consider China's restructuring strategies in relation with its interactions with other types of creditor. Figure 3.8 divides the sample of Chinese debt restructurings based on whether other creditors – the Paris Club (left-hand panel) and private creditors (right-hand panel) – have organised restructurings simultaneously or in a defined time window of two year or four years.

We first observe that many Chinese restructurings took place around a Paris Club restructuring whereas the relationship between Chinese restructurings and private sector actions is much looser. Figure 3.8 (left hand side) 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 or one third of observations in our sample took place in a time window of four years in which we also find a Paris Club restructuring. When conducting the same exercise for the dynamics between China and private sector lenders, only 14 Chinese restructurings occurred in a four-year window around a debt relief action provided by private creditors (Figure 3.8, right-hand side). This looser interaction between China and private sector creditors is understandable given that many countries in our sample do not have access to external financing via financial markets or lending by international banks. Official bilateral lending or assistance from multilateral institutions have been the primary source of financing for these countries.

Moreover, for the 42 Chinese debt relief operations that occur in a four-year window in which the Paris Club also provides debt relief, China predominantly provides principal haircut, which is rarer when China intervenes alone or with private sector creditors. The fact that the Paris Club has been willing to write off the stock of nominal debt since late 1990s seems to emulate China to provide debt forgiveness.

One factor that could explain this de facto emulation between the Paris Club and China is that countries that have benefitted from large-scale nominal debt reduction from the Paris Club were HIPCs, which long faced debt overhangs. This common country characteristic of debtor countries could have motivated China to provide nominal debt treatment as well. It is however hard to use this temporal correlation between Chinese and Paris Club restructurings as the evidence that the Paris Club's comparability of treatment was at work. On the contrary, many practitioners who participated in debt renegotiations with China have pointed to the lack of formal coordination between China and the Paris Club.

**Figure 3.8:** Occurrence of Paris Club and private restructurings around a Chinese debt relief



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

Source: Authors' calculations.

### 2.2.3. 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.<sup>14</sup>

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. In fact, as per the IMF financing assurances policy, for the IMF Board to approve a financial assistance to a member country where debt restructuring is necessary, the country needs to show that it reached an agreement with the Paris Club or a debt restructuring with private sector creditors has been concluded or has made good progress.

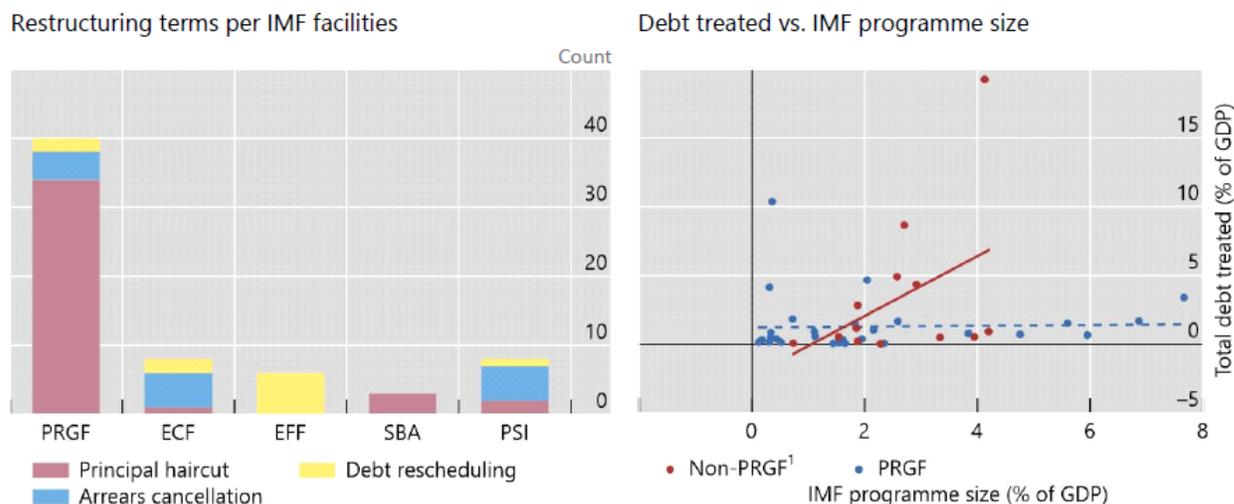
We observe that 40 out of the 65 Chinese restructurings taking place in the context of an IMF programme concern low-income countries that have solicited the IMF's Poverty Reduction and Growth Facility (PRGF), as shown in Graph 3.9 (left-hand panel). The PRGF is in fact offered to

<sup>14</sup>Bolivia, Ecuador and Venezuela could from 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.

