

The Impact of Consumer *versus* Firm Credit on Economic Growth

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ABSTRACT

This study investigates the impact of consumer versus firm lending on Jordanian economic growth by using quarterly data from 1994 to 2018. This study uses the Autoregressive Distributed Lag (ARDL) model.

The empirical results show that there is a positive and long-run equilibrium relationship between consumer lending and GDP growth, since increasing consumer lending raises consumption of services, which contributes 66.6% of Jordan's GDP. Furthermore, the empirical results show that there is no long-run equilibrium relationship between firm lending and Jordanian economic growth. The researcher attributes these results to the crowding effect of government lending. The empirical results show that there is a negative and long-run equilibrium relationship between government lending and GDP growth, as more government lending will decrease the number of loans to the business sector, which in turn will affect the economic growth negatively.

Keywords: Consumer lending, Firm lending, GDP, Economic growth.

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تأثير قروض الأفراد مقابل تأثير قروض الشركات على النمو الاقتصادي

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ملخص

تدرس هذه الدراسة الأثر المستقل لكل من قروض الأفراد وقروض الشركات على النمو الاقتصادي في الأردن، وذلك باستخدام بيانات ربع سنوية خلال الفترة الممتدة من الربع الأول لعام 1994 إلى الربع الأول لعام 2018. وقد استخدمت هذه الدراسة نموذج فترات الإبطاء الموزعة.

أظهرت النتائج التجريبية للدراسة أن هناك علاقة توازنية إيجابية طويلة الأجل بين الإقراض للأفراد والنمو في الناتج المحلي الإجمالي، حيث وُجد أن زيادة الإقراض للأفراد يزيد من استهلاك قطاع الخدمات الذي تبلغ نسبة مساهمته في الناتج المحلي الإجمالي الأردني 66.6%. من جانب آخر، أوضحت النتائج أنه لا توجد علاقة توازنية طويلة الأجل بين الإقراض للشركات والنمو الاقتصادي الأردني، ويعزو الباحث ذلك إلى مزاحمة القطاع الحكومي على القروض المتاحة.

وأظهرت النتائج التجريبية أيضاً أن هناك علاقة توازنية سلبية طويلة الأجل بين الإقراض للقطاع الحكومي والنمو في الناتج المحلي الإجمالي الأردني، لأن زيادة الإقراض للقطاع الحكومي ستقلل من حجم الإقراض للقطاع الخاص، مما يؤثر سلباً على النمو الاقتصادي.

الكلمات الدالة: إقراض الأفراد، إقراض الشركات، الناتج المحلي الإجمالي، النمو الاقتصادي.

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1. INTRODUCTION

Lending to the household sector has increased over time in many countries, as banks lend more to households than to firms (Beck et al., 2012). According to the Global Financial Stability Report (GFSR), which was published by the International Monetary Fund (IMF) in 2017, household debt has continued to increase significantly since 2008 in a sample of 80 countries.

According to the aforementioned report, the average debt ratio in advanced economies increased from 52% of GDP in 2008 to 63% in 2016, while it increased in emerging economies from 15% of GDP to 21% in 2016. A report published by the Bloom Economic Research Division in 2018 indicated that household credit in both developed and emerging economies around the world has increased since the early 2000s. In Jordan, household debt increased from JD10.4 billion at the end of 2017 to JD10.8 billion at the end of 2018 (Financial Stability Report, Central Bank of Jordan, 2018).

The relationship between financial development and economic growth has been widely investigated in previous financial studies (Goldsmith, 1969; Bencivenga and Smith, 1991; King and Levine, 1993; Beck et al., 2000). Furthermore, many studies investigate how credit market development affects economic growth using an aggregative measure of credit allocated to the private sector. (Goldsmith, 1969; Bencivenga and Smith, 1991; King and Levine, 1993; Beck et al., 2000). However, just a few studies have examined the independent macro-economic impact of each firm and credit market. Beck et al. (2012) and Hass et al. (2010) argued that while previous research has focused on lending growth, little is known about the composition of bank lending in terms of customer types (business, households and government).

The theory has suggested various mechanisms through which enterprise credit helps economic growth (Beak et al., 2012; Sassi and Gasmi, 2014). However, it provides ambiguous predictions about the impact of households on

economic growth (Beak et al., 2012; Sassi and Gasmi, 2014). Higher household debt could improve economic efficiency and support macro-financial stability. Household borrowing can smooth fluctuations in consumption and these funds can be used to invest in financial instruments (stocks and bonds), making them an important source of economic development if there are good investment opportunities (Beck and Levine, 2004; Beck et al., 2000).

