Transitional economies: A new perspective on debt and growth

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Introduction

In the aftermath of the Great Financial Crisis, Reinhart and Rogoff's 2010 article "Growth in a time of debt" gained popularity rapidly. Its conclusion, a significant decrease in output growth at high levels of public debt affected governments to implement contractionary measures to avoid such a growth reduction (Wittmeyer, 2013).

However, the findings of Reinhart and Rogoff became a controversial issue when Herndon, Ash and Pollin published "Does high public debt consistently stifle economic growth? A critique of Reinhart and Rogoff", where they point out methodological flaws and other issues (including a since then infamous coding error), questioning the validity of the original findings. Since then, the relationship between debt and growth became a heavily researched topic, with still no consensus among economists. The relevant aspect of causality lacks concluding evidence, puzzling policymakers with controversial statements that may or may not apply to the cases of specific countries.

Studies tend to assess debt and growth by compiling data from a large number of countries and a long time span. The country- and time-specific details get lost in the abundance of data. One such forgotten topic is that of transitional economies. As the members of the Soviet bloc went through a major period of transition from central planning to market economy, one cannot forget about the role of debt, both domestic and foreign in that process. Yet Reinhart and Rogoff never discuss the relationship between debt and growth in any transitional economies, data from these countries is generally excluded from their analysis even when the data is available.

This study focuses on three transitional economies, all of which have different histories of debt and growth in the transition period. Hungary was chosen due to its exceptionally high ratios of public debt to output throughout the transition period. Poland started with the highest gross public, but successfully reduced its debt levels with support

from Western economies. Romania chose a different path, starting with very low debt to output ratios after paying back all of its foreign debt in the last years of Romanian socialism, but then increasing its debt levels throughout the transition.

After a literature review on both the Reinhart and Rogoff controversy and the different transitional paths, I will consider data from the aforementioned three economies to evaluate if Reinhart and Rogoff's theory on debt and growth can be applied to transitional economies. I will also use this data to point out issues when trying to establish causality between debt and growth and using general theories in individual cases with specific circumstances.

Literature

The debt and growth debate

Reinhart and Rogoff [RR] developed their main theory on the connection between public debt and output growth in "Growth in a time of debt," but the foundational ideas go further back. Debt thresholds first appear in RR's 2003 article on debt intolerance. While RR (2003) focus more on examining how a country's historical context affects the role of government debt in the economy, they already discuss that there are certain debt levels above which a country is at risk of a debt crisis. Higher debt to GDP ratios generally lead to higher interest rates and risk premia as the lenders become worried about the possibility of defaulting on the debt. Countries with higher debt levels and a history of default also often face the danger of being shut out of international markets. However, in this early writing, RR do not specify any exact thresholds, rather state that a country's "safe" debt levels depend on institutional weaknesses and risks.

RR's later writings build on this base, but become more specific on general debt thresholds. RR (2009) explain in greater detail the causes and consequences of high debt levels based on the experience of the Great Financial Crisis. They describe that in times of crises, there is political pressure on governments to increase government spending, thus

accumulate debt. At this point, they do not explicitly recommend reducing government debt and even discourage certain methods of debt reduction. They mention the possibility of inflating away debt (which they claim to be practically equal to a default), but emphasise that this significantly lowers the government's credibility, thus the prospects of further loans.

Debt reduction as a necessity to growth first appears in RR's next well-known piece, the article which started the whole debate on debt and growth. In "Growth in a time of debt" (2010a), RR specify the threshold of 90% debt to GDP ratio, above which output significantly deteriorates. The only distinction between countries in their paper is between advanced and emerging economies. They found that emerging economies have a lower "safe" debt threshold and high debt affects their growth more than emerging economies. This seems to be a return to the theory of debt intolerance.

RR (2010a) also approach inflation from a new perspective. Instead of discouraging it in fear of losing credibility, they mention it as a useful way to reduce long-term debt, but simply an ineffective measure against short-term debt. They also argue that fiscal contraction is inevitable to reduce risk premia, increase credibility and reduce the changes of a debt crisis. RR (2012) extends these conclusions, elaborating on prolonged periods of high debt. Focusing on advanced economies they again conclude that high debt correlates with lower output growth, since governments must decrease government spending and/or raise taxes to avoid defaulting on their debt.