HIPC eligible countries, which have also benefited from significant haircuts from the Paris Club, as highlighted in the previous sub-section. Therefore, this multilateral initiative to alleviate the debt burden facing heavily indebted countries seem to have incentivise different creditors to provide debt relief and to unlock official sector financing. In addition, debt forgiveness is also offered when a country benefits from the IMF Extended Credit Facility (ECF), Stand -By Arrangement (SBA) and Policy Support Instrument (PSI). In contrast, the Extended Fund Facility (EFF) is exclusively associated with Chinese debt rescheduling in our database (Angola (2018), Ecuador (2018), Mongolia (2017), Seychelles (2011), Sri Lanka (2019) and Ukraine (2014)). Note that these cases took place in recent years when China seems to prefer debt rescheduling over debt forgiveness. In addition, given the longer-term IMF engagement under an EFF and the development level of these countries (except Mongolia, all middle-income countries and emerging market economies), debt rescheduling might have provided sufficient debt relief in NPV terms to close the beneficiary countries' financing gap.

Graph 3.9 (right-hand panel) also shows correlations between the size of an IMF programme and the magnitude of a country's external debt included for China's debt treatment. For the country cases that the IMF provides a non-PRGF instrument, the bigger the IMF programme, the larger the debt treatment by China. This correlation is statistically significant at a 95% confidence interval. It shows that China may adjust its contribution to debt relief based on the severity of the problem faced by the debtor country, proxied by the country's access to IMF resources. This correlation is not significant when the IMF PRGF is used, indicating once again that debt relief under the HIPC initiative is centrally orchestrated and thus is less correlated with economic situations in individual beneficiary countries.

**Figure 3.9:** *China's debt restructurings and IMF programmes*



*Note:* PRGF = Poverty Reduction and Growth Facility; ECF = Extended Credit Facility; EFF = Extended Fund Facility; SBA = Stand-By Arrangement; PSI = Policy Support Instrument.

*1. Non-PRGF facilities include ECF, EFF, SBA and PSI*

*Source:* Authors' calculations.

### 3. Empirical analysis

We assess the macroeconomic implications of China's debt 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

##### 3.1.1. 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 have triggered the debt restructuring, subjecting our exercise to reverse causality.

[Jordà and Taylor \(2016\)](#) combine 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 \(2019\)](#) follow 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 and Trebesch \(2016\)](#) adopt local projections to examine how pre-emptive and post-default restructurings may entail different costs in international trade for the beneficiary country. The authors argue 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. \(2019\)](#) apply 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 1:

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

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 econometric 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 U.S. 10-year yields, 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 ( $\text{IMF}_{i,t\pm s}$ ). Note that debt negotiations can take several years before a deal is reached and a debtor country can engage different creditors simultaneously, in a sequence, or back and forth. It is important to control debt relief provided by different creditors in the same year, but also in a defined time window.

In the baseline specification, the dummy variables  $\text{Paris}_{i,t\pm s}$  and  $\text{Private}_{i,t\pm s}$  take the value one if there is an intervention within a two-year window around a Chinese restructuring, including contemporaneous actions within the same year. As a robustness check, we will also extend the time window to four years in section 3.3. As for IMF programmes,  $\text{IMF}_{i,t\pm s}$  takes the value one when its Board approves a programme in the same year or one year after a Chinese restructuring. The timing chosen is motivated by the IMF's financing assurances policy. As explained earlier, the IMF financial

assistance normally comes after the agreement or the conclusion of a debt restructuring, depending on the nature of creditors, i.e. bilateral official or private creditors. We take the assumption here that the IMF requests a proof of an agreed debt restructuring between China and a debtor country before making a lending decision. This assumption is motivated by the IMF’s financing assurances policy.  $\mu_{i,t+h}$  is the error term. 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 ([Asonuma, 2016](#); [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 in equation 2.

$$\begin{aligned} \Delta Y_{i,t+h} = & \alpha_{i,h} + \sum_{k=1}^K \beta_h^k (China_{i,t} \times D_{i,t}^k) + \phi_h(L) \Delta Y_{i,t} + \psi_h(L) X_{i,t} + \theta_h IMF_{i,t} \\ & + \eta_h Paris_{i,t} + \zeta_h Private_{i,t} + \mu_{i,t+h} \end{aligned} \quad (2)$$

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  $\beta_h^k$  coefficients.

### 3.1.2. Strategies to deal with 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 use three strategies in the literature. First, [Reinhart and Trebesch \(2016\)](#) and [Cheng et al. \(2018\)](#) use 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 \(2016\)](#) use 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 Zimmermann \(2019\)](#) adopt 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 and Trebesch \(2016\)](#) use 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