According to Alter et al. (2018), debt overhang reduces household consumption when negative shocks occur, an increase in household debt raises the risk of future banking crises and overly optimistic investor expectations associated with debt booms may neglect crash risk.

In conclusion, many studies investigated how the credit market development influences economic growth using an aggregative measure of credit allocated to the private sector. However, few studies investigated the independent macro-economic impact of each firm and household credit market.

The theory provides ambiguous predictions about the impact of households on economic growth. Empirical studies, on the other hand, provide mixed evidence of the relationship between household credit and economic growth.

This study aims to investigate the independent impact of consumer *versus* firm lending on economic growth by using quarterly data from 1994 to 2018. In doing so, this study tries to control the crowding effect of government lending, as expansion of the latter may lead to lower available funds for the business sector, which may have a negative impact on GDP growth.

Importance of the Study

The Kingdom's economic performance in 2018 was affected by the region's persistent uncertainty,

which led to a reduction in foreign direct investment inflows. Also, the Consumer Price Index (CPI) increased by 4.5 percent, affected by the fiscal measures taken by the government at the beginning of 2018 (Financial Stability Report, Central Bank of Jordan, 2018).

In Jordan, the banking sector makes up a large percentage of the market capitalization of companies listed in the ASE, representing one of the largest sectors in Jordan's economy (Ahmad and Abu-Ghunmi, 2021). The licensed banks' assets totaled JD 48.6 billion at the end of 2018, representing 161.9% of GDP. The credit facilities portfolio remained the largest component of the banks' assets at the end of 2018, accounting for about 51.3% of total assets, compared to 50.6% at the end of 2017. The ratio of total credit facilities to GDP approximated 85.6% at the end of 2018 (Financial Stability Report, 2018, Central Bank of Jordan).

In Jordan, with regard to the distribution of direct credit facilities at the end of 2018, the largest share of direct credit facilities is for household credit facilities, which accounted for 38.8% of total credit facilities at the end of 2018, compared to 37.7% at the end of 2017. The credit facilities extended to large companies are next in the rank, accounting for 37.7% of total direct credit facilities at the end of 2018, compared to 38.1% at the end of 2017. For the credit facilities extended to the government and the public sector, they declined to 9.7% at the end of 2018, compared to 12.4% at the end of 2017. With regard to the share of the credit facilities extended to SMEs as a proportion of total credit facilities, it increased to 9.2% at the end of 2018, up from 7.4% at the end of 2017, with the average for emerging market economies ranging between 20.0% and 25.0%. (Financial Stability Report, 2018, Central Bank of Jordan, 2018).

Government strategies are made to support the growth of GDP since a number of studies indicated that there is a strong and significant relationship between household debt and the growth of GDP (Beck et al., 2012; AbdRahman and Maish, 2014; Sassi and Gasmi, 2014) Therefore, the

findings of this research could be used to inform the policies of the Central Bank of Jordan aimed at controlling or increasing the growth of household credit.

2. Literature Review

This section provides an overview of previous studies that investigated the relationship between financial development and economic growth. It then presents an overview of previous studies that investigated the independent macro-economic impact of consumer, firm and government lending.

2.1 Financial Development and Economic Growth

Economic growth is one of the main aims of any economic system. Economists, in their theories, highlight what is beneficial for economic growth. They argue that banks, equity markets and bond markets are efficient financial systems that help capital be put to its most productive uses. (Abu Khalaf and Alnabulsi, 2019).

Goldsmith (1969) was the first to show empirically that there is a positive correlation between financial development and GDP *per capita* in 35 countries, using data prior to 1964. However, he did not indicate that there is a causal link between financial development and economic growth. In the 1990s, economists worked to identify the causal link between financial development and economic growth. King and Levine (1993) were the first to show that financial development is a predictor of economic growth. They studied whether higher levels of financial development are significantly and robustly correlated with economic development. Using data from 80 countries over the period from 1960 to 1989, they constructed four indicators of financial development, which are used to measure the services provided by financial intermediaries. The indicators of financial development are: (1) financial depth,

