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Debt and Growth: Historical Evidence

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Zusammenfassung

Staatsschulden und Wirtschaftswachstum: Evidenz auf Basis eines historischen Datensatzes

Im vorliegenden Papier wird der Zusammenhang zwischen der Staatsverschuldung und dem Wirtschaftswachstum für 17 OECD-Staaten mit einem historischen Datensatz von 1870 bis 2016 untersucht. Die Literatur hat sich bisher auf die Periode nach dem zweiten Weltkrieg konzentriert. Eine relevante Anzahl dieser Studien stützt die neoklassische sog. «konventionelle Sicht», dass Staatsverschuldung und das pro-Kopf-Wirtschaftswachstum in einer negativen Beziehung zueinanderstehen. Unsere Studie zeigt, dass die Korrelation zwischen beiden Grössen weder statistisch signifikant noch robust ist und darüber hinaus kein eindeutiges Vorzeichen bestimmt werden kann. Während unser Basismodell mit den Kontrollvariablen Staatsverschuldung und dem Ausgangsniveau des BIP pro Kopf die «konventionelle Sicht» für die gesamte Stichprobe und die Zeit nach dem zweiten Weltkrieg stützt, erweisen sich die Ergebnisse gegenüber Variationen des Schätzmodells als nicht robust. Dies gilt sowohl für Regressionen, welche einen linearen als auch nichtlinearem Zusammenhang zwischen der Staatsverschuldung und dem Wirtschaftswachstum testen. Aus unseren Ergebnissen folgt, dass als Fundierung finanzpolitischer Handlungsempfehlungen zur Staatsverschuldung und dem Wirtschaftswachstum Panelregressionen nicht ausreichen und weitere Analysen erforderlich sind.

Abstract

Debt and Growth: Historical Evidence

In this present paper, we examine the relationship between public debt and economic growth in a large historical panel dataset of 17 OECD economics over the period from 1870 to 2016. In contrast, the relevant literature focuses on the post-WW-II period. Several empirical studies provide evidence in support of the 'conventional view' that public debt is adversely associated with economic growth. We show that the relationship between government debt and per-capita GDP growth is neither statistically significant and robust nor unambiguous regarding the sign. While our baseline regressions support the 'conventional view', particularly in the aftermath of World War II, these results are not robust to alternative specifications. This holds for a linear as well as a non-linear relationship between public debt and economic growth. Our outcome suggests that politicians should exercise great caution in using empirical studies on the debt-growth nexus as a guidance for fiscal policy and that further in-depth analyses are needed.

Contents

1   Introduction

Several recently published empirical studies support the 'conventional view' of public debt (Elmendorff and Mankiw, 1999) and find a negative relationship between government debt and economic growth (Chudik et al, 2015; Eberhardt and Presbitero, 2015; Woo and Kumar, 2015). Reinhart and Rogoff (2010) share this view and, in particular, find that the relationship between economic growth and public debt becomes negative at a threshold of 90% of GDP. This view has sparked an intensive discussion in the empirical literature. Although the findings by Reinhart and Rogoff (2010) have been questioned on methodological grounds (Herndon et al., 2013), many econometric studies have followed the narrative by Reinhart and Rogoff (2010) to pinpoint the nature of the relationship between public debt and economic growth. So far, the outcome of this literature has been inconclusive (Panizza and Presbitero, 2013 and 2014, Eberhardt and Presbitero, 2015, Guex and Guex, 2018).

Several studies corroborate the findings by Reinhart and Rogoff (2010) and provide evidence for a negative relation between government debt and economic growth at a certain threshold level (Baum et al., 2013; Dreger and Reimers, 2013; Égert, 2015; Salotti and Trecroci, 2016; Lee et al., 2017). Égert (2015) reaches the conclusion that the evidence for a non-linear correlation is not robust and the results strongly depend on specific characteristics of the sample. Panizza and Presbitero (2014) do not find any evidence for a causal relationship in instrumental-variable regressions and Checcherita-Westphal and Rother (2012) even find a positive impact of government debt on economic growth. A few studies provide evidence for a reversed-causality effect (Lof and Malinen, 2014; Panizza and Presbitero, 2014; Bell et al., 2015).

In this paper, we analyze the debt-growth nexus in a fixed-effects panel-growth regression framework, which is a standard workhorse of the relevant literature (Checcherita-Westphal and Rother, 2012; Salotti and Trecroci, 2016). We contribute to the literature by applying a comprehensive dataset over the period from 1870 to 2016 (Jordà et al., 2017). Empirical studies on the relationship between government debt and economic growth focus their attention on post World War II (WWII) evidence. Though Reinhart et al. (2012) examine historical data since 1800, econometric studies usually rely on post-WW II samples and a relatively low number of observations.

We do not find robust evidence for a systematic relationship between public debt and economic growth. This result suggests that public debt is not harmful for growth on average. While in our baseline specification we find some evidence for the 'conventional view', i.e. a potentially negative correlation between debt and growth, our sensitivity analysis shows that the baseline findings are highly sensitive to the inclusion of time fixed effects, country-specific trends and variations of the sample. We also do not find systematic evidence for an inverse U-shape relationship after allowing for a non-linear relation between public debt and economic

growth. In the next section, we present the dataset and the empirical strategy. Section three presents the empirical results and section four concludes.

2   Data and Empirical Strategy

For our panel regressions, with the historical dataset of 17 OECD countries over the period from 1870 to 2016 by Jordà et al. (2017), we use the following fixed-effects approach:[1]