Overall, while they mention the possibility of a country growing out of its debt, thus reducing its debt to GDP ratios by increasing GDP, RR seem to argue that the main link of causality between debt and growth runs from debt to growth. They claim that higher levels of debt hinder growth, and thus if a country wishes to increase output, the first problem to be tackled should be debt reduction, although they never specify such causality explicitly. Nevertheless, this reasoning appears to be contradictory, as most public debt is accumulated

as a consequence of governments trying to increase output, usually during and after crises that lead to growth rates falling. This would suggest that not high debt levels are the source of the problem, but the external circumstances that lead to governments borrowing to boost output.

After the publication of RR (2010a), RR clarified their view on causality, saying that they believe that the causality from debt to growth and growth to debt are both present at the same time (RR, 2010b). They briefly state that financial crises generally lead to higher debt, but higher debt means that government spending will have to decrease in the future to repay the debt, leading to a decrease in output. Although this idea would support that high debt does lead to slower growth, it also brings into question whether debt reduction is a useful solution. After all, it would merely mean that the decrease in output due to decreased government spending would happen sooner rather than later. So RR's clarification about causality fits with their theory, but raises new questions about their proposed solution of debt reduction to achieve growth.

Nevertheless, the findings of RR were generally accepted for a while, even used in policymaking to justify austerity policies. This, however, changed with the publication of Herndon, Ash, and Pollin [HAP] (2013). While the news coverage of the debate focused on the Excel coding error RR made in calculating their results, that was not the main concern of HAP. They questioned the general idea that a threshold exists, above which growth levels significantly decrease. When they replicated RR's analysis with a different, and in their opinion, more suitable methodology, they found no evidence of any "historical boundary" of debt to output ratios. They also argued that RR ignored that the large amount of variance within their established debt categories brought the whole conclusion of debt thresholds and a negative relationship between debt and growth into questions.

After HAP's article both RR and other economists responded. RR admitted the coding error, but held their methodological choices and results (RR, 2013). Others aiming to replicate

the original study confirmed RR or HAP or failed to draw an adequate conclusion (see, among others Chiu & Lee, 2017; Wray, 2017; Bitar, Chakrabarti, & Zeaiter, 2018). Égert (2012) emphasised the complexity of the issue, claiming that any result is too sensitive to the chosen sample to provide reasonable proof to any side of the argument.

However, as HAP focused on criticising methodological choices, and did not question RR's ideas on causality, this aspect of RR's theory did not play a major role in the debates. Thus, research in this area still focuses on supporting or contradicting the presence of any relationship between debt and growth, causing it to lose most of its practical implications for policymaking. The questions surrounding debt and growth became questions of methodological choices and slightly different, large samples of countries and time periods, increasingly ignoring the contexts of debt and growth patterns. Thus the rest of this paper focuses on providing exactly such context for three economies with very unusual circumstances.

Debt and growth in transition

By the time the Soviet bloc collapsed, it has been experiencing an uninterrupted slowdown of growth since the 1960's, generally attributed to the inefficiency and lack of progress of central planning system (Campos & Coricelli, 2002). Different countries attempted different measures to combat this slowdown. Poland and Hungary attempted some (rather ineffective) market reforms. While these reforms were a least relatively consistent in Hungary, in Poland they fluctuated along with the political climate (Kozminski, 1992). Romania, meanwhile, was among the most repressive communist states, maintaining rigid central planning. This lack of experience contributed to Romania's disadvantage at the start of the transition (Ban, 2012). However, the situation was also far from ideal in the other two countries: Hungary had to handle chaotic legislation implemented by the last communist

government but aimed at the transition, while Poland faced hyperinflation, which required an urgent solution (Kozminski, 1992).

These country-specific issues, together with the problems of the whole Soviet bloc determined the role of debt in the transition processes. The two main aspects of public debt considered in the following are external public debts, mainly from foreign loans (IMF, Western economies, etc.) and domestic public debt stemming from a budget deficit. Both were constantly present throughout the transitions and affected the processes deeply.