which equals the overall size of the formal financial intermediary system; (2) the importance of banks relative to the central bank in allocating domestic credit; (3) the percentage of credit allocated to private firms and (4) the ratio of credit issued to private firms to GDP. Generally speaking, financial institutions play an intermediary role by collecting savings from various surplus units (mainly households) and allocating the funds collected among deficit units (mainly firms). Financial institutions and capital markets usually meet the goals of both categories of households and firms, so they contribute to economic growth. In the absence of financial intermediaries, households may invest in less profitable assets and give up better investment opportunities. This inefficiency is reduced by financial intermediaries, which, through asset transformation, bear the liquidity risk of savers and invest the collected funds in less liquid, but more productive projects (Bencivenga and Smith, 1991). Levine (2005) suggested four main mechanisms through which finance can support economic development: (1) the pooling of savings through risk diversification and risk management; (2) the facilitation of exchange through the reduction of transaction costs; (3) the improvement of capital allocation through the production of ex-ante information about investment opportunities and (4) the increase of inventors' willingness to finance new projects through ex-post monitoring and corporate governance. Arcand et al. (2012) used different datasets (country-level and industry-level) and empirical approaches (simple cross-sectional, panel regression and semi-parametric estimators) to prove that there can indeed be too much finance. The results showed that when credit to the private sector reaches 80-100% of GDP, the marginal effect of financial depth on output growth becomes negative. Acedanski and Pietrucha (2019) investigated the relationship between the level and dynamics of financial depth, measured as the private debt to GDP ratio and the volatility of GDP over the period (1970-2014) for 77 countries. They found that higher levels of financial depth are associated with higher volatility once

the financial depth measure exceeds 96-124%. In addition, they find that higher dynamics of financial depth increase the volatility of GDP.

2.2 Types of Credit and Economic Growth

2.2.1 Theoretical Background

Theory has suggested various mechanisms through which enterprise credit helps economic growth (Beck et al., 2012; Sassi and Gasmi, 2014). In the absence of bank credit, firms may invest in less profitable assets and give up better investment opportunities (Bencivenga and Smith, 1991). Therefore, credit to firms may increase the productivity of investments, thereby promoting economic growth (Pagano, 1993) and improving capital allocation through the production of ex-ante information about investment opportunities (Levine, 2005). However, the theory also suggests that there may be a crowding effect of government lending on firm lending. Al Majali (2018) argued that the increase in government borrowing from conventional banks leads to a larger demand for money and loanable funds, resulting in a higher interest rate. This increase is expected to reduce investment and the fall in investment could hurt economic growth. On the other hand, the theory provides ambiguous predictions about the impact of households on economic growth (Beck et al., 2012; Sassi and Gasmi, 2014). For example, borrowing by households, may smooth fluctuations in consumption and households may use these funds to invest in financial instruments (stocks and bonds). So, if there are good investment opportunities, they will be an important source of economic growth (Beck and Levine, 2004; Beck et al., 2000; Alter et al., 2018). It was found that the debt overhang impairs household consumption when negative shocks hit. More household debt increases the possibility of future banking crises and overoptimistic expectations of investors that are

associated with household debt booms may neglect crash risk. Jappelli and Pangano (1994) argued that increasing household credit negatively affects economic growth. Galor and Zeira (1993) argued that household credit can foster economic growth if it increases human capital accumulation. In conclusion, the theory suggests a positive impact of firm credit on economic growth, but it provides ambiguous predictions about the impact of households on economic growth. Therefore, it is useful to examine the empirical evidence in order to have a clear prediction about the impact of household credit on economic growth.

2.2.2 Empirical Evidence

Many previous studies examined the impact of financial development on economic growth using aggregative credit of private sector and did not separate it from household credit and enterprise credit. It is important to understand the relationship between credit composition and economic growth, which may lead to explaining the puzzle of the credit-growth nexus issue (Beck et al., 2012; Sassi and Gasmi, 2014). Buyukkarabacak and Krause (2009) attempted to explore the impact of household debt and firm credit on the trade balance. They tested their hypotheses using the generalized method of moments (GMM) dynamic panel estimators with a sample of 18 emerging countries. The results showed that firm credit is positively correlated with the trade balance of goods and services, because it has the potential to increase investment by relaxing the credit constraints on firms, thus increasing exports and the trade balance. On the other hand, household lending has a negative influence on net exports. Buyukkarabacak and Krause (2009) argued that investigating the impact of household and firm credit on the trade balance in emerging countries is relevant for several reasons: (1) the impact of increased household credit in emerging economies remains ambiguous and (2) if the results indicate that household credit and firm credit have different influences on the trade balance of goods and services, this highlights the importance of the private-credit decomposition. Using