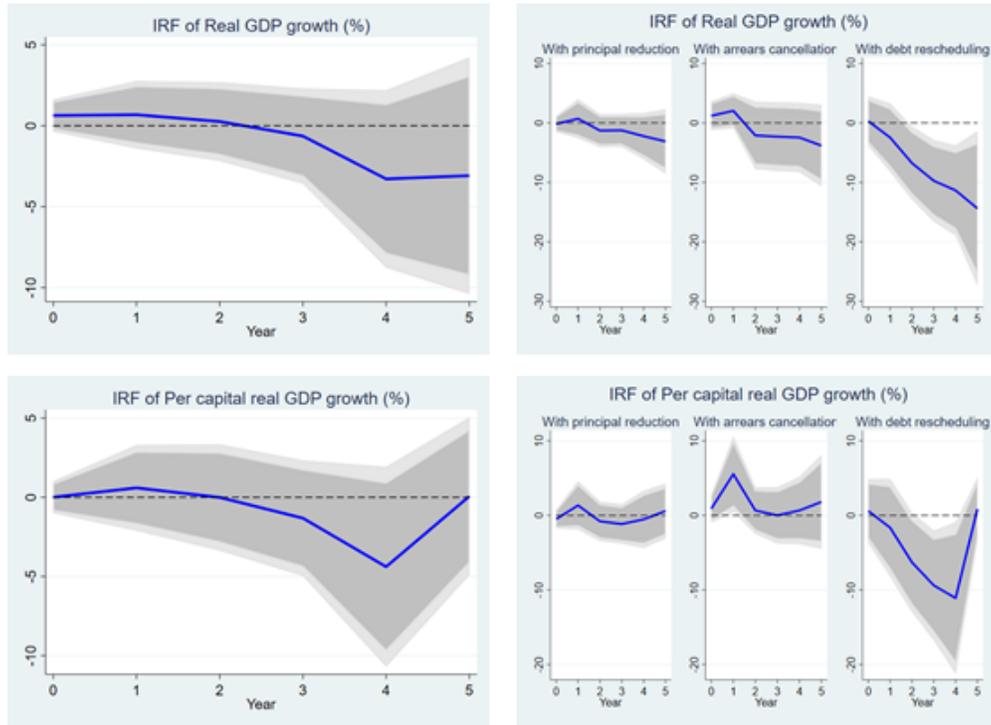
### 3.2.1. Growth effects of Chinese debt restructurings

Figure 3.10 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 A.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 a restructuring is granted by China. The dark and light grey areas represent the 90% and 95% confidence intervals, respectively.<sup>15</sup>

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<sup>15</sup>Regression tables of our local projection exercises are available upon request. We excluded regression tables in the main text due to the paper length limit, as there are six stepwise regressions per variable.

**Figure 3.10:** *Growth effects of Chinese debt restructurings*



*Note: The blue solid line traces the estimated evolution of a given variable over a period of 5 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. Source: Authors' estimates.*

In general, growth and development prospects in the recipient countries are not promising after a debt restructuring. 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 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.

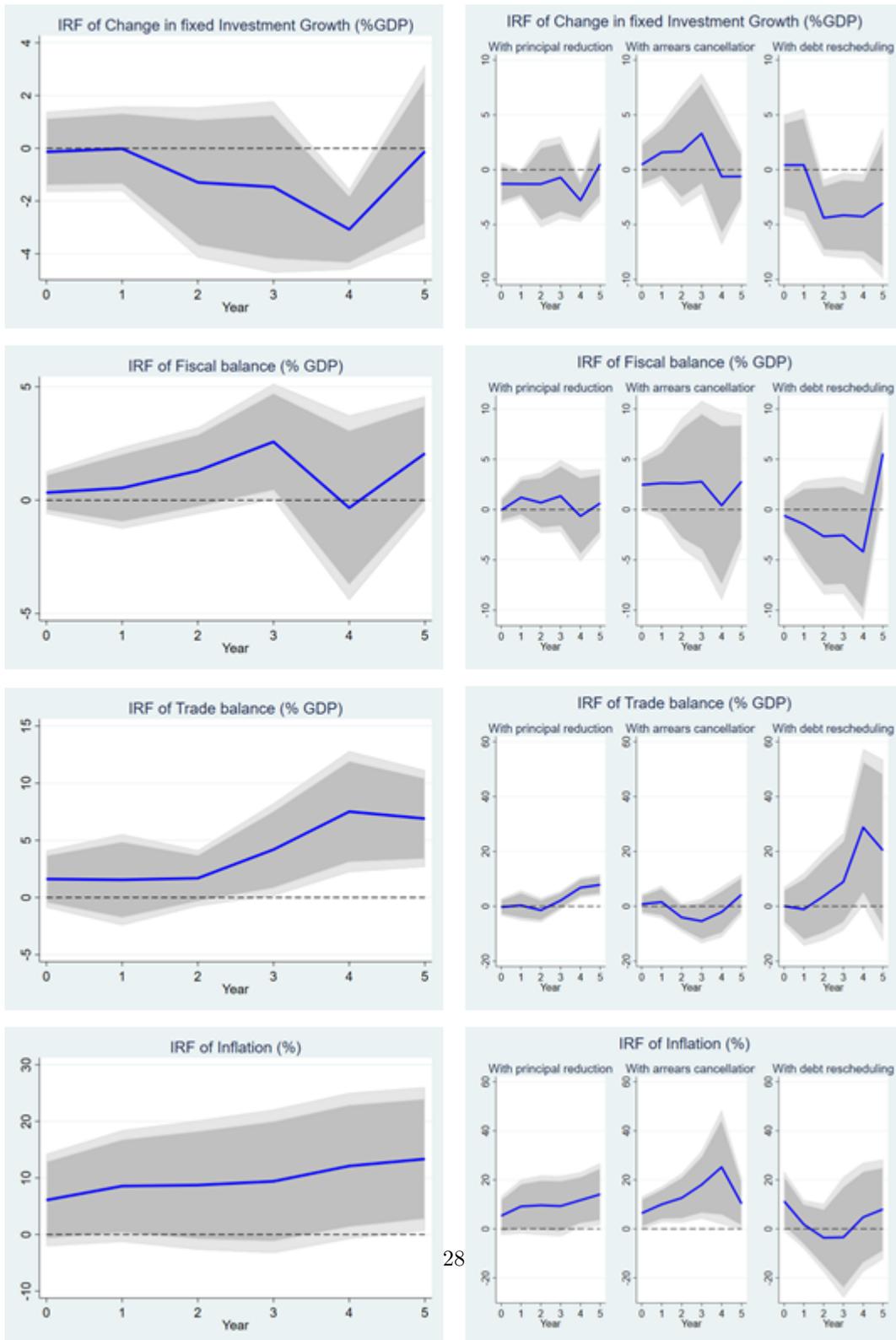
When looking at the effects of different restructuring terms, the deteriorating growth prospects seem to be driven by countries having received debt rescheduling from China. With statistical significance, real GDP contracted by 15% five years after a debt rescheduling case, and real GDP