Poland. By 1989 Poland had accumulated the highest gross external debt in the Soviet bloc, as it had been borrowing since the early 1970's (Budnikovski, 1992). Poland also kept taking on more loans to serve the interest for its debt. At the same time, the budget deficit was continuously increasing in the 1980's, an unsuccessful attempt to increase output. However, Budnikovski (1992) also assesses that the transition brought a relatively successful stabilization, leading to a reduced inflation rate and a more balanced budget. Buiter and Lago (2001) also explain that Poland managed to reduce its external debt levels by negotiating multiple debt relief and reduction programmes, debt reschedulings. This would suggest that Poland found ways to handle its public debt well. And while the stabilization programme and the adjustment costs of the exceptionally rapid transition led to a sudden decline in growth, De Broeck & Koen (2001) point out that from 1992 Poland surpassed every expectation by showing uninterrupted growth, and even the preceding contraction was shallower than other transition economies.

As Poland experienced an increase in debt levels until the start of the transition, and then immediately started reducing both domestic and external debt, and that output growth was at its worst in 1990, RR's model of the negative relationship between growth and debt could theoretically fit transitional Poland. However, as the Polish debt relief programmes are unconventional and rare ways of handling debt, causal patterns between debt and growth

cannot be inferred from Poland's example without taking into account foreign willingness to support establishing a new and stable democracy.

Hungary. The starting position of Hungary was similar to that of Poland. Due to borrowing from the early 1970's as well, Hungary entered the transition with the highest public debt to GDP ratio. However, at the start of the transition the Hungarian economy was also characterized by reforms already in progress. The transition accelerated and continued the reforms of the last communist government, which meant a much more gradual process of transition than in Poland (Kozminski, 1992). Because of the slower process, there were less adjustment issues, so the budget deficit was smaller than in Poland. However, even that budget deficit was a source of concern (Hare, 1991).

The most important difference between the Hungarian and Polish strategies of handling their excessive public debt is that Hungary never asked for any debt relief programmes, believing that it could "outgrow" its debt. This meant that while Hungarian debt levels were increasing even during the transition process (Buiter & Lago, 2001). Kozminski (1992) considered that Hungary was in a better position during the IMF negotiations than Poland, due to a better track record and more experience, and that is why the IMF accepted a softer stabilization programme, even approving very high budget deficits. This led to a less dramatic, but more prolonged recession. Nevertheless, with the help of increased exports and a massive inflow of foreign investment, Hungary also reversed the growth slowdown of the transition within a decade, while also meeting its debt obligations (Campos & Coricelli, 2002; Hare, 1991).

Romania. The role of debt in Romania's transition process differed significantly from the previous two economies. Romania started borrowing later, most of its debt was accumulated between 1979-81. However, this era was characterised by higher interest rates than before, due to the oil crises, which made Romania's situation more difficult (Ban, 2012).

Ban explains that Romania started to follow in the footsteps of Poland, but this changed in 1982, when Ceauşescu saw the fate of Poland, constrained by strict IMF terms of borrowing. He made an ideological commitment to guarantee Romanian sovereignty by repaying all of the country's external debt burdens. He revised the five-year plan to accommodate this goal, and in 1989 announced that all of Romania's external debt has been repaid. While this was the fastest reduction of debt to GDP ratio in the world and Romania even developed a budget surplus, the economic costs cannot be ignored: GDP growth was negative, shortages became commonplace, the living standard collapsed. It is due to this ideologically and not economically motivated policy that Romania entered the transition period with extremely low debt levels, but also already in a deep recession.

The lack of proper institutional framework or experience with market reforms (or even civic discourse), paired with Ceauşescu's debt reduction strategy led to a long transition in Romania. Indeed, Ibrahim (2002) distinguishes two periods of Romanian transition: a gradual approach with uneven results until 1996 followed by more rapid reforms in 1997. This prolonged process led to an extended period of low output and an increasing budget deficit (Buiter & Lago, 2001). Thus while Hungary and Poland spent most of the 1990's increasing their output and reducing their debt levels, Romania faced increasing external debt in a time of macroeconomic instability. However, this increasing debt throughout the transition suggests that RR's model of debt and growth would not apply to Romania's case.