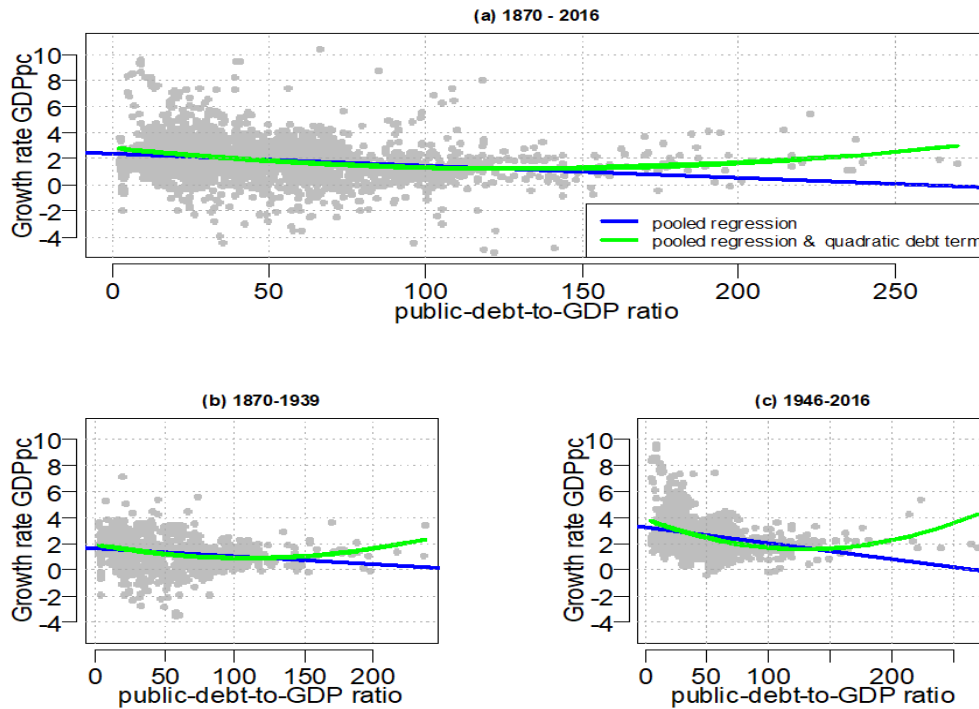$$\Delta y_{it,t+j} = \alpha y_{it} + \beta b_{it} + tr_i + \mu_i + \pi_t + e_{it} \tag{1}$$

Where $\Delta y_{it,t+j}$ denotes annual averages of the first differences of real GDP per capita (in natural logs) between t and t+j (with j = 5, 10), y_{it} is real GDP per capita (in country i and year t) (in natural logs). Coefficient α identifies the convergence effect. The influence of public debt (b) in country *i* and year *t* on subsequent growth is captured by coefficient β. The variables tr_i, μ_i and π_t respectively denote country-specific trends, country- and time fixed effects. Fixed effects capture unobserved heterogeneity across countries and over time. As a test for robustness we include country-specific trends that refines our estimation approach with regard to unobserved heterogeneity.

We estimate a baseline model that includes the public-debt-to-GDP ratio and the level of the real GDP-per-capita. We include country fixed effects and estimate two variations of the regressions, firstly, with five-year, and secondly, with ten-year moving averages of the dependent variable. The controls are lagged by one year before the estimation window begins. To control for the robustness of our results, we add time-fixed effects and country-specific trends. We also examine a possible non-linear relationship between public debt and economic growth by including a quadratic term of the public-debt-to-GDP ratio. To make our results comparable to the literature that focuses on the post-WW II period, we run further regressions for the subsample periods from 1870 to 1939 (pre-WW II) and from 1946 to 2016 (post-WW II). Moreover, we carry out further robustness tests with additional controls and non-overlapping windows as shown in the Appendices A and B.

3   Results

A simple correlation analysis of the data seems to confirm the 'conventional view' and suggests that the correlation between economic growth and the public-debt-to-GDP ratio is negative (see Figure 1).

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[1] For the summary statistics see Appendix, Table A.I.

Figure 1: Debt and growth - historical evidence

Notes: Scatter plots of the public-debt-to-GDP ratio lagged by 10 years and the growth rate of real GDP per capita as 10-year moving averages for different samples (as %); pooled linear regression (blue line) and pooled linear regression with quadratic term of the public-debt-to-GDP ratio (green line).
Source: Jordà et al. (2017), authors' calculations

The inclusion of country-fixed effects in our baseline model provides further support for the 'conventional view'. This bird's eyes view suggests a negative linear relationship between government debt and economic growth for the full sample with five-year growth averages and 10-year growth averages (see Table I, column (1) and (2)). However, the split into pre- and post-WW II samples reveals contradicting findings and shows that the results are sensitive to sample variations. While the coefficient of the public-debt-to-GDP ratio remains negative and statistically significant for the post-WW II sample, the coefficient turns out to be positive and statistically significant for the period before WW II. The quantitative interpretation of the coefficients suggests that an increase of the debt ratio by 10 percentage points of GDP would result in a reduction of 0.08 percentage points of per-capita GDP growth after WW II or an increase of 0.05 to 0.18 percentage points before WW II (see Table I, column (3), (4), (5) and (6)).

Table I: Debt and growth – baseline regressions

PREDICTORS	(1) FULL SAMPLE 5 YEARS	(2) FULL SAMPLE 10 YEARS	(3) PRE-1939 5 YEARS	(4) PRE-1939 10 YEARS	(5) POST-1946 5 YEARS	(6) POST-1946 10 YEARS
LOG GDP PER CAPITA	0.002	0.003*	-0.019**	-0.015***	-0.020***	-0.019***
	(0.002)	(0.001)	(0.008)	(0.003)	(0.003)	(0.003)
DEBT AS A RATIO TO GDP	-0.014**	-0.011***	0.018***	0.005**	-0.008**	-0.008***
	(0.007)	(0.004)	(0.005)	(0.002)	(0.003)	(0.003)
COUNTRY FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes	Yes
TIME FIXED EFFECTS	No	No	No	No	No	No
COUNTRY SPECIFIC TRENDS	No	No	No	No	No	No
NO. OF OBSERVATIONS	2,186	2,101	980	895	1,051	966
NO. OF COUNTRIES	17	17	17	17	17	17
R² WITHIN	0.0306	0.0526	0.0608	0.0761	0.469	0.624

NOTES: DEPENDENT VARIABLE: REAL GDP PER CAPITA GROWTH RATE (OVER 5 OR 10 YEARS). EXPLANATORY VARIABLES ARE (LOG) GDP PER CAPITA AND DEBT AS A RATIO TO GDP. DRISCOLL AND KRAAY (1998) STANDARD ERRORS IN PARENTHESES.*, **, AND ***INDICATE SIGNIFICANCE AT THE 10, 5, AND 1% LEVEL.

To test the robustness of our baseline estimations, we include time-fixed effects (Table II). After this change, our results differ substantially compared to the baseline specification.