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.

### *3.2.2. Exploration of possible economic channels*

Now, we turn to different channels of transmissions that could have led to these macroeconomic results. [Asonuma et al. \(2019\)](#) 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. [Figure 3.11](#) illustrates the impulse responses of these variables.

Figure 3.11: Impulse responses of GDP components and inflation



Note: The blue solid line traces the estimated evolution of a given variable over a period of 5 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.  
 Source: Authors' estimates.

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 is short-lived and investment 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](#)) the difficulty of tracking whether and how debt rescheduling was actually delivered. Moreover, when China offers debt rescheduling, a much larger initial debt stock is often involved. Therefore, the beneficiary countries may have faced prolonged debt overhang but the lack of nominal haircuts only kicks the can down the road without tackling the core issue. 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. We do not observe such an effect in our database for rescheduling cases.

Second, we see some degree of fiscal tightening, as measured by sustained fiscal surplus after a debt restructuring. This could stem from the requirements of IMF financial assistance which sets the stage for many restructuring events. In rescheduling cases, fiscal surplus surged to 5% of GDP in year five, with statistical significance.

Third, 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. However, as ([Asonuma and Trebesch, 2016](#)) argue, debt restructurings could affect imports and exports differently, with preemptive restructurings depressing imports more than exports. An improvement in net exports could well reflect expenditure switching instead of a recovery in domestic production.

Finally, the beneficiary countries could have 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%.

### 3.2.3. Debt trajectories

Finally, we look at how debt in the recipient countries evolves 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 [Figure 3.12](#) that changes in total public debt relative to GDP remain positive, in particular in countries that receive a debt rescheduling. The total debt stock thus continues to grow. Public debt increases by 40% of GDP four years after a rescheduling action. In contrast, public debt seems to decrease when China cancelled accumulated debt arrears.

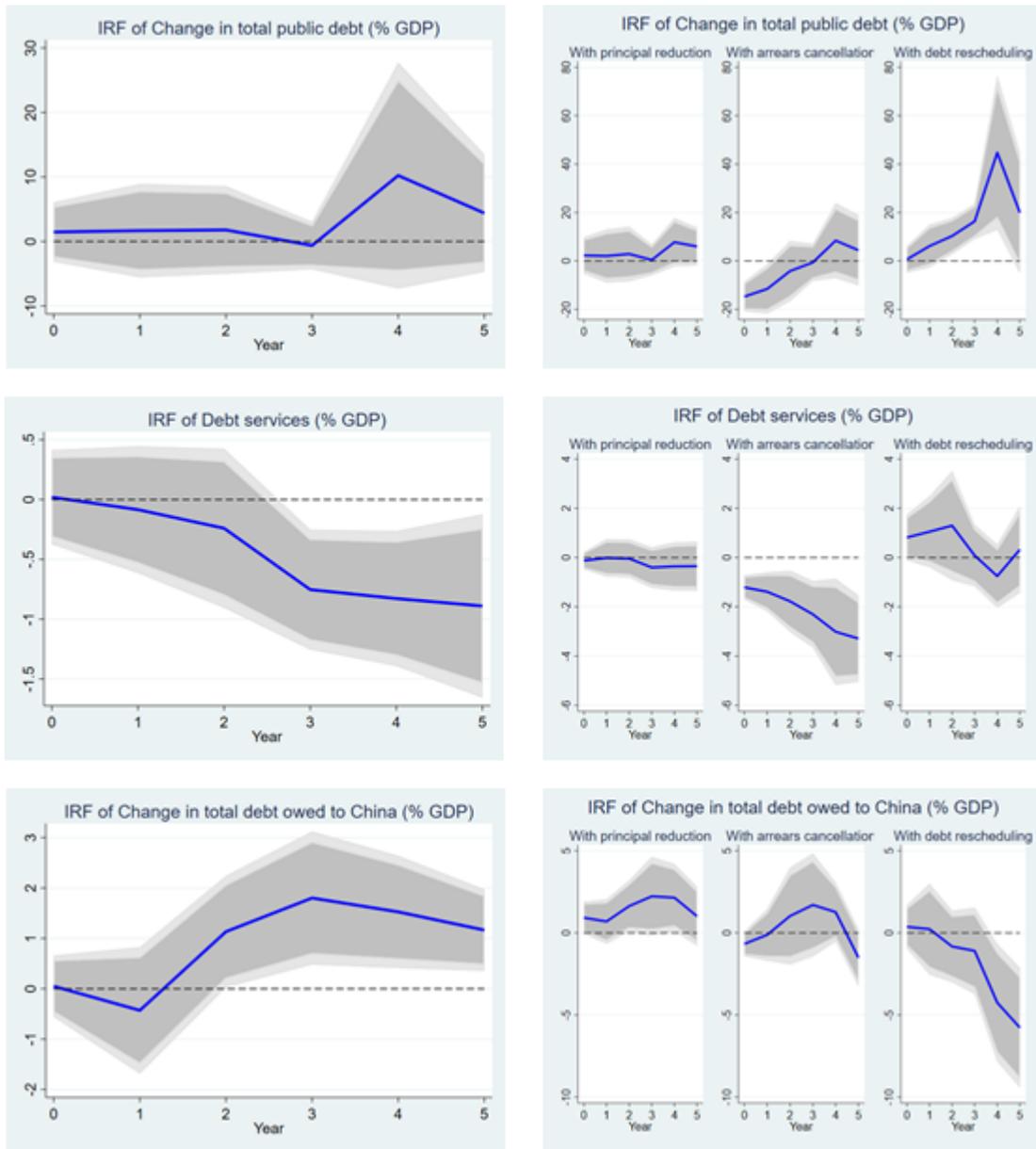
We see similar patterns on the variation of annual debt service payments across different restructuring strategies. Countries having received arrears cancellations see a large reduction on their costs related to debt repayments. Debt service costs remain elevated for debt rescheduling cases with a temporary reduction between the third and fourth year after a restructuring. For one thing, debt rescheduling does not reduce the stock of debt burden, and continues to require interest payments and in the medium to long term refinancing by new debt.

