# International Journal of Research Publication and Reviews

# Private Debt and Real GDP: A Panel ARDL Analysis of the Emerging Asian Economies

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*DOI:* https://doi.org/10.55248/gengpi.5.0224.0517

### ABSTRACT:

The study aims to examine the role of household debt and corporate debt on growth in a sample of 11 Emerging Asian economies which has witnessed the largest increase in private debt over the past decade. The study concludes that the increase in household debt and corporate are significantly harmful the economic growth, while also finding the stimulating role that gross savings and net exports has on the Real GDP growth. The Lending interest rate and inflation are found to be insignificant for economic growth.

**Keywords:** Private debt, Real GDP, Economic Growth, ARDL, Emerging Economies **JEL: C1, G32, G51, O4,**

### Introduction:

In recent years the focus of the economic narrative has shifted from public debt to private debt. The Jan 2020 Global Economic Prospectus discusses the fourth wave of rapid debt buildup which started after the 2008 Global Financial crisis and is continuing to gain momentum(World Bank, 2020). This wave of debt is prevalent in emerging economies and is driven by the rise of private debt compared to the past crisis which was driven by the rise of public debt. The global debt levels have reached a peak of 238 per cent of global GDP as of 2023 with a private debt-to-GDP ratio of 145 per cent and a Public debt to GDP ratio of 92 per cent (IMF, 2023a). In emerging economies, the interest has increased in recent years as the private debt levels are rising at a faster rate compared to the advanced economies.

Private debt is broadly classified as household debt and corporate debt. The research into the field of household debt has been gaining prominence following the Global financial crisis of 2008 after multiple research papers and reports lending support to the observation that excessive household debt and sub-prime lending were the major drivers of the crisis. Concerning corporate debt levels, concerns are being raised frequently owing to a combination of precarious work conditions, high debt distress, declining tax revenues, falling export revenues and insufficient fiscal and policy space (Adrian, 2019; Akrur Barua and Patricia Buckley, 2019; WSJ, 2019).

Given this background, this paper conducts a time series analysis of the relationship between real GDP growth and the level of household debt. The paper is organised as follows. First, we discuss the relevance of household leverage for economic growth and some stylized facts followed by a review of the literature on the linkages between household debt and growth. In the third section, data sources and research methodology are discussed. In the fourth section, we present the results of the study and finally, a few tentative conclusions are offered.

### Stylized facts:

The growth of household and corporate leverage is however not consistent between the emerging economies. The growth is mainly accounted by the emerging Asian economies with countries like Thailand, Malaysia, China having high level of household debt even compared to many advanced economies. On the other hand, countries in Europe and central Asia(ECA) and Latin American countries have moderate levels of debt, which remains a matter of concern given the downward growth prospects, relative weakness of financial infrastructure and low fiscal buffers. On the corporate side, both Emerging and Emerging European countries are witnessing a rise of debt levels while Latin American countries and Emerging Middle eastern countries are also following suit (Statista, 2020)(IMF, 2023b).

The levels are expected to further increase in near future. The emerging economies are witnessing a disruptive penetration of financial technology which has grated financial access, thereby supporting accelerated credit expansion. At the same time the growing middle-class population and rising consumerism will propagate the growth of retail loans(Aditya Saroha & Cheska Lozano, 2024; Holt & McKay, 2018). As such Household debt has been a growing concern in recent years, reaching significant levels with implications for both economic stability and individual financial well-being.