Table II: Debt and growth – baseline regressions with time fixed effects

PREDICTORS	(1) FULL SAMPLE 5 YEARS	(2) FULL SAMPLE 10 YEARS	(3) PRE-1939 5 YEARS	(4) PRE-1939 10 YEARS	(5) POST-1946 5 YEARS	(6) POST-1946 10 YEARS
LOG GDP PER CAPITA	-0.028***	-0.025***	-0.068***	-0.054***	-0.043***	-0.041***
	(0.007)	(0.006)	(0.016)	(0.009)	(0.004)	(0.004)
DEBT AS A RATIO TO GDP	-0.010**	-0.007***	-0.002	-0.003	-0.001	-0.000
	(0.005)	(0.003)	(0.005)	(0.002)	(0.002)	(0.002)
COUNTRY FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes	Yes
TIME FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes	Yes
COUNTRY SPECIFIC TRENDS	No	No	No	No	No	No
NO. OF OBSERVATIONS	2,186	2,101	980	895	1,051	966
NO. OF COUNTRIES	17	17	17	17	17	17
R² WITHIN	0.348	0.445	0.337	0.335	0.717	0.813

NOTES: DEPENDENT VARIABLE: REAL GDP PER CAPITA GROWTH RATE (OVER 5 OR 10 YEARS). EXPLANATORY VARIABLES ARE (LOG) GDP PER CAPITA AND DEBT AS A RATIO TO GDP. DRISCOLL AND KRAAY (1998) STANDARD ERRORS IN PARENTHESES.*, **, AND ***INDICATE SIGNIFICANCE AT THE 10, 5, AND 1% LEVEL.

While the regression for the whole sample still provides evidence for a systematically negative correlation between public debt and economic growth, the evidence vanishes for the pre- and post-WW II samples. The coefficient of the public-debt-to-GDP ratio decreases substantially and loses statistical significance for both of the sub-samples. Thus, the negative or positive correlation of public debt with economic growth might reflect common shocks that influence all countries at the same time, however, in an asymmetric way. Examples are oil price, financial or international political crises. To better capture cross-country heterogeneity, we add country-specific trends (see Table III).

Table III: Debt and growth – baseline regressions with time fixed effects and country-specific trends

PREDICTORS	(1) FULL SAMPLE 5 YEARS	(2) FULL SAMPLE 10 YEARS	(3) PRE-1939 5 YEARS	(4) PRE-1939 10 YEARS	(5) POST-1946 5 YEARS	(6) POST-1946 10 YEARS
LOG GDP PER CAPITA	-0.080***	-0.067***	-0.146***	-0.104***	-0.048***	-0.047***
	(0.011)	(0.010)	(0.017)	(0.009)	(0.008)	(0.007)
DEBT AS A RATIO TO GDP	-0.007	-0.003	-0.003	-0.002	0.011***	0.011***
	(0.005)	(0.003)	(0.005)	(0.001)	(0.003)	(0.002)
COUNTRY FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes	Yes
TIME FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes	Yes
COUNTRY SPECIFIC TRENDS	Yes	Yes	Yes	Yes	Yes	Yes
NO. OF OBSERVATIONS	2,186	2,101	980	895	1,051	966
NO. OF COUNTRIES	17	17	17	17	17	17
R² WITHIN	0.426	0.565	0.479	0.529	0.758	0.866

NOTES: DEPENDENT VARIABLE: REAL GDP PER CAPITA GROWTH RATE (OVER 5 OR 10 YEARS). EXPLANATORY VARIABLES ARE (LOG) GDP PER CAPITA AND DEBT AS A RATIO TO GDP. DRISCOLL AND KRAAY (1998) STANDARD ERRORS IN PARENTHESES.*, **, AND ***INDICATE SIGNIFICANCE AT THE 10, 5, AND 1% LEVEL.

Again, the results change substantially. The relationship between public debt and growth turns out to be statistically insignificant in the regressions for the full sample and remains insignificant for pre-WW II. In contrast, the regressions for the post-WW II sample indicate even a systematic positive relationship between public debt and growth. These results suggest that the relationship between public debt and economic growth appears to be neither sample-robust nor robust against standard controls.

Table IV: Debt and growth – nonlinear specification with time fixed effects and country specific trends

PREDICTORS	(1) FULL SAMPLE 5 YEARS	(2) FULL SAMPLE 10 YEARS	(3) PRE-1939 5 YEARS	(4) PRE-1939 10 YEARS	(5) POST-1946 5 YEARS	(6) POST-1946 10 YEARS
LOG GDP PER CAPITA	-0.079***	-0.066***	-0.149***	-0.106***	-0.048***	-0.048***
	(0.012)	(0.010)	(0.016)	(0.008)	(0.008)	(0.007)
DEBT AS A RATIO TO GDP	-0.014	-0.011*	-0.030*	-0.020***	0.011*	0.007
	(0.009)	(0.006)	(0.016)	(0.005)	(0.006)	(0.005)
DEBT * DEBT	0.003	0.004*	0.013**	0.009***	0.000	0.002
	(0.003)	(0.002)	(0.006)	(0.002)	(0.002)	(0.002)
COUNTRY FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes	Yes
TIME FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes	Yes
COUNTRY SPECIFIC TRENDS	Yes	Yes	Yes	Yes	Yes	Yes
NO. OF OBSERVATIONS	2,186	2,101	980	895	1,051	966
NO. OF COUNTRIES	17	17	17	17	17	17
R² WITHIN	0.427	0.567	0.485	0.538	0.758	0.867

NOTES: DEPENDENT VARIABLE: REAL GDP PER CAPITA GROWTH RATE (OVER 5 OR 10 YEARS). EXPLANATORY VARIABLES ARE (LOG) GDP PER CAPITA, DEBT AS A RATIO TO GDP, AS WELL AS DEBT AS A RATIO TO GDP* DEBT AS A RATIO TO GDP. DRISCOLL AND KRAAY (1998) STANDARD ERRORS IN PARENTHESES.*, **, AND ***INDICATE SIGNIFICANCE AT THE 10, 5, AND 1% LEVEL.

Table IV shows the results after a non-linear relationship between debt and growth is taken into account. These findings do not suggest a systematic non-linear relationship. The quadratic

term turns out to be statistically significant and positive for the full sample as well as the pre-WW II sample, which indicates a U-shaped relationship. This is contrary to the hypotheses in the literature that predicts an inverse U-shaped relationship (e.g. Lee et al., 2017). For the post-WW II period, we do not find a statistically significant non-linear relationship. These results suggest that the non-linear relationship might be relatively loose.

Overall, our analysis provides no evidence for a systematic negative or non-linear relationship between public debt and economic growth. These findings hold if further control variables are included (see Appendix A). Further robustness tests with non-overlapping windows corroborate the results (see Appendix B).

4 Conclusion

Our results do not provide support for a systematic statistically significant and robust relationship between government debt and growth in the long run (five or 10-year windows). While our baseline regressions do support the 'conventional view' that government debt might be negatively associated with economic growth, this relationship loses statistical significance and even turns into the opposite if tests for robustness are carried out, such as including time-fixed effects and country-specific trends.

