EMPIRICAL ANALYSIS OF FINANCIAL DEVELOPMENT IN KENYA; DOES REMITTANCESMATTER?

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Purpose: The purpose of this paper was to empirically analyze the effect of remittances on financial development in Kenya. Specifically, the study sought to establish the effect of remittances on domestic credit and secondly, to determine the effect of remittances on money supply.

Design/Methodology: The research design used in this study was exploratory design. The study employed panel regression analysis and simultaneously used pooled regression and random effects on sample size of 40 quarters for the period of 2007-2016.

Findings: The study established that remittances is positively and significantly related with domestic credit (β=1.342; p<0.05). Remittances was also found to be positively and significantly related to money supply in Kenya in the period of study (β=1.174; p<0.01).

Theoretical implications: This study adds value to theory by not only looking at financial development attributes but by empirically analyzing the extent of the effect of remittances and financial development. The findings of the study also updates literature by providing emprical evidence from a developing country perspective.

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Originality/Value: The paper fills an important gap in academic literature by providing insights into the effect of remittances on financial development in developing economies. This study complements other studies focusing on GDP and economic development of Sub Saharan Africa given the increasing of inflows to the region.This paper provides policy makers with evidence on the implications of remittances in financial development.

Key words:Remittances, Financial development, Domestic credit, Money supply, Kenya

Introduction

Remittances are financial resource flows arising from the cross border movement of nationals of a country (Kapur, 2004). Immigrant remittances have received increasing attention of researchers over the last couple of decades, due to the substantial financial inflows into developing countries, as their size and impact on the economies have experienced significant growth over a period of time (Nyamongo *et al.,* 2012). The attention is due to the substantial financial inflows into developing countries. Indeed Singh *et al.,* (2010) concurs that remittances to developing countries have substantially increased over the past decade, both globally and in sub-Saharan Africa.

Research indicates the role that remittances play with regard to poverty, inequality, growth, education, infant mortality and entrepreneurship. According to World Bank (2014) remittances continue to not only be sources of livelihood for the families in developing countries but also contribute to economic growth and development for developing nations. Ombaba *et al.,* 2016 agrees that the inflows have caused significant growth in the recipient countries over a period of time.

The World Bank (2011) recounted that remittances have outpaced private capital flows such as foreign direct investments and portfolio investments, with the exponential increase over the last decades, and that remittances comprise the second largest source of external finance for developing nations around the globe. According to World Bank report remittances contribute more than ten percent to the GDP of developing nations (World Bank, 2011). The increasing amount of remittances relative to other external flows suggests that the macro-economic effects

of remittances may be of critical importance to the link between remittances and financial development. Even so, this still remains one of the least researched areas in the literature in Sub-Saharan Africa (Ajilore & Ikhide, 2012). Rapoport & Docquier (2005) concurs that there is scanty empirical studies to illustrate the impact remittances on the financial sector development, with the focus on the banking sector.

Developing economies are part of the poorest and most under-developed regions in the world. These economies are faced by political instability, economic instability, unemployment, corruption and most of all weak financial institutions to accommodate remittance inflows over several decades United Nations Development Programme, 2007-2009). These prevailing circumstances have led to a high level of poverty resulting to citizens of these countries seeking for employment in other regions around the world for a better working life and conditions.This in turn has contributed to an increasing number of remittances sent by migrants. Literature has indicated that it is likely that remittances can affect long-term growth if received through well-developed financial markets (Ajilore & Ikhide, 2012).

Today, especially for developing countries, remittances are an important source of capital inflow and have significantly increased in recent years. They amount to more than twice the Official Development Assistance (ODA) provided by the industrial nations and constitute approximately two-thirds of the foreign direct investments paid into developing countries. For many poor countries, they are actually the major source of external financing. According the World Bank estimates (Rathe et al. 2012), of the approx. US 543 billion remittances transferred throughout the world in 2012, some USD 406 bn were transferred to developing countries. Compared to the previous year (US 381 billion) they rose by 6.5% and have more than tripled since 2002 (USD 116 billion). According to World Bank, officially recorded remittances to developing countries registered an increase of 0.4 percent in 2015, $ 431.6 billion, over $ 430 billion in 2014.

A large percentage of remittances, varying from 20 to 200 percent, remains unrecorded and according the literature, African immigrants are known to use informal channels to remit back home instead of using the formal banking system (Chowdhury, 2011). The remittance to Kenya is remitted through both formal and informal channels (Ombaba *et al*., 2016). According to

Ombaba *et al*., (2016) reasons for preferring informal channels for remittances include considerations of cost, speed, ease of making and receiving the transfer, coverage within the home country.Literature shows that due to limitations faced when transferring money immigrants prefer informal channels (Anyamwu & Erhijakpor, 2010; Adepoju 2008). Officially recorded remittances transferred using formal channels are not close to the actual figures as statistics do not include remittances transferred using informal channels from the World Bank Indicators (Le, 2011). This therefore leads to a considerable understatement of recorded remittance figures.