Did China continue to lend to countries that had previously benefited 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.<sup>16</sup>

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<sup>16</sup>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.

Figure 3.12: Debt trajectories



Note: The blue solid line traces the estimated evolution of a given variable over a period of 5 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.  
 Source: Authors' estimates.

### *3.3. Robustness checks*

#### *3.3.1. 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 <sup>17</sup>.

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

#### *3.3.2. 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 control 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

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<sup>17</sup>The first-step regression table is available upon request.

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 the Annex (Figures B.1 - B.4). 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 cancels accumulated arrears rather than reducing the principal value of the outstanding debt.

A third of Chinese restructurings take place within a four-year time window in which the Paris Club also conducted debt relief in the same country. In these cases, China is 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 effects on growth 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.

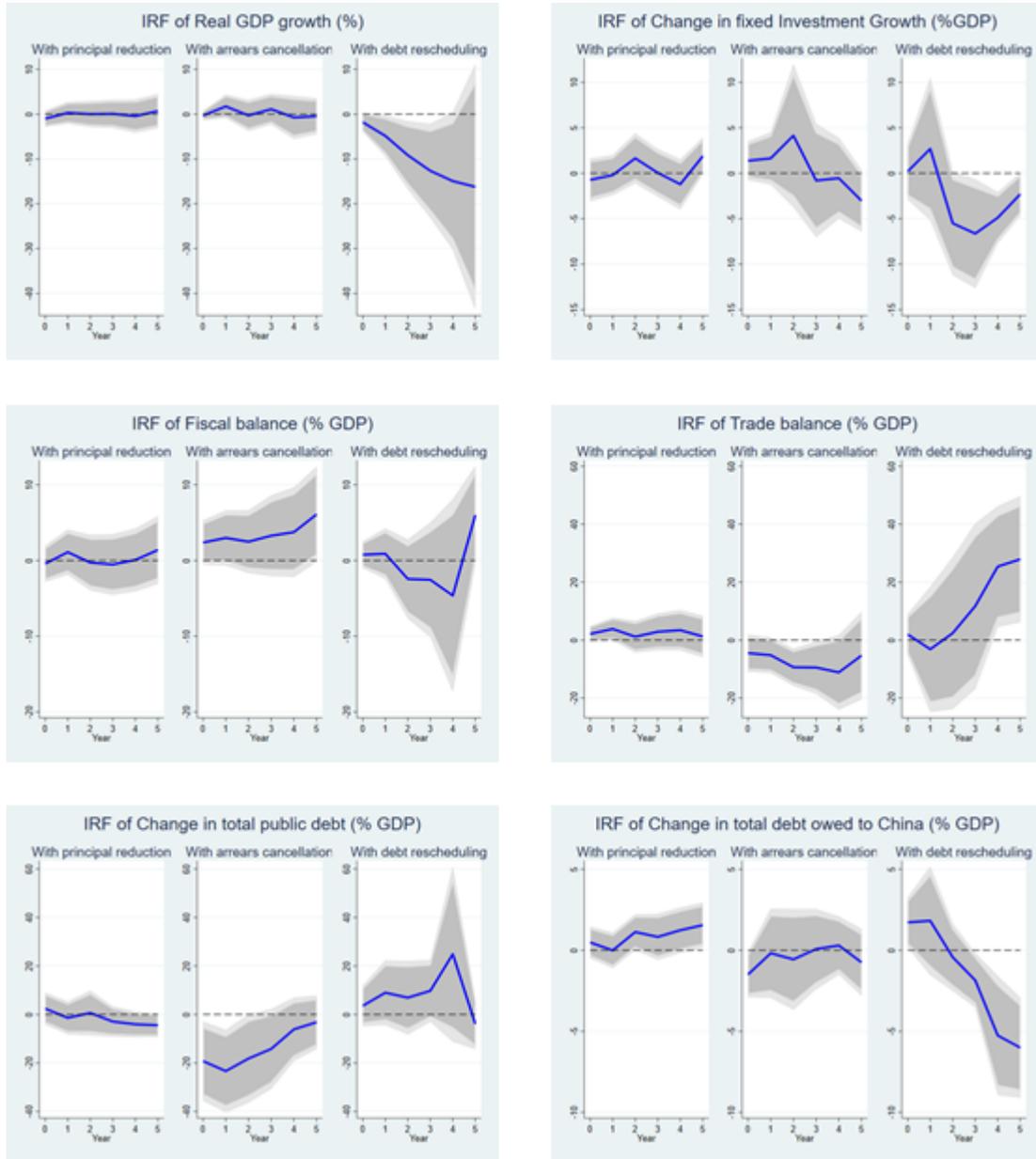
## 5. Appendix

### *Appendix A: Statistics*

**Table A.1:** *Summary statistics of variables used in local projections*

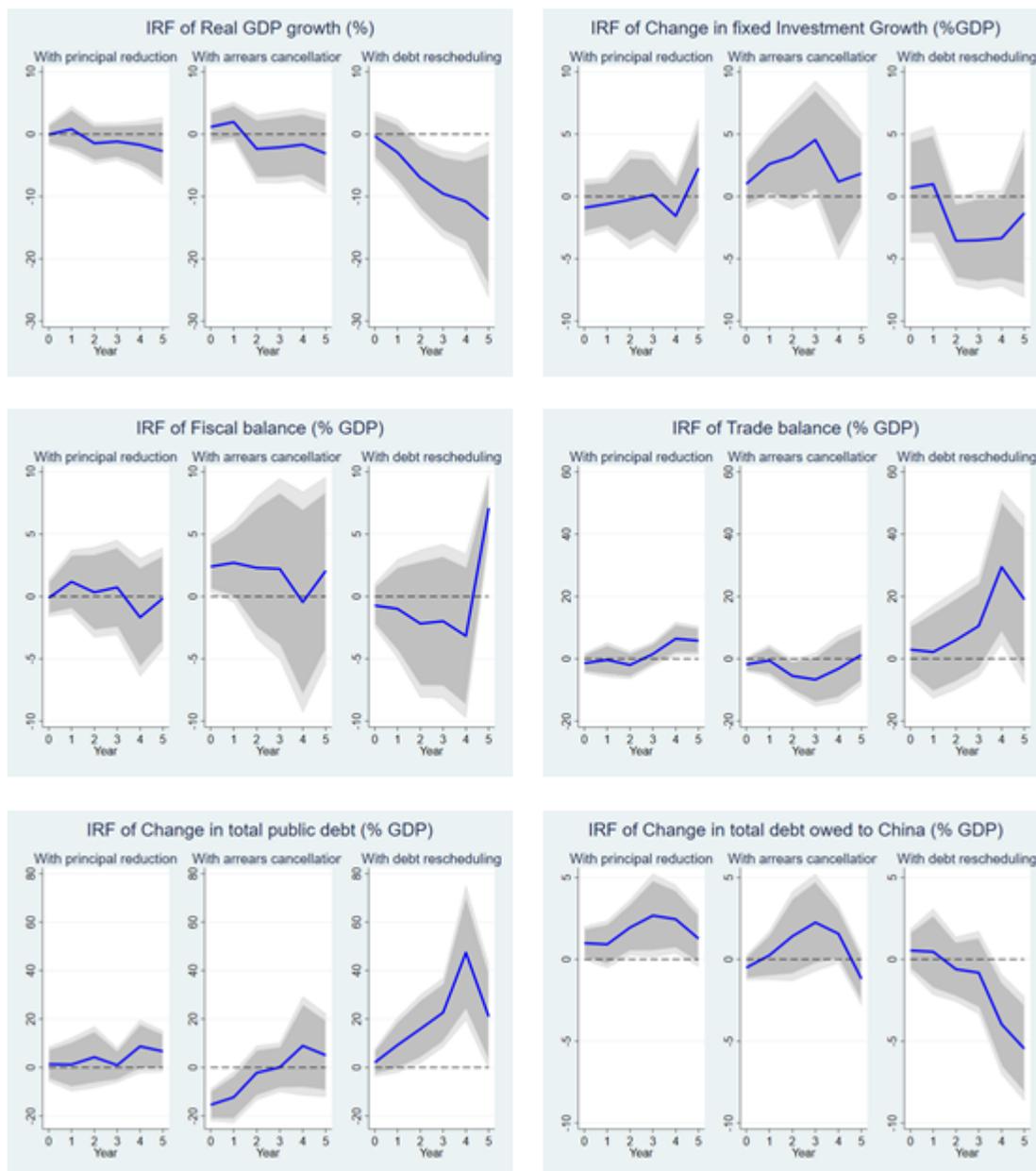
	Mean	St.dev.	Min	Max	Median	Obs.
Real GDP growth (%)	5.08	7.66	-35.00	60.02	4.61	121
Per capital real GDP growth (%)	3.05	6.39	-16.28	53.66	2.08	119
Gross capital formation (% GDP)	24.19	10.51	4.04	52.69	22.71	105
Public debt (% GDP)	72.44	59.28	0.00	345.98	57.83	119
Primary balance (% GDP)	-0.08	6.30	-35.26	21.83	-0.57	117
Debt service (% GDP)	0.53	1.96	-6.15	5.56	0.69	117
Current account balance (% GDP)	-3.74	11.05	-48.80	39.73	-4.14	122
International reserves/GDP (%)	16.23	24.10	0.23	239.26	11.29	112
Trade balance (% GDP)	-7.93	22.47	-161.43	49.54	-7.55	108
World real GDP growth (%)	4.13	1.16	2.50	5.60	3.60	125
US 10y treasury rate (%)	3.57	1.09	1.78	5.12	4.04	125
VIX index	20.60	5.87	11.04	40.00	22.50	125