We additionally analyze a potentially non-linear relationship between public debt and growth and include a quadratic term of the public-debt-to GDP ratio. These results do not provide evidence for a systematic and robust inverse U-shape relationship. We thus recommend that policymakers treat the literature on the systematic debt-growth nexus with caution.

5   References

Baum, A., Checherita-Westphal, C., Rother, P. (2013). Debt and growth: New evidence for the euro area, Journal of International Money and Finance, 32, 809 – 821.

Bell, A., Johnston, R., Jones, K. (2015). Stylised fact or situated messiness? The diverse effects of increasing debt on nationaleconomic growth, Journal of Economic Geography, 15, 449-472.

Checherita-Westphal, C., Rother, P. (2012). The impact of high government debt on economic growth and its channels: An empirical investigation for the euro area, European Economic Review, 56, 1292 – 1405.

Chudik, A., Mohaddes, K., Pesaran, M.H., Raissi, M. (2015). Is There a Debt-threshold Effect on Output Growth?, IMF Working Paper, WP/15/197, International Monetary Fund (IMF), Washington D.C.

Dreger, C., Reimers, H.-E. (2013). Does euro area membership affect the relation between GDP growth and public debt?, Journal of Macroeconomics, 38, 481 – 486.

Eberhardt, M., Presbitero, A.F. (2015). Public debt and growth: Heterogeneity and non-linearity, Journal of International Economics, 97, 45 -58.

Égert, B. (2015). Public debt, economic growth and nonlinear effects: Myth or reality?, Journal of Macroeconomics, 43, 226 – 238.

Elmedorf, D.W., Mankiw, G. (1999). Government debt, NBER Working Paper, No. 6470, National Bureau of Economic Research (NBER), Cambridge, USA:

Guex, G., Guex, S. (2018). Debt, economic growth, and interest rates: an empirical study of the Swiss case, presenting a new long-term dataset: 1894-2014, Swiss Journal of Economics and Statistics, 153(16), 1 -13.

Herndon, T., Ash, M., Polin, R. (2013) Does high public debt consistently stifle economic growth? A critique of Reinhart and Rogoff, Cambridge Journal of Economics, 38, 257 – 279.

Jordà, O., Schularick, M, Taylor, A.M.. 2017. "Macrofinancial History and the New Business Cycle Facts." in NBER Macroeconomics Annual 2016, volume 31, edited by Martin Eichenbaum and Jonathan A. Parker. Chicago: University of Chicago Press.

Lee, S., Park, H., Seo, M.H., Shin, Y. (2017). Testing for a Debt-Threshold Effect on Output Growth, Fiscal Studies, 38(4), 701 – 717.

Lof, M., Malinen, T. (2014) Does sovereign debt weaken economic growth? A panel VAR analysis, Economics Letters, 122, 403 – 407.

Panizza, U., Presbitero, A.F. (2013). Public debt and economic growth in advances countries: a survey, Swiss Journal of Economics and Statistics, 149(2), 175 – 204.

Panizza, U., Presbitero, A.F. (2014). Public debt and economic growth: Is there a causal effect?, Journal of Macroeconomics, 41, 21 -41.

Reinhart, C. M, and Kenneth S R. (2010). Growth in a time of debt. American Economic Review, 100(2), 573-578.

Reinhart, C. M.; Reinhart, V. R.; Rogoff, K. S. (2012). Public Debt Overhangs: Advanced-Economy Episodes since 1800. Journal of Economic Perspectives. 26 (3), 69–86.

Salotti and Trecroci (2016) The Impact of Government Debt, Expenditure and Taxes on Aggregate Investment and Productivity Growth, Economica, 83 (330), 356-384.

Woo, J.; Kumar, M.S. (2015). Public Debt and Growth, Economica, 82, 705 – 739.

APPENDIX A

Table A.I: Descriptive Statistics

VARIABLE	(1) OBSERVATIONS	(2) MEAN	(3) STD. DEV.	(4) MIN	(5) MAX
AV. GDP GROWTH 5 YEARS	2363	0.018	0.028	-0.244	0.161
AV. GDP GROWTH 10 YEARS	2278	0.018	0.019	-0.061	0.103
GOVERNMENT DEBT AS A RATIO TO GDP	2271	0.528	0.387	0.019	2.698
LOG GDP PER CAPITA	2448	3.226	0.888	1.183	4.730
INVESTMENT RATIO	2228	0.185	0.064	0.017	0.389
REAL INTEREST RATE	2397	5.562	3.018	-5.996	23.729
OPENNESS	2358	0.424	0.329	0.013	2.974
POPULATION GROWTH	2431	0.008	0.010	-0.252	0.265

Results with additional control variables

Table A.II: Debt and growth – baseline regressions

PREDICTORS	(1) FULL SAMPLE 5 YEARS	(2) FULL SAMPLE 10 YEARS	(3) PRE-1939 5 YEARS	(4) PRE-1939 10 YEARS	(5) POST-1946 5 YEARS	(6) POST-1946 10 YEARS
LOG GDP PER CAPITA	-0.002	-0.001	-0.017	-0.015***	-0.022***	-0.022***
	(0.002)	(0.002)	(0.010)	(0.004)	(0.003)	(0.002)
INVESTMENT RATIO	0.053	0.041	-0.081	-0.006	-0.052	-0.034
	(0.038)	(0.037)	(0.051)	(0.024)	(0.032)	(0.021)
REAL INTEREST RATE	0.001	0.000	0.001	-0.000	0.000	0.000
	(0.001)	(0.000)	(0.002)	(0.001)	(0.000)	(0.000)
OPENNESS	-0.011*	-0.007	-0.011*	-0.001	0.002	0.008*
	(0.006)	(0.005)	(0.006)	(0.002)	(0.007)	(0.004)
POPULATION GROWTH	-0.110	-0.164	-0.001	-0.338***	-0.087*	-0.045
	(0.076)	(0.109)	(0.145)	(0.083)	(0.047)	(0.039)
DEBT AS A RATIO TO GDP	-0.007	-0.009***	0.017***	0.007***	-0.010***	-0.009***
	(0.004)	(0.003)	(0.003)	(0.002)	(0.003)	(0.002)
COUNTRY FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes	Yes
TIME FIXED EFFECTS	No	No	No	No	No	No
COUNTRY SPECIFIC TRENDS	No	No	No	No	No	No
NO. OF OBSERVATIONS	1,981	1,896	825	750	1,035	950
NO. OF COUNTRIES	17	17	16	16	17	17
R² WITHIN	0.0464	0.0663	0.101	0.127	0.508	0.667

NOTES: DEPENDENT VARIABLE: REAL GDP PER CAPITA GROWTH RATE (OVER 5 OR 10 YEARS). EXPLANATORY VARIABLES ARE (LOG) GDP PER CAPITA, INVESTMENT AS A RATIO TO GDP, REAL INTEREST RATE, DEGREE OF OPENNESS, POPULATION GROWTH (PERCENTAGE POINTS), AND DEBT AS A RATIO TO GDP. DRISCOLL AND KRAAY (1998) STANDARD ERRORS IN PARENTHESES.*, **, AND ***INDICATE SIGNIFICANCE AT THE 10, 5, AND 1% LEVEL.