It is evident from the literature on these transition processes, that public debt, both external and domestic, played a major, but always different role in the transitions. Indeed, Pivac & Pečarić (2010) also emphasise how fast growth in transition economies was a direct consequence of foreign indebtedness. However, whether the debt was taken on before the transition and then reduced, or instead increased as a consequence of the transition could be a factor determining if theories of debt and growth can be applied transitional economies.

Data and methodology

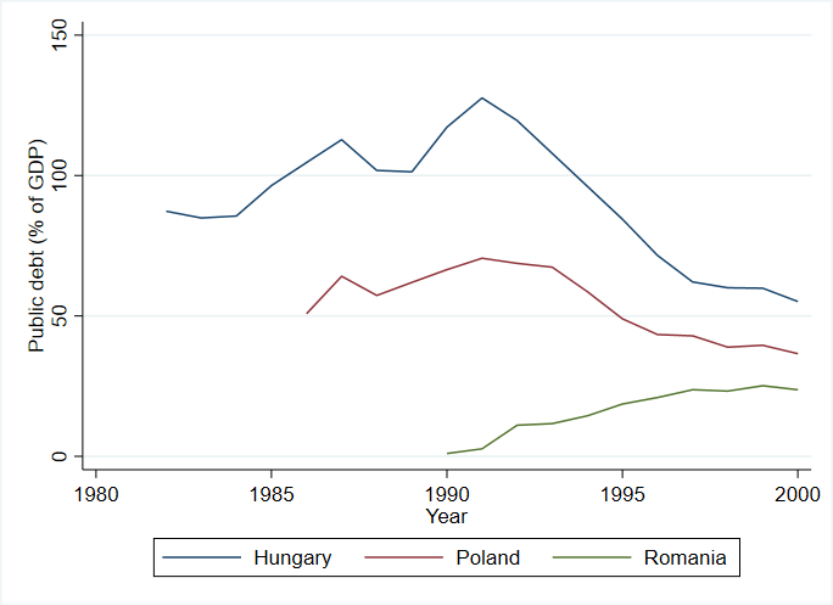
The data for this study was obtained from IMF databases, the Historical Public Debt Database for public debt and the World Economic Outlook for data on output growth and inflation (https://www.imf.org/external/datamapper/datasets). As data availability is limited in the case of transitional economies, I consulted other data sources, such as RR (2011) to provide context when necessary. I attempted to use data from between 1980 and 2000 to capture both the transition period and the time directly preceding the transition, however exact numerical public debt data was available since 1982 in Hungary, 1986 in Poland and 1990 in Romania. I suspect that the lack of previous data is at least partly due to the unreliability of socialist statistics.

As this study concerns such a limited sample both in terms of time and countries, it does not intend to provide results that can be generalized to larger samples. The aim is to observe the connections between the patterns of the available data, the historical context, and macroeconomic theory on debt and growth based on RR, and to compare more or less successful strategies of handling debt during the transition.

Results

To provide empirical evidence on the debt levels described in the literature review, I used the available IMF data to compare the public debt levels of the three observed transitional economies. Figure 1 indeed shows that Hungary had the highest public debt to GDP ratios throughout the transition, while Romania started with almost no debt. As Hungary and Poland reduced their debt in the 1990's, but Romania increased its debt levels, the three countries show a converging pattern.