time-series techniques, Abd Rahman and Masih (2014) investigated the relationship between household debts, GDP, house prices and lending rates in Malaysia from 1999 to 2014. They also investigated what factors contributed to the increase in household debts and which of the selected variables had an effect on the increase in household debts. The household debt to GDP ratio in Malaysia in 2013 was at 86.8% and this shows that there is a co-integrating long-run relation between household debt, house price, GDP and interest rate. They also found that in the short run, household debt could not be affected by the changes in GDP, lending rate and house price. They also found that in the long run, there is a positive and significant relationship between house price and household debts. Furthermore, they discovered that the increase in household debts may not affect GDP in both the short and long runs. Sassi and Gasmi (2014) investigated empirically the impact of household credit and firm credit on economic growth using a sample of 27 European countries over the period (1995-2012) based on the estimations of OLS and IV regression and the GMM dynamic panel data model. The results showed that firm credit influences economic growth positively, since lending to the 15 productive firms constitutes the necessary premise for the realization of the innovation process. Household credit has a negative effect on economic growth, Bahadir and Gumus (2016) investigated whether there is a different effect of household credit and business credit on business cycles in emerging market economies. They argue that increasing household credit affects the economy through an increase in consumption and demand for goods and services, whereas business credit has the potential to increase investment and labor demand. The results showed that household credit has a positive relationship with output, consumption, investment and real exchange rate appreciation, while it has a

negative correlation with net exports. On the other hand, business credit has a weaker correlation with all of these variables. Kim (2016) investigated the relationship between household debt and GDP in the US. He employed the vector error correction model on quarterly time-series data from 1951 to 2009. He argued that the impact of household debt on economic growth varies between the short and long runs. In the short run, household debt increases consumption and hence encourages growth, but in the long run, the accumulation of debt could generate a negative effect on output. Leon (2016) investigated the impact of household credit and firm credit on economic growth and created a new hand-collected database covering 143 countries from 1995 to 2014, but due to the lack of data regarding control variables, only 126 countries were employed for econometric analysis. The results showed that there is no relationship between overall credit and growth. On the other hand, it was found that household credit has a negative effect on growth. Islam (2017) asked whether credit extended to households and firms has an impact on the share of exports in gross domestic product and on the trade balances from 1964 to 2013, for 42 countries. He argued that firm and household lending have different impacts on external balances because of the presumption that households and firms borrow for different reasons: households borrow for consumption, while firms borrow for production. The results showed that the higher the shares of credit going to the firm, the higher the export share in the gross domestic product and the stronger the trade balance. However, household credit has a negative or insignificant relationship with the trade balance and the share of exports in gross domestic product. Mian et al. (2017) indicated that an increase in household debt predicts lower GDP growth, by using a sample of 30 countries over the period (1960-2012) based on vector auto-regression. They argued that the increase in household debt will increase the ratio of consumption to GDP and GDP will experience a boost. However, this boost is temporary and then GDP falls. They indicated that the rise in the ratio of

household debt to GDP over a three-to-four-year period in a given country predicts a decline in economic growth. Alter et al. (2018) found a negative relationship between household debt and future economic growth in a sample of 80 advanced and emerging countries over the period of (1950-2016). They suggested three mechanisms to explain the negative relationship between household debt and economic growth: (1) increasing household debt reduces household consumption when negative shocks hit; (2) increasing household debt raises the possibility of future banking crises and (3) over-optimistic expectations of investors that are associated with household debt booms may neglect crash risk.

Daud et al. (2021) investigated the effects of household debt on 24 countries' economic growth. They also examined whether a tipping point of debt exists. By employing the threshold method, it was found that the impact of household debt on a country's economic growth is negative. Because the relationship between debt and growth is a monotonically non-increasing function, we do not find a magic threshold of debt.

Law et al. (2021) examined the effects of business (enterprise) credit and household credit on economic performance in Malaysia. Their analysis was based on quantile regression estimations using quarterly time-series datasets from 1999 (Q4) to 2019 (Q4). The empirical findings revealed that business credit is positively associated with economic performance, whereas household credit is an insignificant determinant of economic performance.