Table A.III: Debt and growth – baseline regressions with time fixed effects

PREDICTORS	(1) FULL SAMPLE 5 YEARS	(2) FULL SAMPLE 10 YEARS	(3) PRE-1939 5 YEARS	(4) PRE-1939 10 YEARS	(5) POST-1946 5 YEARS	(6) POST-1946 10 YEARS
LOG GDP PER CAPITA	-0.025***	-0.025***	-0.061***	-0.047***	-0.040***	-0.040***
	(0.005)	(0.005)	(0.016)	(0.009)	(0.004)	(0.004)
INVESTMENT RATIO	-0.063**	-0.059*	-0.075**	-0.011	-0.040*	-0.025*
	(0.026)	(0.034)	(0.035)	(0.030)	(0.022)	(0.013)
REAL INTEREST RATE	-0.000	-0.000	0.001	0.000	0.000*	0.001***
	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)
OPENNESS	0.004	0.006*	-0.008*	-0.002	0.008	0.008***
	(0.005)	(0.003)	(0.004)	(0.002)	(0.005)	(0.003)
POPULATION GROWTH	-0.148*	-0.191*	0.068	-0.187**	-0.063	-0.047*
	(0.089)	(0.112)	(0.202)	(0.089)	(0.038)	(0.026)
DEBT AS A RATIO TO GDP	-0.008**	-0.008***	-0.000	-0.000	-0.005*	-0.003*
	(0.004)	(0.003)	(0.003)	(0.002)	(0.003)	(0.002)
COUNTRY FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes	Yes
TIME FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes	Yes
COUNTRY SPECIFIC TRENDS	No	No	No	No	No	No
NO. OF OBSERVATIONS	1,981	1,896	825	750	1,035	950
NO. OF COUNTRIES	17	17	16	16	17	17
R² WITHIN	0.385	0.483	0.365	0.310	0.741	0.842

NOTES: DEPENDENT VARIABLE: REAL GDP PER CAPITA GROWTH RATE (OVER 5 OR 10 YEARS). EXPLANATORY VARIABLES ARE (LOG) GDP PER CAPITA, INVESTMENT AS A RATIO TO GDP, REAL INTEREST RATE, DEGREE OF OPENNESS, POPULATION GROWTH (PERCENTAGE POINTS), AND DEBT AS A RATIO TO GDP. DRISCOLL AND KRAAY (1998) STANDARD ERRORS IN PARENTHESES.*, **, AND ***INDICATE SIGNIFICANCE AT THE 10, 5, AND 1% LEVEL.

Table A.IV: Debt and growth – baseline regressions with time fixed effects and country-specific trends

PREDICTORS	(1) FULL SAMPLE 5 YEARS	(2) FULL SAMPLE 10 YEARS	(3) PRE-1939 5 YEARS	(4) PRE-1939 10 YEARS	(5) POST-1946 5 YEARS	(6) POST-1946 10 YEARS
LOG GDP PER CAPITA	-0.068***	-0.064***	-0.154***	-0.104***	-0.048***	-0.052***
	(0.009)	(0.009)	(0.021)	(0.011)	(0.008)	(0.008)
INVESTMENT RATIO	-0.060*	-0.062*	-0.022	-0.002	-0.007	0.025*
	(0.031)	(0.037)	(0.042)	(0.021)	(0.024)	(0.014)
REAL INTEREST RATE	0.000	0.000	0.001	0.001	0.000	0.000***
	(0.000)	(0.000)	(0.002)	(0.001)	(0.000)	(0.000)
OPENNESS	-0.003	0.002	-0.018***	-0.008***	0.027***	0.028***
	(0.007)	(0.004)	(0.005)	(0.002)	(0.008)	(0.004)
POPULATION GROWTH	-0.107	-0.142	0.204	-0.071	-0.050	-0.041
	(0.083)	(0.102)	(0.155)	(0.072)	(0.037)	(0.025)
DEBT AS A RATIO TO GDP	-0.006	-0.004*	-0.000	-0.001	0.008**	0.010***
	(0.004)	(0.003)	(0.005)	(0.001)	(0.004)	(0.002)
COUNTRY FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes	Yes
TIME FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes	Yes
COUNTRY SPECIFIC TRENDS	Yes	Yes	Yes	Yes	Yes	Yes
NO. OF OBSERVATIONS	1,981	1,896	825	750	1,035	950
NO. OF COUNTRIES	17	17	16	16	17	17
R² WITHIN	0.454	0.594	0.514	0.541	0.772	0.884

NOTES: DEPENDENT VARIABLE: REAL GDP PER CAPITA GROWTH RATE (OVER 5 OR 10 YEARS). EXPLANATORY VARIABLES ARE (LOG) GDP PER CAPITA, INVESTMENT AS A RATIO TO GDP, REAL INTEREST RATE, DEGREE OF OPENNESS, POPULATION GROWTH (PERCENTAGE POINTS), AND DEBT AS A RATIO TO GDP. DRISCOLL AND KRAAY (1998) STANDARD ERRORS IN PARENTHESES.*, **, AND ***INDICATE SIGNIFICANCE AT THE 10, 5, AND 1% LEVEL.