Figure 1



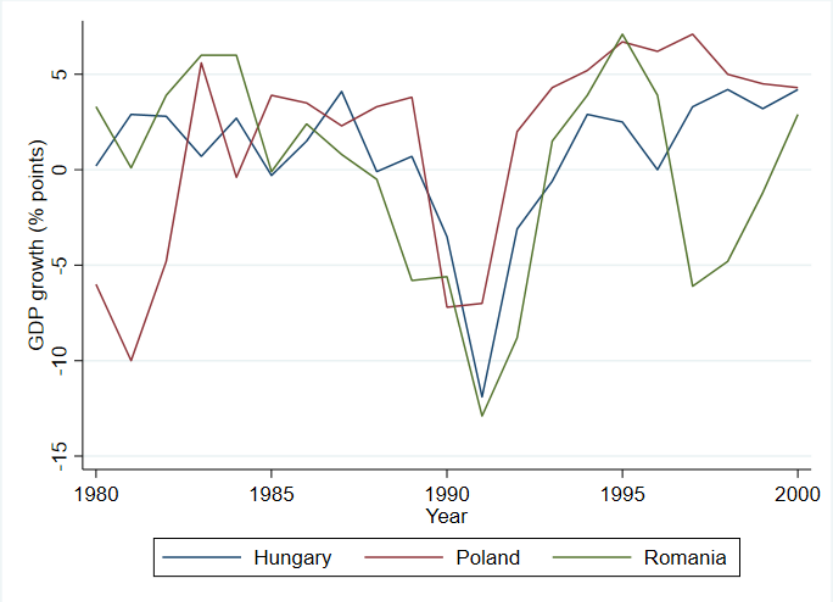
While previous public debt data is unavailable, RR (2011) provide external debt to exports ratios for Romania from the early 1970's. Based on the academic literature I assume that external and public debt followed similar patterns in Romania, as Ceauşescu's policies affected external and domestic public debt simultaneously. RR show very low levels of debt for most of the 1970's, a sharp increase from the end of the decade followed by a less rapid, but still exceptional reduction throughout the 1980's. However, despite Ceauşescu's claims, Romania did not reach 0 external debt in 1989. This supports the claim on the unreliability of socialist data. Afterwards the external debt statistics follow the same pattern as public debt does in Figure 1, providing empirical evidence that external and public debt follows similar patterns.

The next aspect of RR's theory is output growth. Figure 2 compares GDP growth before and during the three transitions. All three countries show evidence of both the growth slowdown before the transition and the rapid fall of output at the start of the transition. Poland did indeed experience both the shortest and the shallowest recession, already showing positive growth from 1992. However, the graph already shows that Polish growth started slowing

down by 2000, bringing into question whether the strong growth is sustainable (De Broeck & Koen, 2001).

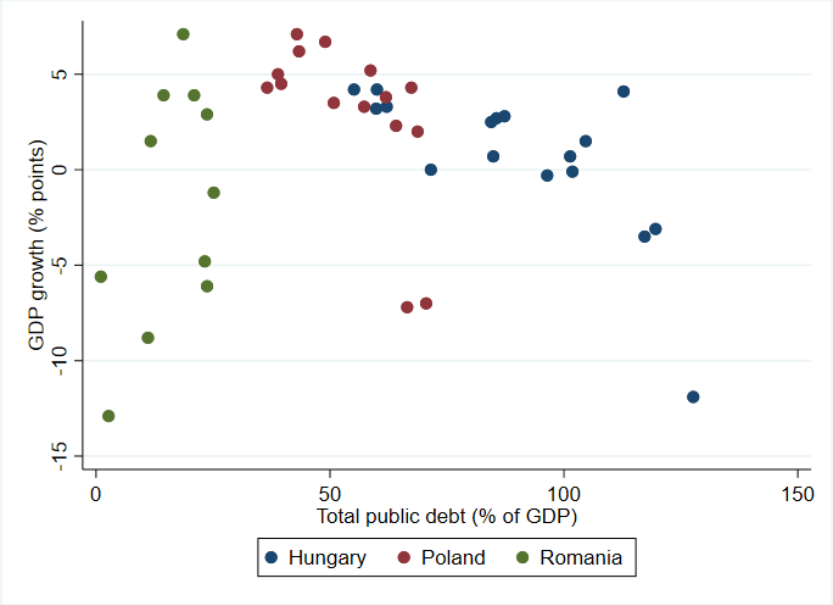
The growth patterns of Hungary and Romania are surprisingly similar, especially since they had so different starting positions and transition strategies. Romanian output fell only slightly deeper than Hungarian, however, I must emphasise that Romanian output started falling well before Hungarian output, and started growing again after Hungarian output. So overall the transitional recession was much deeper than Hungary's. Romania also had a second period of negative growth after 1995, which probably served as a cause for the 1997 reforms. By that time, Hungary showed a slow, but relatively constant growth, suggesting that it managed to stabilise its economy.