Finally, there is evidence of the negative impact of government lending on reducing the amount of loanable funds available to businesses, indicating a negative impact on economic growth. Emran and Farazi (2009) investigated the relationship between government borrowing and private credit in

developing countries using panel data in 60 developing countries. The results indicated that a \$1.00 increase in government borrowing decreases private credit by about \$1.40.

3. Data, Methodology and Empirical Results

This section starts by giving an overview of the sample and data sources. Then, it describes the variables and methodology of the study. Finally, it describes the empirical results.

3.1 Sample and Data Sources

This study focuses on investigating the impact of consumer *versus* firm credit on Jordanian economic growth using quarterly data from 1994 to 2018. For the purpose of this study, the researcher collected quarterly data on household credit, firm credit and government credit in Jordan over the period from the first quarter of 1994 to the first quarter of 2018, as well as data on GDP growth. The data was collected from the Central Bank of Jordan.

3.2 Methodology

The aim of this study is to investigate the independent macro-economic impact of household and firm lending on the economic growth of Jordan over the period from the first quarter of 1994 to the first quarter of 2018. The Autoregressive Distributed Lag (ARDL) model is used to examine equilibrating and long-run associations between credit composition and economic growth. The ARDL approach was developed by Pesaran and Shin (1999) and Pesaran et al. (2001). The ARDL approach has many advantages. The most important of these is that it is not necessary to test the unit root of the variables. Therefore, the ARDL approach can be applied regardless of whether the regressors are I (0) or I (1).

3.3 Study Model

In order to achieve the study objective of investigating independent macro-economic impact of household and firm

lending on the economic growth of Jordan over the period from the first quarter of 1994 to the first quarter of 2018, the following regression model is designed:

$$GGDP_t = \alpha + \beta_1 Lending_t + e_t \quad (1)$$

Lending enters the equation as consumer, firm and government leading, respectively, where:

- GGDP is the growth in gross domestic product at market prices.
- Consumer lending is money borrowed by individuals in the form of loans that are to be repaid later as a percentage of GDP.
- Firm lending is the total claim of deposit money banks on non-financial firms as a ratio of GDP.
- Government lending is the total claim of deposit money banks on the government as a ratio of GDP.

3.3.1 Dependent Variable (Growth of GDP)

Many studies use the growth in GDP *per capita* to measure economic growth (Beck et al. 2012, Sassi and Gasmi, 2014). In this study, growth in GDP was used to measure economic growth due to data-availability constraints. Growth in GDP is calculated using the following equation:

$$GGDP = (GDP_t - GDP_{t-1}) / GDP_{t-1} \quad (2)$$

3.3.2 Independent Variables

* Consumer Lending

It is money borrowed by individuals in the form of loans that are to be repaid later, such as mortgages, car loans, personal loans and the balance on a credit card (Harari, 2018). To investigate the impact of household lending on Jordanian economic growth, the household as a percentage of GDP is used in the same way as used by Beck et al. (2012) and Sassi and Gasmi (2014).

As of the end of 2018, there were approximately 1.1 million borrowers from banks operating in Jordan, representing 16.6% of the total adult population. Along with Lebanon, Jordan ranked third among Arab countries in this regard. In comparison with developed countries, the percentage of borrowers to the total adult population in Jordan was lower than the average in developed countries of about 19.1% (Financial Stability Report, Central Bank of Jordan, 2018).

Many studies indicated that there is a negative relationship between consumer lending and economic growth, since the debt overhang impairs household consumption when negative shocks hit. More household debt increases the probability of future banking crises and overoptimistic expectations of investors that are associated with household debt booms may neglect crash risk (Sassi and Gasmi, 2014; Leon, 2016).

On the other hand, various studies implied a positive relationship between consumer lending and economic growth, since higher household debt could improve economic efficiency and support macro-financial stability. Household borrowing may be used to smooth fluctuations in consumption and households may use these funds to invest in financial instruments (stocks and bonds). So, if there are good investment opportunities, they will be a source of economic growth (Beck and Levine, 2004; Beck et al., 2000).

In addition, the Jordan Strategy Forum (2018) indicated that when banks' credit to individuals increases by 1%, real GDP increases by 0.89%.

Last, but not least, many studies argued that the impact of household debt on economic growth varies between short and long periods of time. In the short run, household debt increases consumption and hence encourages growth, but in the long run, the accumulation of debt could generate a negative effect on output (Kim, 2016).