Table A.V: Debt and growth – Nonlinear specification with time fixed effects and country specific trends

PREDICTORS	(1) FULL SAMPLE 5 YEARS	(2) FULL SAMPLE 10 YEARS	(3) PRE-1939 5 YEARS	(4) PRE-1939 10 YEARS	(5) POST-1946 5 YEARS	(6) POST-1946 10 YEARS
LOG GDP PER CAPITA	-0.068***	-0.063***	-0.156***	-0.105***	-0.048***	-0.054***
	(0.009)	(0.008)	(0.021)	(0.011)	(0.008)	(0.008)
INVESTMENT RATIO	-0.064**	-0.067*	-0.030	-0.013	-0.007	0.026*
	(0.031)	(0.038)	(0.041)	(0.021)	(0.024)	(0.014)
REAL INTEREST RATE	0.000	0.000	0.001	0.000	0.000	0.000***
	(0.000)	(0.000)	(0.002)	(0.001)	(0.000)	(0.000)
OPENNESS	-0.003	0.002	-0.019***	-0.009***	0.027***	0.030***
	(0.007)	(0.004)	(0.005)	(0.003)	(0.008)	(0.004)
POPULATION GROWTH	-0.111	-0.146	0.154	-0.111*	-0.050	-0.041
	(0.083)	(0.104)	(0.139)	(0.058)	(0.037)	(0.025)
DEBT AS A RATIO TO GDP	-0.017*	-0.017***	-0.028	-0.028***	0.007	0.003
	(0.009)	(0.006)	(0.019)	(0.006)	(0.007)	(0.005)
DEBT * DEBT	0.005*	0.006**	0.014*	0.013***	0.001	0.003*
	(0.003)	(0.003)	(0.007)	(0.002)	(0.002)	(0.002)
COUNTRY FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes	Yes
TIME FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes	Yes
COUNTRY SPECIFIC TRENDS	Yes	Yes	Yes	Yes	Yes	Yes
NO. OF OBSERVATIONS	1,981	1,896	825	750	1,035	950
NO. OF COUNTRIES	17	17	16	16	17	17
R² WITHIN	0.456	0.598	0.520	0.561	0.772	0.886

NOTES: DEPENDENT VARIABLE: REAL GDP PER CAPITA GROWTH RATE (OVER 5 OR 10 YEARS). EXPLANATORY VARIABLES ARE (LOG) GDP PER CAPITA, INVESTMENT AS A RATIO TO GDP, REAL INTEREST RATE, DEGREE OF OPENNESS, POPULATION GROWTH (PERCENTAGE POINTS), DEBT AS A RATIO TO GDP, AS WELL AS DEBT AS A RATIO TO GDP* DEBT AS A RATIO TO GDP. DRISCOLL AND KRAAY (1998) STANDARD ERRORS IN PARENTHESES.*, **, AND ***INDICATE SIGNIFICANCE AT THE 10, 5, AND 1% LEVEL.

APPENDIX B: Non-overlapping windows

Baseline regressions

Table B.I: Debt and growth – baseline regressions

PREDICTORS	(1) FULL SAMPLE 5 YEARS	(2) FULL SAMPLE 10 YEARS	(3) PRE-1939 5 YEARS	(4) PRE-1939 10 YEARS	(5) POST-1946 5 YEARS	(6) POST-1946 10 YEARS
LOG GDP PER CAPITA	0.003	0.002	-0.014**	-0.005	-0.021***	-0.021***
	(0.002)	(0.003)	(0.006)	(0.008)	(0.003)	(0.003)
DEBT AS A RATIO TO GDP	-0.012*	-0.014**	0.014**	0.010	-0.008	-0.013***
	(0.007)	(0.006)	(0.006)	(0.005)	(0.005)	(0.002)
COUNTRY FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes	Yes
TIME FIXED EFFECTS	No	No	No	No	No	No
COUNTRY SPECIFIC TRENDS	No	No	No	No	No	No
NO. OF OBSERVATIONS	438	219	195	89	202	100
NO. OF COUNTRIES	17	17	17	17	17	17
R² WITHIN	0.0317	0.0649	0.0485	0.0438	0.497	0.702

NOTES: DEPENDENT VARIABLE: REAL GDP PER CAPITA GROWTH RATE (OVER 5 OR 10 YEARS). EXPLANATORY VARIABLES ARE (LOG) GDP PER CAPITA AND DEBT AS A RATIO TO GDP. DRISCOLL AND KRAAY (1998) STANDARD ERRORS IN PARENTHESES.*, **, AND ***INDICATE SIGNIFICANCE AT THE 10, 5, AND 1% LEVEL.

Table B.II: Debt and growth – baseline regressions with time fixed effects

PREDICTORS	(1) FULL SAMPLE 5 YEARS	(2) FULL SAMPLE 10 YEARS	(3) PRE-1939 5 YEARS	(4) PRE-1939 10 YEARS	(5) POST-1946 5 YEARS	(6) POST-1946 10 YEARS
LOG GDP PER CAPITA	-0.025*	-0.023*	-0.047***	-0.045***	-0.043***	-0.042***
	(0.012)	(0.012)	(0.011)	(0.007)	(0.007)	(0.004)
DEBT AS A RATIO TO GDP	-0.008	-0.009*	0.001	-0.001	-0.002	-0.002
	(0.005)	(0.004)	(0.003)	(0.003)	(0.004)	(0.003)
COUNTRY FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes	Yes
TIME FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes	Yes
COUNTRY SPECIFIC TRENDS	No	No	No	No	No	No
NO. OF OBSERVATIONS	438	219	195	89	202	100
NO. OF COUNTRIES	17	17	17	17	17	17
R² WITHIN	0.343	0.498	0.278	0.413	0.710	0.831

NOTES: DEPENDENT VARIABLE: REAL GDP PER CAPITA GROWTH RATE (OVER 5 OR 10 YEARS). EXPLANATORY VARIABLES ARE (LOG) GDP PER CAPITA AND DEBT AS A RATIO TO GDP. DRISCOLL AND KRAAY (1998) STANDARD ERRORS IN PARENTHESES. *, **, AND ***INDICATE SIGNIFICANCE AT THE 10, 5, AND 1% LEVEL.

Table B.III: Debt and growth – baseline regressions with time fixed effects and country specific trends

PREDICTORS	(1) FULL SAMPLE 5 YEARS	(2) FULL SAMPLE 10 YEARS	(3) PRE-1939 5 YEARS	(4) PRE-1939 10 YEARS	(5) POST-1946 5 YEARS	(6) POST-1946 10 YEARS
LOG GDP PER CAPITA	-0.075***	-0.065***	-0.113***	-0.110***	-0.055***	-0.053***
	(0.015)	(0.013)	(0.022)	(0.006)	(0.010)	(0.010)
DEBT AS A RATIO TO GDP	-0.004	-0.004	0.006	0.003	0.010**	0.008**
	(0.004)	(0.003)	(0.006)	(0.002)	(0.004)	(0.002)
COUNTRY FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes	Yes
TIME FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes	Yes
COUNTRY SPECIFIC TRENDS	Yes	Yes	Yes	Yes	Yes	Yes
NO. OF OBSERVATIONS	438	219	195	89	202	100
NO. OF COUNTRIES	17	17	17	17	17	17
R² WITHIN	0.430	0.625	0.420	0.744	0.763	0.883

NOTES: DEPENDENT VARIABLE: REAL GDP PER CAPITA GROWTH RATE (OVER 5 OR 10 YEARS). EXPLANATORY VARIABLES ARE (LOG) GDP PER CAPITA AND DEBT AS A RATIO TO GDP. DRISCOLL AND KRAAY (1998) STANDARD ERRORS IN PARENTHESES. *, **, AND ***INDICATE SIGNIFICANCE AT THE 10, 5, AND 1% LEVEL.