Figure 2



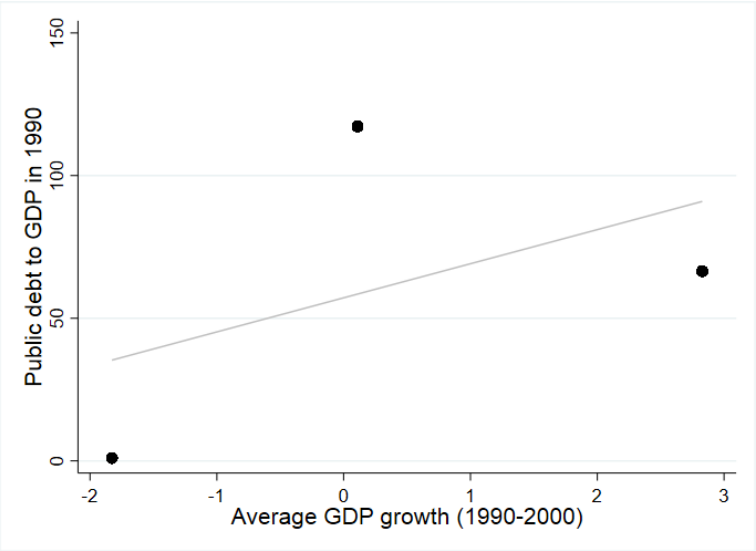
The next step of the analysis is to connect public debt levels and GDP growth. Figure 3 uses the full data sample. Figure 4 simplifies the dataset to show only public debt levels in 1990 and average GDP growth in the following decade, which allows to make inferences about causality from debt to growth, as RR and others have done.

Figure 3



Clearly there is no sign of the negative relationship found by Reinhart and Rogoff in their analyses of other samples. A linear relationship between debt and growth account for R^2=0.1% of the variation in growth at different debt levels and the regression line is almost perfectly flat. It is worth noting that the countries are almost completely separated on the x-axis, their debt levels almost never overlap. However, they have all experienced relatively similar growth levels: most data concentrates between 0-5%, while Hungary and Romania even experienced growth below -10%. Interestingly, both the highest and lowest debt to GDP ratios correspond to exceptionally low growth rates. Those points are from 1991, when Romania has already paid back most of its debt, and has not started borrowing yet, while Hungary has not started repaying its debt after accumulating it.

Figure 4



While Figure 4 does not contain much information, it is the simplest way to test RR's theory on causality from debt to growth in this sample. If high debt levels indeed led to lower future growth rates, then the debt to GDP ratio at the start of the transition would predict growth during the transition and the three points would be arranged along a downward sloping line. However, that is clearly not the case, as no particular relationship can be observed between the points. Debt levels thus cannot be used to predict growth during the transition, as the literature review of the transition processes already suggested.

Based on the previous two figures it would be easy to claim that debt and growth are unrelated in transitional economies, and that these economies lack a causal pattern from debt to growth. However, if I only apply RR's theory of the negative debt-growth relationship to a single country, the data show a different pattern. Figures 5-7 show the association between debt and growth for each of the three countries. While these findings cannot be used to infer causality, both Hungary and Poland show strong evidence that higher debt levels are associated with lower levels of growth. The fit of the regression line is especially good in the case of Hungary.