Remittances in the literature are referred to as altruistic behaviours by the remitter, possible repayment of loans and self-interest. They form important contributions to socio-economic activities (Chowdhury, 2011). According to Ajilore and Ikhide (2012) remittances which is used for consumption by poor people have negligible impact on long-term growth.

The existing literature has focused extensively on the effect remittances have on economic growth (Aggarwal *et al.,* 2011; Ajilore & Ikhide, 2012; Chowdhury, 2011; Oke & Okpala, 2011). Thus, literature is largely skewed towards economic growth effects, the financial deepening of remittances and the expanding thereof is mostly unexplored. The effects of remittances on financial development have not been extensively studied and are still largely unexplored, and hence leaving a major gap in the literature that requires further research.

Aggarwal *et al.*, (2011) indicated that there is limited attention given to the effects, remittances have on financial development, as an increase in remittances would promote financial development in the banking sector. This will lead to opportunities and possibilities to alleviate poverty and boost economic growth. The area of remittances is relevant to the developing world as banking remittances could have positive effects and developmental influences on the local economies, and Kenya can benefit from this increase of remittances through the formal channels to boost economies and improve formal financial institutions.

1.2 Theory and Hypotheses Development

Altruism Theory

Altruism theory is associated to the works of Chami, Fullenkamp and Jahjah (2003) and proposes that migrants dispatch cash back home in worry of the welfare of the rest of the relatives. It holds that the migrant's utility is gotten from that of his/her family back home; the vagrant is fairly fulfilled when the welfare of his family back home is in an ideal situation. This infers the migrant to transmit more subsidizes to his family when there are unfavorable monetary conditions holding in the nation of origin. The hypothesis see settlements as compensatory exchanges since they increment when the vagrant's nation of origin is confronted with monetary interruptions, for example, dry seasons and a budgetary emergency (Chami *et al*., 2003).

The hypothesis thus infers that remittances amid times when there is disintegration in financial conditions in the business. Therefore, altruism theory supports inverse relationship between remittances and macroeconomic variables where unfavorable macroeconomic variables will lead to increased foreign remittances to support the families in home country. Altruism theory thus views remittances from social perspective and ignores investment perspective (Wanyoike, 2015).

Hypothesis Development

Remittances and Bank Development

Literature has not been able to prove consistent relationship between remittances and the developing of the banking sector (Ajilore and Ikhide, 2012). Fajnzylber and López (2008) and Aggarwal *et al*. (2011) proposed that remittances in developing nations might affect financial development in the banking sector which is based on the idea that money is transferred through the banks. More importantly, banks will have the opportunity to provide financial access and products to the unbanked that otherwise would not have been part of their mainstream clients. Bank accounts may be opened and offer financial services in order to have a more inclusive approach and deepen the financial sector.

Orozco and Fedewa agrees that when banking fees are lowered, products that are specifically designed to attract remittances can provide a positive role that banking institutions play in fostering the relationship between remittances and financial development. Credit in the economy may increase when remittances that are received are used as deposits even if loans are not provided for remittance-recipients in the country (Orozco & Fedewa, 2006).

An empirical study by Gupta et al. (2009) on financial development and remittances for Sub-Saharan Africa used cross-country panel OLS regressions. The study utilised an unbalanced panel of 44 Sub-Saharan Africa countries and six time periods. The data was composed of five year-averages from 1975 to 2004. In the study it was established that remittances have a positive and significant effect on financial development, and most importantly the small savers that were unbanked gained a foothold in the banking sector that otherwise would have been difficult for them to explore that specific market. The authors found that remittances are stable and private transfers that promote financial development. Their findings hold value even after factoring the reverse causality between financial development and remittances.

Aggarwal *et al.,* (2011) conducted a study for 109 developing countries that included several Sub-Saharan African economies. The focus of their study was on the ratio of bank deposits and credit to GDP, and a positive relationship was found between remittances and the financial sector development. Different estimation techniques were used such as country and time fixed effects; also, a smaller sample was used for official remittances data flows through non-bank entities; and thirdly, GMM using lagged regressors and instrumental variables (IV) estimations was the last technique to address the potential endogeneity of remittances. The findings remained robust and demonstrated the flow between remittances and financial development, measuring the relationship between formal financial institutions as the ratio of deposits and credit to GDP of selected countries in the sample. They also mentioned that the possibility of financial development could lead to a higher influx of remittances through the banking sector.

Ajilore and Ikhide (2012) did a study on remittances and financial sector development for Sub-Saharan Africa countries. Five countries were selected and an analysis was done for Nigeria, Cape-Verde, Senegal, Lesotho and Togo. Auto-regressive distributed lag (ARDL) was used and the period stretched from 1985 to 2009. It was concluded that there are long-run relationships between remittances and financial development, promoting financial development in four of the five selected countries. However, Nigeria was an exception. The study concluded that financial institutions on should develop and provide attractive and friendly products to enhance remittances and find an investment vehicle by using remittances. The financial markets should be more developed as the weaker institutions are deterring migrants from remitting through the

formal channels. The study stressed the need for more regulatory strengthening and sound policies on a macro-level in the countries.