Table B.IV: Debt and growth – nonlinear specification with time fixed effects and country- specific trends

PREDICTORS	(1) FULL SAMPLE 5 YEARS	(2) FULL SAMPLE 10 YEARS	(3) PRE-1939 5 YEARS	(4) PRE-1939 10 YEARS	(5) POST-1946 5 YEARS	(6) POST-1946 10 YEARS
LOG GDP PER CAPITA	-0.075***	-0.064***	-0.121***	-0.117***	-0.055***	-0.055***
	(0.015)	(0.013)	(0.019)	(0.009)	(0.010)	(0.012)
DEBT AS A RATIO TO GDP	-0.012	-0.022**	-0.029	-0.010	0.013	-0.003
	(0.010)	(0.008)	(0.016)	(0.010)	(0.013)	(0.019)
DEBT * DEBT	0.004	0.010**	0.019**	0.007	-0.001	0.005
	(0.004)	(0.004)	(0.007)	(0.006)	(0.006)	(0.007)
COUNTRY FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes	Yes
TIME FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes	Yes
COUNTRY SPECIFIC TRENDS	Yes	Yes	Yes	Yes	Yes	Yes
NO. OF OBSERVATIONS	438	219	195	89	202	100
NO. OF COUNTRIES	17	17	17	17	17	17
R² WITHIN	0.431	0.634	0.431	0.747	0.763	0.885

NOTES: DEPENDENT VARIABLE: REAL GDP PER CAPITA GROWTH RATE (OVER 5 OR 10 YEARS). EXPLANATORY VARIABLES ARE (LOG) GDP PER CAPITA, DEBT AS A RATIO TO GDP, AS WELL AS DEBT AS A RATIO TO GDP* DEBT AS A RATIO TO GDP. DRISCOLL AND KRAAY (1998) STANDARD ERRORS IN PARENTHESES.*, **, AND ***INDICATE SIGNIFICANCE AT THE 10, 5, AND 1% LEVEL.

Results with additional control variables

Table C.I: Debt and growth – baseline regressions

PREDICTORS	(1) FULL SAMPLE 5 YEARS	(2) FULL SAMPLE 10 YEARS	(3) PRE-1939 5 YEARS	(4) PRE-1939 10 YEARS	(5) POST-1946 5 YEARS	(6) POST-1946 10 YEARS
LOG GDP PER CAPITA	-0.002	-0.003	-0.015*	-0.010	-0.026***	-0.027***
	(0.003)	(0.003)	(0.008)	(0.010)	(0.003)	(0.002)
INVESTMENT RATIO	0.056	0.057	-0.009	0.053*	-0.054	-0.026
	(0.045)	(0.051)	(0.042)	(0.022)	(0.054)	(0.022)
REAL INTEREST RATE	0.001	0.001	0.000	-0.001*	0.000	0.000
	(0.001)	(0.001)	(0.002)	(0.001)	(0.000)	(0.000)
OPENNESS	-0.010	-0.010	0.000	0.002	0.012**	0.011*
	(0.007)	(0.007)	(0.005)	(0.002)	(0.005)	(0.005)
POPULATION GROWTH	-0.062	-0.099	-0.114	-0.600**	-0.367***	-0.391***
	(0.184)	(0.345)	(0.234)	(0.191)	(0.087)	(0.085)
DEBT AS A RATIO TO GDP	-0.007	-0.009*	0.018**	0.016***	-0.010**	-0.012***
	(0.006)	(0.005)	(0.006)	(0.003)	(0.004)	(0.003)
COUNTRY FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes	Yes
TIME FIXED EFFECTS	No	No	No	No	No	No
COUNTRY SPECIFIC TRENDS	No	No	No	No	No	No
NO. OF OBSERVATIONS	391	191	158	68	201	99
NO. OF COUNTRIES	17	17	16	16	17	17
R² WITHIN	0.0521	0.100	0.0830	0.205	0.539	0.759

NOTES: DEPENDENT VARIABLE: REAL GDP PER CAPITA GROWTH RATE (OVER 5 OR 10 YEARS). EXPLANATORY VARIABLES ARE (LOG) GDP PER CAPITA, INVESTMENT AS A RATIO TO GDP, REAL INTEREST RATE, DEGREE OF OPENNESS, POPULATION GROWTH (PERCENTAGE POINTS), AND DEBT AS A RATIO TO GDP. DRISCOLL AND KRAAY (1998) STANDARD ERRORS IN PARENTHESES.*, **, AND ***INDICATE SIGNIFICANCE AT THE 10, 5, AND 1% LEVEL.

Table C.II: Debt and growth – baseline regressions with time fixed effects

PREDICTORS	(1) FULL SAMPLE 5 YEARS	(2) FULL SAMPLE 10 YEARS	(3) PRE-1939 5 YEARS	(4) PRE-1939 10 YEARS	(5) POST-1946 5 YEARS	(6) POST-1946 10 YEARS
LOG GDP PER CAPITA	-0.024***	-0.022**	-0.052***	-0.039**	-0.040***	-0.041***
	(0.008)	(0.009)	(0.014)	(0.011)	(0.008)	(0.004)
INVESTMENT RATIO	-0.039	-0.046	-0.026	0.043	-0.038	-0.028
	(0.032)	(0.035)	(0.039)	(0.023)	(0.036)	(0.021)
REAL INTEREST RATE	0.000	0.000	0.000	-0.001	0.000	0.000
	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)
OPENNESS	0.005	0.004**	-0.003	0.000	0.013**	0.010***
	(0.003)	(0.002)	(0.004)	(0.001)	(0.005)	(0.002)
POPULATION GROWTH	-0.278	-0.566**	0.094	-0.359	-0.251**	-0.197**
	(0.191)	(0.206)	(0.329)	(0.186)	(0.107)	(0.075)
DEBT AS A RATIO TO GDP	-0.008	-0.011*	0.007	0.006	-0.006	-0.005
	(0.006)	(0.005)	(0.004)	(0.003)	(0.004)	(0.003)
COUNTRY FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes	Yes
TIME FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes	Yes
COUNTRY SPECIFIC TRENDS	No	No	No	No	No	No
NO. OF OBSERVATIONS	391	191	158	68	201	99
NO. OF COUNTRIES	17	17	16	16	17	17
R² WITHIN	0.370	0.564	0.279	0.447	0.733	0.857