Figure 5

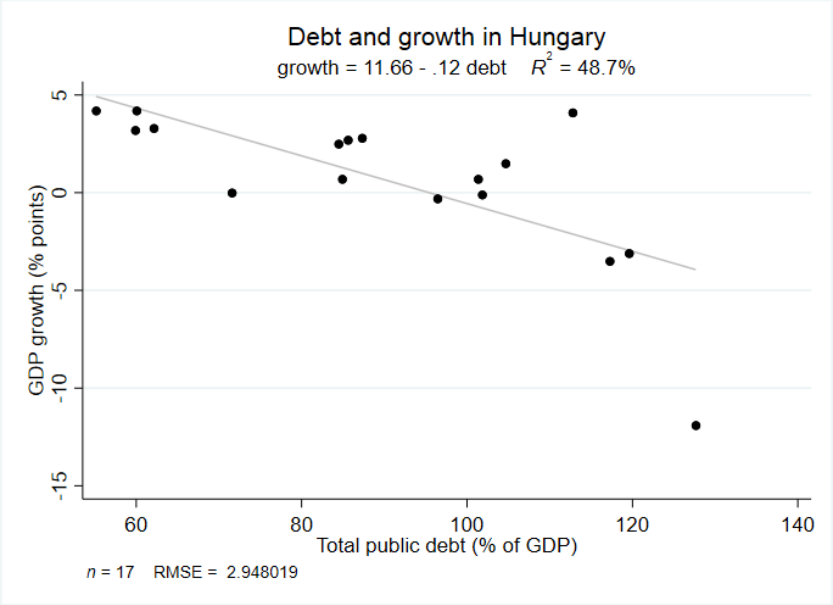


Figure 6

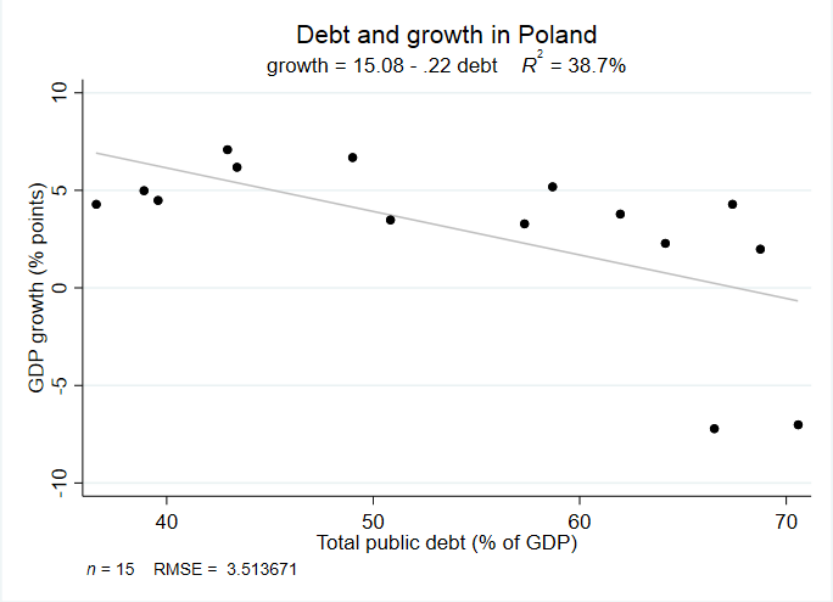
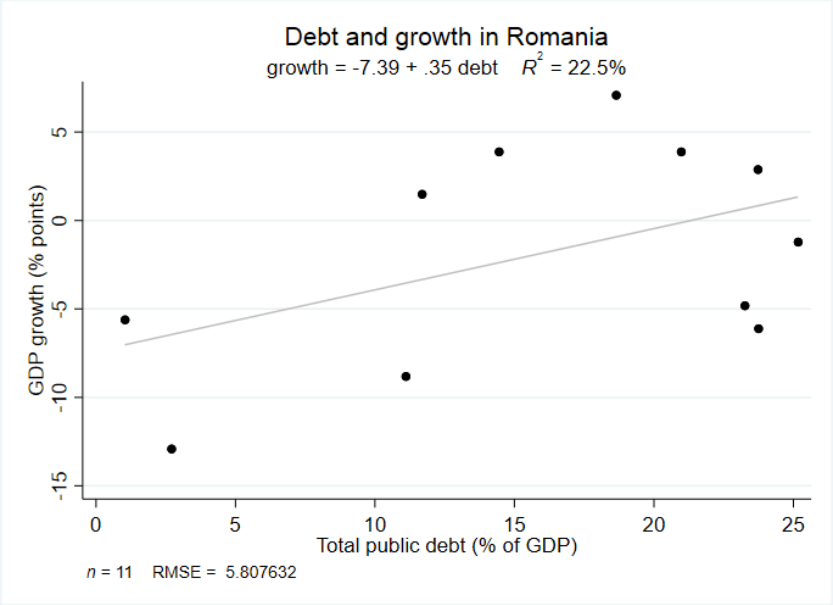