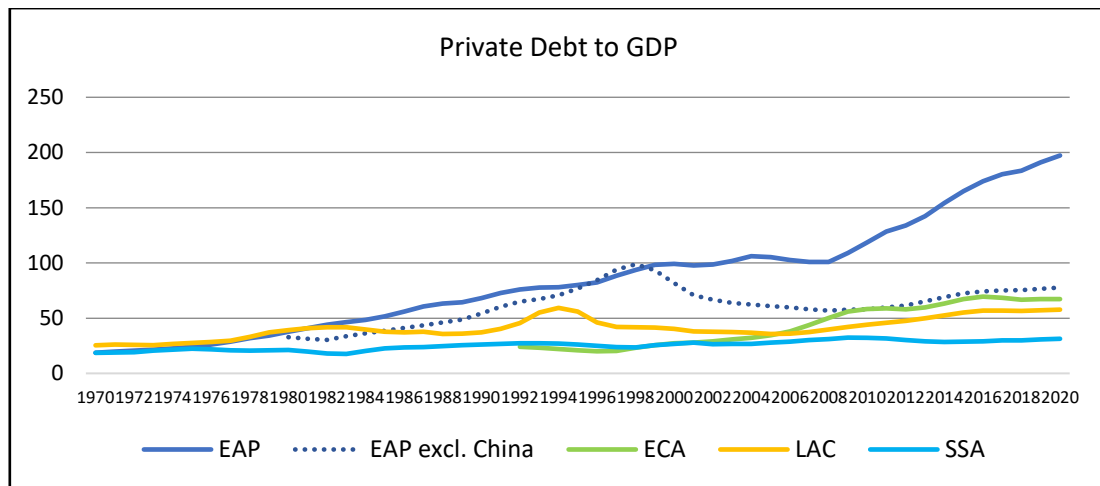**Figure 1: Private debt to GDP ratio of Emerging Economies**



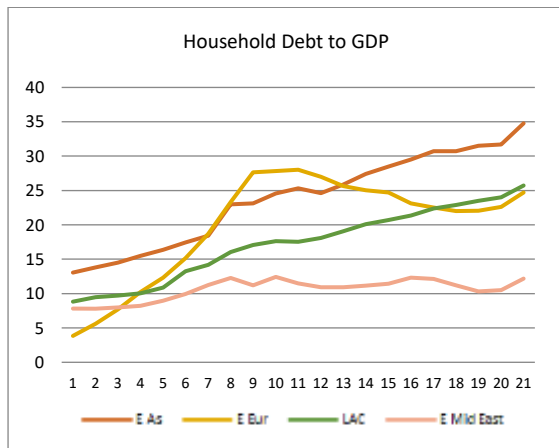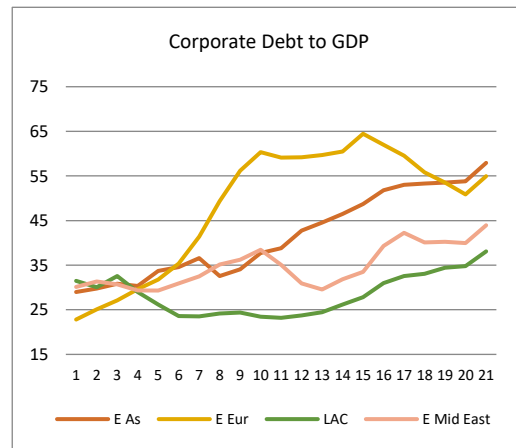**Figure 2: Household Debt to GDP Ratio by Blocs**



**Figure 3: Corporate debt to GDP ratio of Blocs**



## Review of literature:

The past literature has not been able to provide conclusive evidence about the private debt and growth nexus, with two contrasting narratives appearing over time. The first one relates to the stimulating effect that private debt growth has of economic growth while the other relates to the connections found between excessive leverage in the private sector and financial stability concerns. For this paper, the review of literature is provided separately for household debt and corporate debt for better clarity and judgment.

**Household debt:**

From a theoretical perspective, we find that household debt increases are positively related to growth. This view is backed by Keynesian Consumption Theory (Keynes, 2018), the Permanent Income Hypothesis by (Ando & Modigliani, 1963) or consumption function theory by (Friedman, 1957) . As per Keynes, household debt stimulates economic growth by boosting consumption, which increases aggregate demand in the economy, leading to higher output and employment levels. The resulting increase in income can then enable households to repay their debt, creating a positive feedback loop. The Permanent Income Hypothesis (PIH) posits that households base their consumption decisions on their expected long-term income rather than their current income. By maintaining their desired level of consumption through borrowing, households can avoid significant fluctuations in living standards and contribute to economic stability. Some theories suggest that households may borrow to overcome liquidity constraints and invest in assets that generate long-term returns, such as education, housing, or entrepreneurship. In this view, household debt serves as a tool for wealth accumulation and intergenerational mobility. At the same time, we have the housing market dynamics as mortgage debt can have positive effects on economic growth. The residential investment channel propagates economic growth through positive externalities on employment, construction activity, investment and gross capital formation within the economy (Khan & Rouillard, 2018; Xiaoqing, 2021). At the same time, it creates household wealth accumulation with rising home values leading to an increase in household wealth and consumption, further stimulating economic growth.