* **Firm Lending**

It is the total claim of deposit money banks on non-

financial firms as a ratio of GDP (Beck et al., 2012; Sassi and Gasmi, 2014). Many studies indicated that firm lending has a positive impact on economic growth, since it increases investment by relaxing the credit constraints on firms, thus increasing exports and the trade balance (Buyukkarabacak and Krause, 2009). In addition, Bahadir and Gumus (2016) indicated that business credit has the potential to increase investment and labor demand.

* **Government Lending**

It is the total claim of deposit money banks on the government as a ratio of GDP. Many studies indicated that there is a negative relationship between government lending and economic growth. Government borrowing was introduced to control the crowding out effect of government borrowing on private-sector credit. Al-Majali (2018) argued that the increase in government borrowing from conventional banks leads to a larger demand for money and loanable funds, resulting in a higher interest rate. This increase is expected to reduce investment and the fall in investment could hurt economic growth. In addition, Emran and Farazi (2009) indicated that a \$1.00 increase in government borrowing decreases private credit by about \$1.40.

3.4 Empirical Results

Next, the study will present the empirical results.

3.4.1 Descriptive Statistics

Table 1 reports the descriptive statistics for the sample of the study (growth of GDP, consumer lending, firm lending and government lending) over the period from the first quarter of 1994 to the first quarter of 2018. As shown in Table 1, the average economic growth rate in Jordan during the study period was about 2.03% and the rate ranged from -12.3% to 15.8%, with a standard deviation of 8.2%.

It is noted here that there was an instability in the economic growth in Jordan during the period of the study.

Table (1)
Descriptive statistics

Variable	Mean	Median	Std. Dev.	Min.	Max.	Skewness	Kurtosis
GGDP	0.0238	0.0434	0.0828	-0.1230	0.1579	-0.1826	1.7598
Consumer lending / GDP	0.7755	0.7190	0.1927	0.5357	1.4905	1.5061	4.9056
Firm lending/GDP	2.0088	1.9802	0.1681	1.6976	2.4206	0.3035	2.5043
Government lending/GDP	0.2394	0.2265	0.0928	0.0537	0.4332	0.1569	2.0700

Growth in GDP is calculated by using this equation: $GGDP = (GDP_t - GDP_{t-1}) / GDP_{t-1}$. Consumer lending is money borrowed by individuals in the form of loans that are to be repaid later as a percentage of GDP. Firm lending is the total claim of deposit money banks on non-financial firms as a ratio of GDP. Government lending is the total claim of deposit money banks on the government as a ratio of GDP.

3.4.2 Correlation Matrix

Table 2 shows the correlation matrix between the variables of the study. The correlation between these variables is noteworthy; the sample includes growth in GDP, consumer lending, firm lending and government lending over the period from the first quarter of 1994 to the

first quarter of 2018. As shown in Table 2, all the credit compositions (consumer, firm and government) as a percentage of GDP are negatively correlated with economic growth. Therefore, simple-correlation analysis suggests a negative relationship between finance and economic growth.

Table (2)
Correlation matrix

Variable	GGDP	Consumer lending/ GDP	Firm lending/ GDP	Government lending/ GDP
GGDP	1			
Consumer lending/ GDP	-0.0298	1		
Firm lending / GDP	-0.5051	-0.1852	1	
Government lending / GDP	-0.1780	-0.3296	0.3264	1

Growth in GDP is calculated by using this equation: $GGDP = (GDP_t - GDP_{t-1}) / GDP_{t-1}$. Consumer lending is money borrowed by individuals in the form of loans that are to be repaid later as a percentage of GDP. Firm lending is the total claim of deposit money banks on non-financial firms as a ratio of GDP. Government lending is the total claim of deposit money banks on the government as a ratio of GDP.

3.4.3 Unit Root Tests

Firstly, the variables used in this study are tested for the unit roots as a prerequisite for the co-integration test. The test is applied to both the original series and the first differences. Further, the models with and without trend are

experimented.