Figure 7



It is worth noting that Hungary has experienced not only the highest, but also the largest range of debt to growth ratios. This empirical evidence is even quite close to RR's exact findings, that growth levels only start significantly decreasing above 90% debt to GDP ratios (though this threshold seems to be higher in the case of transitional Hungary).

The data points are more scattered in Poland, but nevertheless, both years of exceptionally low Polish growth are associated with relatively high debt levels, and the overall relationship is still negative. While this is even further away from the debt threshold of "Growth in a time of debt" at approximately 60%, this difference could be attributed to differences in institutional weaknesses between countries, as RR also speculated in earlier writings (2003).

The Hungarian and Polish data together suggests that the negative relationships between debt and growth are present in both countries and there is also some empirical evidence of causal relationships. Poland started the transition with a lower debt to GDP ratio, then showed higher average growth in the following decade. However, whether this is evidence for a debt-to-growth causal relationship is not clear. Most likely the differences come from the transitional starting positions, applied reforms and policies, and the success of

those reforms in the respective countries. The same can be said about a growth to debt causality. While increased growth rates led to both countries reducing their debt levels, Poland did so mainly with debt relief agreements and not by "outgrowing" its debt. And while Hungary did attempt to reduce debt only by output growth, and it did drastically reduce its debt levels, it still had the highest debt to GDP ratios of the three countries at the end of the 1990's. Overall, the empirical results of Hungary and Poland appear in a different light once the theoretical context is considered.

The most exceptional data in this sample, however, comes from Romania. Unlike the previous two countries, Romanian data even shows a not particularly strong, but nevertheless present positive relationship. Years with low growth have very low debt levels, but public debt increases as output growth is higher. This contradicts RR's theory completely, but seems plausible in the context of Romanian transition and debt handling strategies. The low public debt value of 1990 does not show the economic and social price of the previous decade of repaying said debt. The context of Romanian external debt also gives insight into why Romania does not fit in the pattern of any causal relationship between debt and growth. The low growth which followed the almost 0 debt and the increasing debt levels as Romanian output grew both point to the absence of debt-to-growth and growth-to-debt causality. Instead, debt and growth patterns can be traced back to politically motivated actions, unsuitable policies or delayed reform attempts.

Conclusion

This study tries to answer the question whether Reinhart and Rogoff's theory on the negative relationship between public debt and growth, lower output above certain debt thresholds, and causal relationships between debt and growth can be applied to transitional economies. Based on evidence from Hungary, Poland and Romania, it is clear that there is no "safe" debt threshold applicable to all transitional economies. These countries all had

completely different experiences with public debt, while their growth rates moved in relatively similar patterns. This also leads to the absence of any relationship between debt and growth when considering the full sample of this study.

However, when the countries are analysed individually, taking into account the contexts of their transition processes, both Hungary and Poland show some evidence supporting the negative relationship between debt and growth. Romania's positive relationship between debt and growth can be explained by the context of Romanian policymaking before and during the transition. The ideologically motivated strategy of repaying external debt at such high costs had no foundation in macroeconomic theory, so it is no surprise that such theory also cannot be applied to the consequences of such a strategy. However, in all three countries the exact context of the complex transition processes prohibits me from inferring debt-to-growth or growth-to-debt causal relationships.

I focused on empirical evidence from a very specific sample in this study, and thus I do not intend to conclude anything about the general theory of Reinhart and Rogoff. Instead, I attempted to emphasise the importance of taking the context of each country and era into consideration rather than relying on a large sample to justify my findings. And there lies the most prominent issue of the Reinhart and Rogoff debate, where both sides consistently draw contradictory conclusions instead of focusing on the relevant causes of the different relationships between debt and growth.

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