There are also empirical papers that offer support for the positive linkages between the increase of household leverage and economic growth. According to (Endut & Hua, 2009), a low interest rate environment has reduced the cost of borrowing and indirectly increased the incentive for households to borrow in order to smooth their desired path of consumption over their life cycle. A higher level of financial inclusion and economic growth in a nation has a

positive, long-term relationship. There is support from literature as well on this (Beck & Levine, 2004; Levine & Zervos, 1998). A study (Mian & Sufi, 2014b) found that increases in household debt in the United States were positively associated with higher consumption and GDP growth during the pre-crisis period. On similar lines, (Jappelli & Pistaferri, 2014) examined data from European countries and concluded that household debt had a positive effect on consumption, contributing to economic growth. As far as more debt is accumulated the consumption will increase as well, spurring economic growth (Disney & Gathergood, 2018; Masih, 2013; Rees, 2014). Adelino et al., (2012) examined the impact of mortgage debt on economic growth and found that it had positive spillover effects on employment and GDP growth.

Conversely, other empirical research highlights the negative consequences of high household debt on economic growth. The negative relationship between household debt and the real economy can be explained through direct wealth effects, reduced consumption and tightening of lending conditions. In the former case, a fall in the net worth of the households following a decline in house prices leads to spending cutbacks for individual households and a collecting fall in aggregate demand. This is followed by low production activity in the economy and a loss of employment, extending beyond the initial shock. Excessive debt levels can lead to reduced consumer spending, financial fragility, and lower long-term growth prospects. This narrative emerges mainly from the observations of empirical papers written after the 2008 financial crisis though past literature does offer some insights into the negative implications of high leverage. A study by (Dokko & Dynan, 2018) found that households with high levels of debt tend to reduce consumption during economic downturns, exacerbating the severity of recessions. Research by (Kumhof et al., 2013) suggests that high levels of household debt can lead to financial crises, which have significant negative effects on economic growth. High and rapidly rising levels of household debt can be risky. A high level of debt increases the sensitivity of households to any shock to their income or balance sheet. Though the leverage increase at household level supports consumption in short run, this growth in consumption spending is highly fragile relying mostly on the unsustainable growth of housing bubbles. Research by (Brown, 2007) suggests that high levels of consumer debt, particularly credit card debt, can negatively affect economic growth by reducing disposable income and increasing financial stress.

Household leverage is a powerful statistical predictor of the severity of the recession as well as any impending banking crises (Aldasoro et al., 2018; Büyükkarabacak & Valev, 2010). counties. A study by (Jordà et al., 2013) examined the relationship between household debt and financial crises across different countries and found that excessive household debt was a significant predictor of financial instability. Mian & Sufi, (2014a)studied the impact of household debt on financial crises and concluded that high levels of household debt increase the likelihood of severe recessions and prolonged periods of economic stagnation.