Figure B.1: AIPW



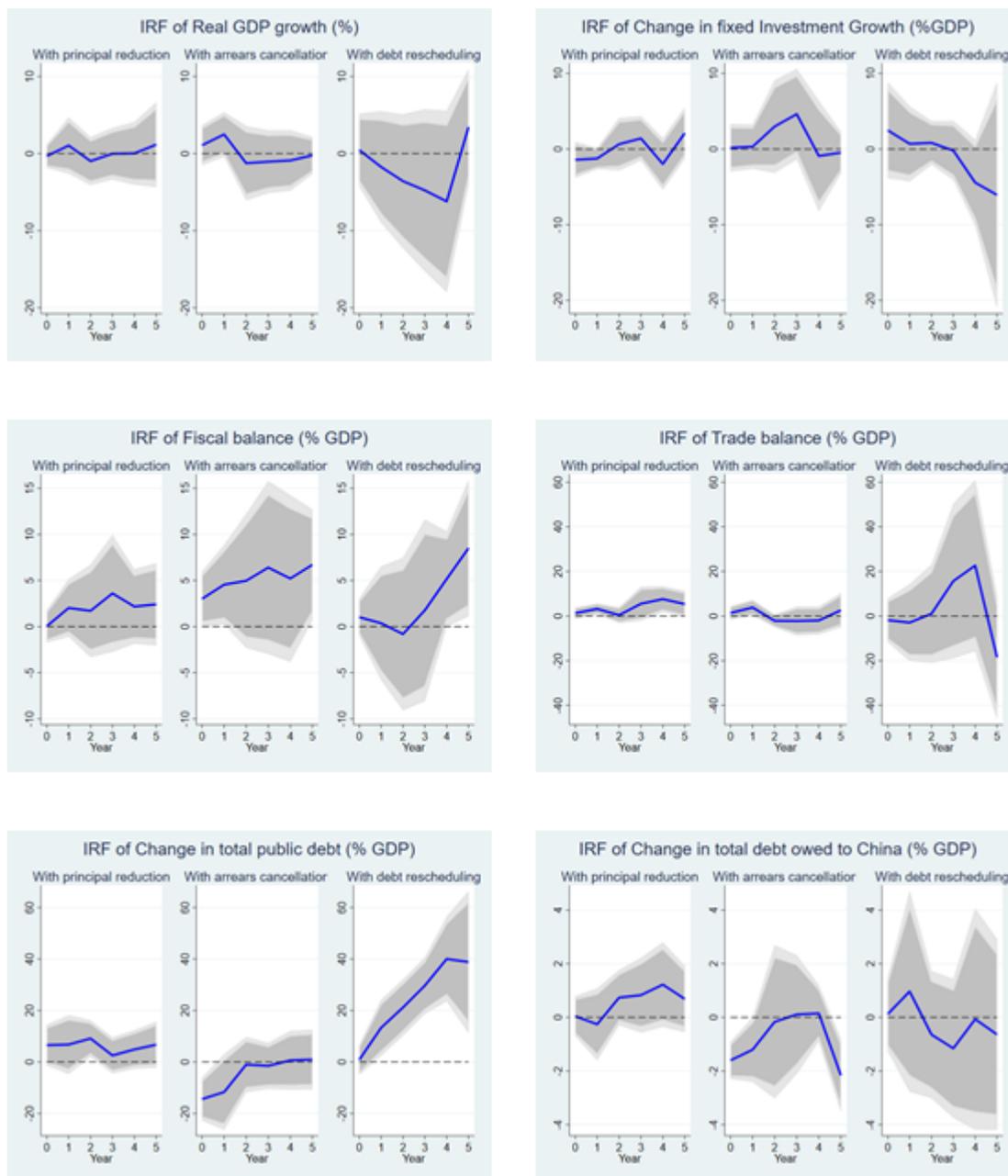
Note: The blue solid line traces the estimated evolution of a given variable over a period of 5 years after a shock at time 0, which corresponds to the year when a restructuring is granted by China. The dark and light grey areas represent the 90% and 95% confidence intervals, respectively. Source: Authors' estimates.