The model has three forms, as shown below: The first form is shown in Equation 3 (constant only):

$$\Delta Y_t = b_1 + Z_{y,t-1} + ai + e_t \quad (3)$$

The second form is shown in Equation 4 (trend and constant):

$$\Delta Y_t = b_1 + b_2 t + Z y_{t-1} + a i + e_t \quad (4)$$

The third form is shown in Equation 5 (no trend, no constant):

$$\Delta Y_t = Z y + a i + e_t \quad (5)$$

Table (3)
Unit root test

Variables	ADF						DEC
	Level			First Difference			
	C	C+T	NON	C	C+T	NON	
GGDP	-3.1059 (0.0295)	-3.1050 (0.1114)	-1.7394 (0.0777)				I (0)
Consumer lending/GDP	-2.7866 (0.0641)	-2.6504 (0.2596)	-0.2632 (0.5887)	-3.1955 (0.0234)	-3.2592 (0.0797)	-3.1999 (0.0016)	I (1)
Firm lending /GDP	-2.4603 (0.1286)	-2.3974 (0.3784)	0.0440 (0.6655)	-4.1324 (0.0014)	-4.1154 (0.0085)	-4.1572 (0.0001)	I (1)
Government lending /GDP	-1.9705 (0.2993)	-1.7266 (0.7315)	0.7097 (0.4067)	-3.6756 (0.0060)	-9.9166 (0.0000)	-3.7006 (0.0003)	I (1)

Growth in GDP is calculated by using this equation: $GGDP = (GDP_t - GDP_{t-1}) / GDP_{t-1}$. Consumer lending is money borrowed by individuals in the form of loans that are to be repaid later as a percentage of GDP. Firm lending is the total claim of deposit money banks on non-financial firms as a ratio of GDP. Government lending is the total claim of deposit money banks on the government as a ratio of GDP.

Table 3 shows the results of the Augmented Dickey Fuller (ADF) stationary tests. The ADF stationarity tests show that the growth of GDP is stationary, while credit composition as a ratio of GDP is integrated to order 1. Since variables are to be integrated to order 0 or 1, the ARDL model is used to estimate the relationship between GDP growth and credit composition.

3.4.4 Lag Length Selection Criteria

The study uses Schwarz Information Criteria (SC) for the selection of optimal

lag lengths. As shown in Table 4, the optimal number of lags for growth in GDP is 4 and the optimal number of lags for all independent variables (consumer lending, firm lending and government lending) is five.

Table (4)
The optimal number of lags (SC)

Lags	GGDP	Consumer lending/ GDP	Firm lending / GDP	Government lending/ GDP
0	-2.056839	-0.402488	-0.702478	-1.926031
1	-2.007780	-2.247095	-0.859244	-3.930877
2	-2.880230	-2.197601	-0.865404	-3.881188

3	-3.129169	-2.189702	-1.294409	-3.949049
4	-3.881835*	-2.138697	-1.773897	-3.918712
5	-3.830056	-2.492332*	-2.201417*	-4.007341*

Growth in GDP is calculated by using this equation: $GGDP = (GDP_t - GDP_{t-1}) / GDP_{t-1}$. Consumer lending is money borrowed by individuals in the form of loans that are to be repaid later as a percentage of GDP. Firm lending is the total claim of deposit money banks on non-financial firms as a ratio of GDP. Government lending is the total claim of deposit money banks on the government as a ratio of GDP.

3.4.5 Co-integration Tests

In order to check the existence of a co-integration relationship among the variables, the study uses the bound test (Pesaran et al., 2001), which is based on testing the null

hypothesis of no co-integration relationship among the variables. Table 5 shows the results of the bound test.

Table (5)
Bound test

Dependent Variable	F-statistic	Lower critical bound at 5%	Upper critical bound at 5%	Result
Consumer lending/ GDP	11.8155	4.94	5.73	Equilibrium relationship exists
Firm lending/ GDP	4.6096	4.94	5.73	No equilibrium relationship exists
Government lending/ GDP	6.8796	4.94	5.73	Equilibrium relationship exists

Growth in GDP is calculated by using this equation: $GGDP = (GDP_t - GDP_{t-1}) / GDP_{t-1}$. Consumer lending is money borrowed by individuals in the form of loans that are to be repaid later as a percentage of GDP. Firm lending is the total claim of deposit money banks on non-financial firms as a ratio of GDP. Government lending is the total claim of deposit money banks on the government as a ratio of GDP.

As shown in Table 5, the calculated F- statistics for consumer lending as a percentage of GDP and government lending as a percentage of GDP exceed the upper critical bound at the level of significance of 5%. Thus, the null hypothesis of no cointegration is rejected. Therefore, there is a long-run equilibrium relationship between consumer lending and government lending and growth in GDP. F-statistic for firm lending as a percentage of GDP is not exceeding the upper critical bound at the level of significance of 5%. Thus, there is no long-run equilibrium relationship between firm lending and growth in GDP.