**Corporate debt:**

Similar to the research on household debt, the evidence from corporate arena also come for both positive and negative impact of debt. In a paper by (Nitzan & Bichler, 2009) , the authors state that corporate debt contributes to capital formation by providing firms with the necessary funds to acquire physical capital, such as machinery, equipment, and infrastructure. Increased capital formation leads to higher productivity levels, which can drive economic growth over the long term (Modigliani & Miller, 1958) . Corporate debt also plays a crucial role in economic expansion by allowing firms to undertake large-scale investments in capital expenditures, research and development, and expansion initiatives which are essential for fostering economic growth. When firms borrow to finance capital projects or expand operations, they create demand for goods and services, which can have positive multiplier effects throughout the economy. This boost in aggregate demand contributes to economic growth (Bernanke et al., 1996). At the same time, Debt financing allows firms to manage risk more effectively by spreading it across a broader investor base. By issuing bonds or taking out loans, firms can transfer some of the risks associated with their operations to creditors. This risk-sharing mechanism can promote entrepreneurship, investment, and ultimately, economic growth. Gertler et al., (1994)emphasize the impact of corporate balance sheet conditions, including debt levels, on aggregate demand and economic activity. They find that changes in corporate debt can affect investment and consumption spending, thereby influencing GDP growth. Corporate debt can also enhance financial intermediation by providing funds for investment opportunities that might otherwise go unfunded. In economies with well-functioning financial markets, firms can access debt financing to fuel growth-enhancing projects, leading to higher levels of economic output and overall prosperity (Rajan & Zingales, 1998).

Apparently, it is suggested that the difference of the ultimate impact of debt on any economy can be explained through the Financial Development Theory as advocated by the likes of Robert J. Shiller, Raghuram Rajan, Ross Levine, and Asli Demirgüç-Kunt. The theory states that in economies with well-developed financial markets, firms may have easier access to debt financing, which can facilitate growth by providing resources for investment. However, in less developed financial markets, firms may face constraints in accessing debt financing, which could impede their growth prospects (Maxwell J. Fry, 1989). Another is debt cycle theory by Ray Dalio which suggests that financial cycles are interrelated to business cycles. In normal growth times, businesses borrow disproportionally in anticipation of incoming revenues and profits (Dalio, 2018). Debt service is not a major issue as long as periodic cash flows occur. This leads to a rise in the undischarged corporate debt attributed to the persistently low-interest rate environment that brings about the prudential issue of underwriting standards and if and how they will hold up in case of readjustment of interest rates to higher levels. However, as the business cycle reaches the end of its peak, the effect starts to reverse.

Given that financial infrastructure of the emerging markets is not at par with that of advanced economies, we find empirical evidence of the challenges to growth from the corporate side. As of 2021, IMF had predicted that in event of a material economic slowdown scenario half as severe as the global financial crisis, IMF in its report had predicted that "corporate debt-at-risk (debt owed by firms that are unable to cover their interest expenses with their earnings) could rise to $19 trillion — or nearly 40 percent of total corporate debt in major economies—above crisis levels." (IMF, 2019). This is particularly concerning for developing countries where the capacity to respond to shocks has been limited by It is estimated that the developing world is exposed to a $2-3 trillion financing gap which the international community has failed to address (UNCTAD, 2020). Since March 2020, the value of currency in emerging economies is depreciating, raising the value of their debts in terms of local currency. Likewise, the delirious association between

sudden capital flow and increased debt crisis risk has been studied over decades. It has been found that this regularity is often true for much of the past events in history, where a surge in capital flows often precede external debt crisis since 1800 (Kaminsky et al., 2003; Mendoza, 2010; Reinhart & Rogoff, 2008). At the same time, the number of corporate defaults is on the rise in the wake of reduced earnings with credit downgrades on the rise. As firms become distressed and default rates climb higher, credit markets may come to a sudden stop, especially in risky segments like high yield, leveraged loan, and private debt markets. Previous episodes like 2001, 2008, end of 2018 show that this liquidity simply evaporates when a crunch strengthens. Lopez-Garcia et al., (2022) examine the relationship between corporate debt and economic downturns, demonstrating how high levels of corporate leverage can exacerbate financial instability during periods of economic contraction.

## Data Sources and Research Methodology:

### Data:

The data for private debt is sourced from the IMF global debt database, while data on real economic variables is openly available on the IMF World Economic Outlook and World Bank databases. The countries selected include Bangladesh, China, India, Indonesia, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand and Vietnam.

### Methodology:

This study analyses whether rising private debt is harmful for real economy, in both the short-run and long-run using data from 11 emerging Asian countries. Panel estimation is chosen in this study to control for individual heterogeneity, to identify unobservable characteristics and to give more information on reliable estimation (Baltagi et al., 2000).