**Figure B.2:** *Using alternative definitions of interactions with other creditors*



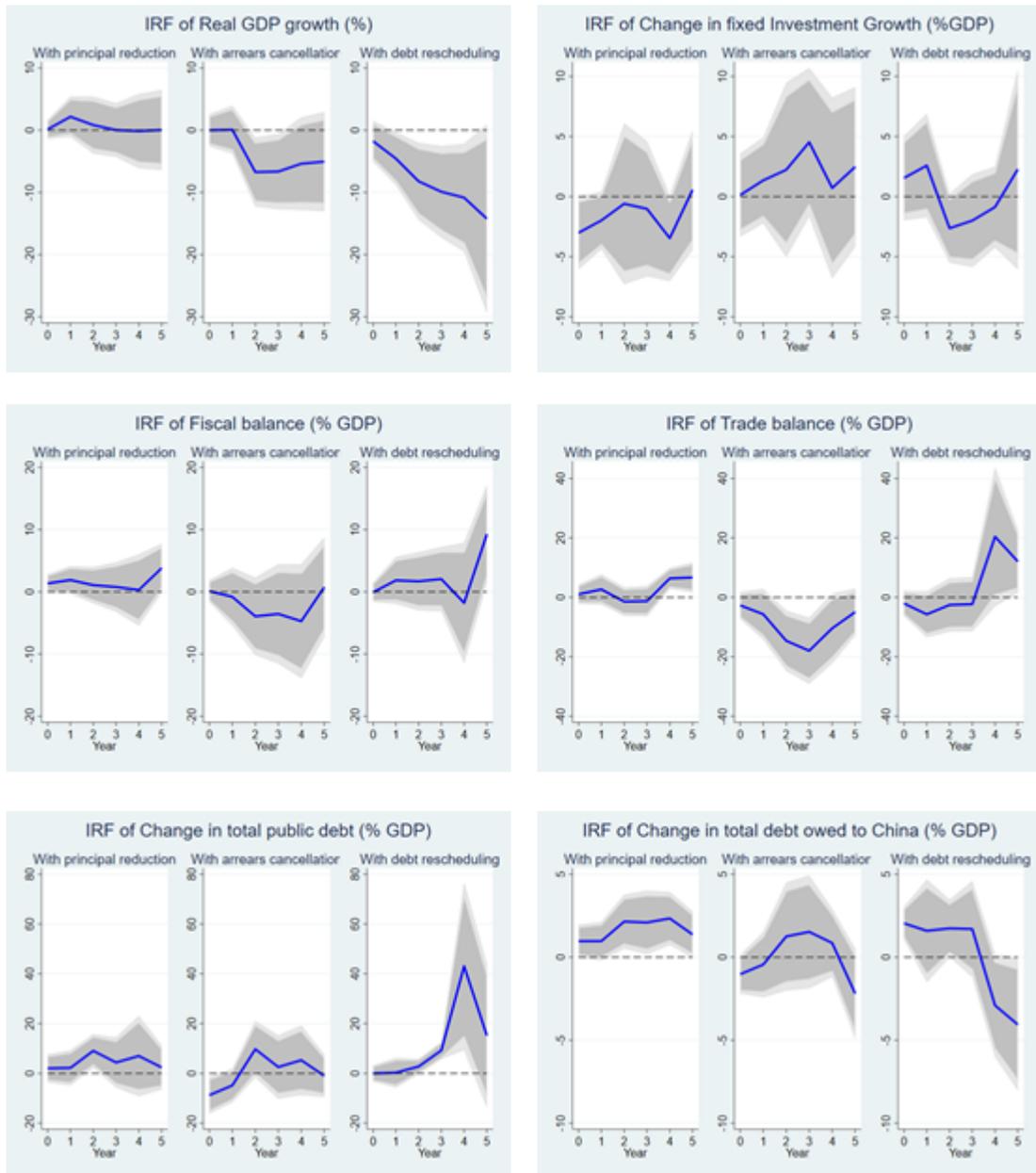
*Note:* The blue solid line traces the estimated evolution of a given variable over a period of 5 years after a shock at time 0, which corresponds to the year when a restructuring is granted by China. The dark and light grey areas represent the 90% and 95% confidence intervals, respectively.  
*Source:* Authors' estimates.

Figure B.3: Using only African countries



Note: The blue solid line traces the estimated evolution of a given variable over a period of 5 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.  
 Source: Authors' estimates.

Figure B.4: Macroeconomic regressors with four lags



Note: The blue solid line traces the estimated evolution of a given variable over a period of 5 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.

Source: Authors' estimates.

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