NOTES: DEPENDENT VARIABLE: REAL GDP PER CAPITA GROWTH RATE (OVER 5 OR 10 YEARS). EXPLANATORY VARIABLES ARE (LOG) GDP PER CAPITA, INVESTMENT AS A RATIO TO GDP, REAL INTEREST RATE, DEGREE OF OPENNESS, POPULATION GROWTH (PERCENTAGE POINTS), AND DEBT AS A RATIO TO GDP. DRISCOLL AND KRAAY (1998) STANDARD ERRORS IN PARENTHESES. *, **, AND ***INDICATE SIGNIFICANCE AT THE 10, 5, AND 1% LEVEL.

Table C.III: Debt and growth – baseline regressions with time fixed effects and country specific trends

PREDICTORS	(1) FULL SAMPLE 5 YEARS	(2) FULL SAMPLE 10 YEARS	(3) PRE-1939 5 YEARS	(4) PRE-1939 10 YEARS	(5) POST-1946 5 YEARS	(6) POST-1946 10 YEARS
LOG GDP PER CAPITA	-0.071***	-0.064***	-0.124***	-0.108***	-0.059***	-0.065**
	(0.011)	(0.015)	(0.034)	(0.010)	(0.012)	(0.017)
INVESTMENT RATIO	-0.037	-0.036	-0.037	0.072***	0.013	0.052
	(0.041)	(0.038)	(0.054)	(0.010)	(0.043)	(0.050)
REAL INTEREST RATE	0.000	0.001	0.002*	0.000	-0.000	0.000
	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
OPENNESS	-0.003	0.001	-0.014**	0.006	0.036***	0.038**
	(0.005)	(0.003)	(0.005)	(0.006)	(0.006)	(0.013)
POPULATION GROWTH	-0.229	-0.509**	0.336	-0.558*	-0.152	-0.148*
	(0.209)	(0.215)	(0.368)	(0.225)	(0.109)	(0.059)
DEBT AS A RATIO TO GDP	-0.005	-0.006	0.010	0.007	0.008**	0.008***
	(0.006)	(0.005)	(0.007)	(0.006)	(0.003)	(0.002)
COUNTRY FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes	Yes
TIME FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes	Yes
COUNTRY SPECIFIC TRENDS	Yes	Yes	Yes	Yes	Yes	Yes
NO. OF OBSERVATIONS	391	191	158	68	201	99
NO. OF COUNTRIES	17	17	16	16	17	17
R² WITHIN	0.458	0.683	0.450	0.770	0.776	0.903

NOTES: DEPENDENT VARIABLE: REAL GDP PER CAPITA GROWTH RATE (OVER 5 OR 10 YEARS). EXPLANATORY VARIABLES ARE (LOG) GDP PER CAPITA, INVESTMENT AS A RATIO TO GDP, REAL INTEREST RATE, DEGREE OF OPENNESS, POPULATION GROWTH (PERCENTAGE POINTS), AND DEBT AS A RATIO TO GDP. DRISCOLL AND KRAAY (1998) STANDARD ERRORS IN PARENTHESES. *, **, AND ***INDICATE SIGNIFICANCE AT THE 10, 5, AND 1% LEVEL.

Table C.IV: Debt and growth – nonlinear specification with time fixed effects and country- specific trends

PREDICTORS	(1) FULL SAMPLE 5 YEARS	(2) FULL SAMPLE 10 YEARS	(3) PRE-1939 5 YEARS	(4) PRE-1939 10 YEARS	(5) POST-1946 5 YEARS	(6) POST-1946 10 YEARS
LOG GDP PER CAPITA	-0.070***	-0.063***	-0.130***	-0.119***	-0.059***	-0.067**
	(0.011)	(0.015)	(0.036)	(0.017)	(0.013)	(0.020)
INVESTMENT RATIO	-0.039	-0.039	-0.046	0.070***	0.012	0.054
	(0.041)	(0.039)	(0.054)	(0.008)	(0.045)	(0.051)
REAL INTEREST RATE	0.000	0.001	0.001	-0.000	-0.000	0.000
	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
OPENNESS	-0.003	0.001	-0.015**	0.002	0.036***	0.040**
	(0.005)	(0.003)	(0.005)	(0.008)	(0.006)	(0.013)
POPULATION GROWTH	-0.228	-0.481*	0.335	-0.572**	-0.155	-0.121
	(0.207)	(0.228)	(0.360)	(0.206)	(0.104)	(0.085)
DEBT AS A RATIO TO GDP	-0.009	-0.020**	-0.019	-0.012	0.011	-0.003
	(0.011)	(0.009)	(0.021)	(0.008)	(0.010)	(0.016)
DEBT * DEBT	0.002	0.007*	0.015	0.010	-0.001	0.005
	(0.004)	(0.004)	(0.010)	(0.006)	(0.005)	(0.006)
COUNTRY FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes	Yes
TIME FIXED EFFECTS	Yes	Yes	Yes	Yes	Yes	Yes
COUNTRY SPECIFIC TRENDS	Yes	Yes	Yes	Yes	Yes	Yes
NO. OF OBSERVATIONS	391	191	158	68	201	99
NO. OF COUNTRIES	17	17	16	16	17	17
R² WITHIN	0.459	0.688	0.457	0.776	0.776	0.906

NOTES: DEPENDENT VARIABLE: REAL GDP PER CAPITA GROWTH RATE (OVER 5 OR 10 YEARS). EXPLANATORY VARIABLES ARE (LOG) GDP PER CAPITA, INVESTMENT AS A RATIO TO GDP, REAL INTEREST RATE, DEGREE OF OPENNESS, POPULATION GROWTH (PERCENTAGE POINTS), DEBT AS A RATIO TO GDP, AS WELL AS DEBT AS A RATIO TO GDP* DEBT AS A RATIO TO GDP. DRISCOLL AND KRAAY (1998) STANDARD ERRORS IN PARENTHESES.*, **, AND ***INDICATE SIGNIFICANCE AT THE 10, 5, AND 1% LEVEL.

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