Panel Autoregressive Distributed Lag (ARDL) models are a powerful econometric tool for analysing the dynamics of relationships between variables in panel data settings. Panel ARDL has become increasingly popular in applied econometric research, particularly in fields such as macroeconomics, finance, and development economics, where researchers seek to understand the dynamics of relationships between variables over time and across different entities. ARDL models combine the flexibility of autoregressive distributed lag models, which capture both short-term dynamics and long-term equilibrium relationships, with the advantages of panel data analysis, which accounts for heterogeneity across individual entities (Kripfganz & Schneider, 2016; Shin et al., 2014).

The basic equation of Panel ARDL is represented as follows.

$$\Delta y_{it} = \sum_{k=1}^{p-1} \lambda_{ik}^{*} \Delta y_{i,t-k} + \sum_{k=0}^{q-1} \delta_{ik}^{*'} \Delta X_{i,t-k} + \varphi_i y_{i,t-1} + \beta_i' X_{it} + \omega_i + \varepsilon_{it}$$

Panel ARDL allows for the inclusion of both time-series and cross-sectional dimensions, enabling researchers to account for unobserved heterogeneity across entities and time periods. It incorporates lagged values of the dependent and independent variables to capture both short-term dynamics and potential long-run equilibrium relationships. This model facilitates the testing of hypotheses regarding the existence of long-run relationships between variables, as well as the direction and magnitude of their effects.

## Results:

Before econometric analysis, we need to study the descriptive statistics of the variables to understand the nature of the data, the results of which are presented in Table 1.

**Table 1: Descriptive statistics of variables**

|  | Mean | Maximum | Minimum | Std. Dev. | Skewness | Kurtosis |
|---|---|---|---|---|---|---|
| **RGDPCH** | 3.997718 | 34.5 | -15.1 | 4.239844 | 0.157385 | 9.800123 |
| **HHD** | 17.6308 | 89.43609 | 0.186787 | 15.12478 | 1.729452 | 6.566474 |
| **CORPD** | 40.75395 | 144.8549 | 0.57079 | 26.74353 | 1.211711 | 4.311394 |
| **GSAV** | 23.81783 | 64.717 | 4.201 | 9.063007 | 1.2455 | 5.215462 |
| **INF** | 6.170421 | 96.1 | -19.3 | 8.296616 | 5.095589 | 40.94729 |
| **NETEXPORTS** | -1.025 | 53.791 | -77.573 | 11.08563 | -0.59525 | 9.065789 |
| **LINT** | 12.21501 | 80.45 | 0.15 | 10.20573 | 2.976685 | 14.8486 |

Following this, a preliminary test is run to check whether the variables are non-stationary, for which the panel unit root test is conducted  Table 2 presents the results of the IPS test (Im et al., 2003), which is based on the null hypothesis of non-stationarity.

**Table 2: Unit root testing: IPS**

|  | at level | | at first difference | | |
| --- | --- | --- | --- | --- | --- |
|  | **Statistic** | **p-value** | **Statistic** | **p-value** | **Stationarity decision** |
| **Real GDP change** | -0.6378 | 0.262 | -10.5615 | 0.000 | at first difference |
| **Household Debt** | 1.6176 | 0.947 | 7.8817 | 0.000 | at first difference |
| **Corporate Debt** | 2.2614 | 0.988 | -8.1889 | 0.000 | at first difference |
| **Gross savings** | -2.3034 | 0.011 | -10.2622 | 0.000 | at level |
| **Inflation** | -9.0544 | 0.000 | -21.1354 | 0.000 | at level |
| **Net exports** | -11.754 | 0.000 | -22.072 | 0.000 | at level |
| **Lending Interest Rate** | -8.8647 | 0.000 | -19.2879 | 0.000 | at level |

Since the data is in a combination of stationary at the level and stationary at the first difference, the panel autoregressive distributed lag (ARDL) is used to examine the relationship for which the optimal lag selection is to be done. The following formula has been used for this purpose.

```
forvalues i=1/11{
ardl RGDPch hhd Corpd if (CID==`i'), maxlag(1 1 1)
matrix list e(lags)
di
}
```

Based on the results the lag structure of (1, 0, 0) is found optimal, which is followed by a selection of an appropriate model to be run. Panel ARDL can be run in three variations, The Mean group model, the pooled mean group model and the Dynamic fixed effects model. To select between the MG, PMG and DFE models Hausman tests are run (Hausman, 1978).