3.4.6 Long-run Coefficients of ARDL

The results show that there is a positive and significant relationship between consumer lending and GDP growth at the levels of 1% and 5%. These results confirm the findings of the Jordan Strategy Forum, which indicated that when bank credit to individuals increases by 1%, the real GDP increases by 0.89%, since consumer lending increases consumption of services, which contributes 66.6% of GDP in Jordan. On the other hand, there is a negative and significant relationship between government

lending and GDP growth at the levels of 1% and 5%, because more lending to the government will decrease the number of loans to the private sector. According to Al-

Majali (2018), government borrowing from domestic banks leads in a greater than one-on-one crowding out of private credit.

Table (6)
Long-run coefficients of ARDL

Dependent Variable	Long-run coefficient	Significance level
Consumer lending / GDP	0.0492	0.0001
Government lending / GDP	-0.0904	0.0056

Growth in GDP is calculated by using this equation: $GGDP = (GDP_t - GDP_{t-1}) / GDP_{t-1}$. Consumer lending is money borrowed by individuals in the form of loans that are to be repaid later as a percentage of GDP. Firm lending is the total claim of deposit money banks on non-financial firms as a ratio of GDP. Government lending is the total claim of deposit money banks on the government as a ratio of GDP.

3.4.7 Short-run Coefficients of ARDL

The coefficient of ECT terms presents the speed of adjustment in the long run due to the shock. As shown in Table 7, the positive and equilibrating relationship between

consumer lending and GDP growth is adjusted faster than the negative and equilibrating relationship between government lending and GDP growth by 0.217762.

Table (7)
Short-run coefficients of ARDL

Dependent Variable	Speed of adjustment	Significance level
Consumer lending / GDP	1.3355	0.0000
Government lending / GDP	1.1178	0.0001

Growth in GDP is calculated by using this equation: $GGDP = (GDP_t - GDP_{t-1}) / GDP_{t-1}$. Consumer lending is money borrowed by individuals in the form of loans that are to be repaid later as a percentage of GDP. Firm lending is the total claim of deposit money banks on non-financial firms as a ratio of GDP. Government lending is the total claim of deposit money banks on the government as a ratio of GDP.

4. Discussion and Conclusions

Many studies have investigated how credit-market development influences economic growth using an aggregative measure of credit allocated to the private sector. However, just a few studies have examined the independent macro-economic impact of each firm and credit market.

Theory provides ambiguous predictions about the

impact of households on economic growth. Empirical studies, on the other hand, provide mixed evidence of the relationship between household credit and economic growth.

This study aims to investigate the independent impact of consumer *versus* firm lending on economic growth by using quarterly data from 1994 to 2018.

The Autoregressive Distributed Lag (ARDL)

model was used to examine the macro-economic independent impact of consumer *versus* firm lending on economic growth. ARDL approach was developed by Pesaran and Shin (1999) and Pesaran et al. (2001). The ARDL approach has many advantages. The most important of these is that it is not necessary to test the unit root of the variables. Therefore, the ARDL approach can be applied regardless of whether the regressors are I (0) or I (1).

The empirical results show that there is a positive and long-run equilibrium relationship between consumer lending and GDP growth, since increasing consumer lending raises consumption of services, which contributes 66.6% of Jordan's GDP

On the other hand, there is a negative and long-run equilibrium relationship between government lending and GDP growth, because more lending to the government will decrease the number of loans to the private sector. Furthermore, the results indicate that there is no long-run equilibrium relationship between firm lending and economic growth.

5. Limitations and Suggestions

This study investigates the independent macro-economic impact of consumer *versus* firm lending on Jordanian economic growth using quarterly data from 1994

to 2018. This study, due to data limitations, covers 25 years.

However, this study could provide opportunities for further research into analyzing the impact of the financial crisis of 2008.

6. Recommendations

Based on the results of this study, the following recommendations are suggested:

First, the government should re-examine its public finances in order to find solutions to rising public debt and continual budget deficits.

Second, the government and private sector should work together to improve opportunities for economic growth and increase *per capita* income, which reduces the risks of lending to individuals and has a positive impact on economic growth.

Third, the government should consider the negative impact of public debt on the amount of credit granted to the private sector.

Furthermore, the government as well as banks should consider the development of a secondary market for government security, as this market would be a useful source of public financing from the private sector in general and not mostly from banks.

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