**Table 3: Hausman Test**

|  | **Co PMG vs MG** | **PMG vs DFE** |
| --- | --- | --- |
| Chi-square Test value | 2.925 | 0.16 |
| P-value | 0.712 | 0.9236 |
| Decision | The Ho of Homogeneity is rejected | The Ho of Homogeneity is rejected |
| Better Model | PMG | PMG |

Based on the results of the Hausman test Table 3, PMG is found to be the appropriate model. The final step is to run the PMG model the results of which are displayed in table 4.

**Table 4: Panel ARDL-PMG results**

| Pooled Mean Group Regression | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| **D.RGDP** | **Coef.** | **Std. Err.** | **z** | **P>|z|** | **[95% Conf.** | **interval]** |
|  |  |  |  |  |  |  |
| **hhd** | -0.09293 | 0.025473 | -3.65 | 0.000 | -0.14285 | -0.043 |
| **Corpd** | -0.09735 | 0.015193 | -6.41 | 0.000 | -0.12713 | -0.06757 |
| **SR** |  |  |  |  |  |  |
| **ec** | -0.78957 | 0.068579 | -11.51 | 0.000 | -0.92398 | -0.65516 |

| **hhd D1.** | -0.06604 | 0.227217 | -0.29 | 0.771 | -0.51138 | 0.3793 |
|---|---|---|---|---|---|---|
| **Corpd D1.** | -0.157 | 0.065383 | -2.4 | 0.016 | -0.28515 | -0.02885 |
| | | | | | | |
| **Gsav** | 0.291758 | 0.079261 | 3.68 | 0.000 | 0.13641 | 0.447105 |
| **Lint** | -0.09356 | 0.15265 | -0.61 | 0.540 | -0.39275 | 0.205626 |
| **Inf** | -0.13874 | 0.094894 | -1.46 | 0.144 | -0.32473 | 0.047245 |
| **Netexports** | 0.07515 | 0.035323 | 2.13 | 0.033 | 0.14438 | 0.00592 |
| **_cons** | 2.552408 | 2.828855 | 0.9 | 0.367 | -2.99205 | 8.096863 |

The results of the Panel ARDL show that in the long run, both household debt and corporate debt hurt economic growth with coefficients of -0.09293 and -0.09735. The findings of this paper are in line with the observations of (Adrian & Natalucci, 2020; Horioka & Niimi, 2020; IMF, 2022; MAXWELL J. FRY, 1989). We find that while the recent household debt surge does not raise short-term risk to the financial system, it has represented a key impediment to economic growth in the long run.

Also, among the control variable, gross savings and net exports have a positive impact on real GDP growth with a one per cent rise in savings resulting in a 29 per cent rise in GDP and a one per cent rise in net exports resulting in a 7 per cent growth in GDP, in line with (Guerrieri & Lorenzoni, 2017; Liargovas & Skandalis, 2012). The impact of lending interest rate, inflation and net exports are found to be insignificant for the current sample.

## Conclusion:

Private debt has been increasing in emerging economies and While this increase reflects to some extent the intended effects of expansionary monetary policy, central banks in various advanced and emerging market economies have recently warned against the financial stability risks of high household debt and high debt-to-income ratios when inflation and wage growth are low. The paper finds a detrimental impact of private debt increase (both household and corporate debt ) on real GDP growth, signalling the importance of maintaining low leverage in the private sector, thereby overcoming the debt overhang caused. Excessive reliance on debt financing can leave businesses and households exposed to interest rate fluctuations, currency risks, and other market uncertainties. At the macroeconomic level, high private debt exerts a drag on growth through reduced investment and distorted resources.

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