A study done in Bangladesh by Chowdhury (2011) tested the relationship between remittance flows and financial development. The results found that an increasing flow of remittances positively and significantly influence, expand and deepen the financial sector of Bangladesh. More importantly, remittances are independent from financial development and significantly enhance all three measures that were used in the study for financial development. These included private domestic deposits to GDP, bank credit to GDP and M2 to GDP. The government has identified opportunities to use remittances to improve development with policies to encourage migrant workers to remit through the banking sector.

In Kenya a study by Nyamongo *et al.* (2012) investigated the role of remittances, financial development and economic growth on 36 Sub-Saharan Africa countries. A panel econometric framework was used and four findings were obtainable. Firstly, "financial in boosting economic growth appears weakened" for the selected countries in the sample. Second, remittances are a source of growth for these countries. "Volatility of remittances appears to have a negative effect on growth for African countries". Lastly, remittances seem to have a positive effect on financial development. This study however did not look at the role remittances play on the domestic credit, money supply and mone
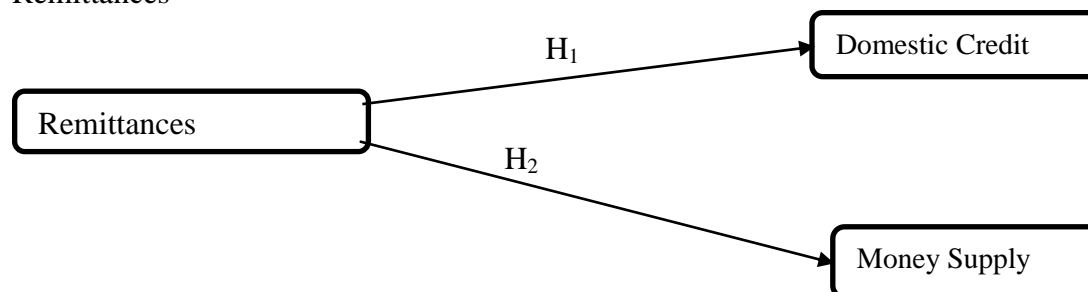
Hypothesis 1; Remittances is not significantly related with domestic credit in Kenya
Hypothesis 2; Remittances is not significantly related with money supply in Kenya

Independent Variable   Dependent Variable
Remittances

Remittances	H_1	Domestic Credit
	H_2	Money Supply

Control Variables

Foreign Exchange
Inflation
Interest rate
GDP

3.0 Methods and Data

Exploratory research design was used in this study. Panel data was used in this study which was derived from Central Bank of Kenya and World Bank.Secondary data used for the study will be sourced from different sources. Macro-economic variables made up of exchange rate (Ksh/United States dollar rate), the inflation rate, interest rate, and GDP growth rate were obtained from the Central Bank of Kenya. Data on remittance inflows was obtained from the World Bank database. The data spans from January 2007 to December 2016. Economic growth statistics are available on quarterly basis.

Monthly data was summarized into four quarters per year to enable analysis. Data converted into quarterly data related to exchange rates, inflation, interest rates, domestic credit, money supply and remittances.

FD (Domestic credit)$_{it}$= c + β1Rem$_{it}$+ ε

FD (M2)$_{it}$= c + β$_2$ Rem$_{it}$ + ε

Measurement of Variables

Financial Development

Liquid liabilities and credit to the private sector expressed as percentage of GDP were determined in separate regressions. Financial development is a proxy that is used by different measures of financial development; M2 as a ratio to GDP (liquid liabilities) and domestic credit to the private sector as a ratio to GDP. Literature regards the measures above as standard measures of financial depth of a country. Loans to the private sector as a ratio to GDP has been

considered however to be more reliable and appropriate indication of the financial depth within a country. This is the money that is loaned to the private sector on behalf of banks. Liquid liabilities are viewed as the broadest indicator, as they include all bank and non-bank financial institutions (Ajilore & Ikihide, 2012; Aggarwal et al., 2011).

Remittances

REM in the equation denotes remittance. The variable is created from the sum of the following: workers' remittances, compensation of employees and migrant transfers according to the World Bank. The ratio of remittances to GDP determine the amount of remittances that are received through the financial sector in relation to the GDP figures of the respective countries in the sample (Ajilore & Ikhide, 2012; Aggarwal et al., 2011).

Exchange Rate (*ln*EX)

It is defined as the Kenya shillings per US dollar rate. A decline in the Kenyan currency is likely to affect the economy negatively and vice versa. In an import, driven economy, a depreciation of the local currency will drive pricing upward making it difficult for people to save or invest. Hence, a negative effect is hypothesized between the exchange rate and securities market performance.

Inflation Rate (*ln*INF)

In times of rising inflation, prices are always unstable and rising. Income is therefore, devoted for consumption purposes. Hence, savings and investment will be affected negatively. Based on the above argument, *a prior* sign will be negative.

Interest Rate (*ln*INT)

The amount charged, expressed as a percentage of principal, by a lender to a borrower for the use of assets. Under the assumption of the liquidity preference theory, an increase in money supply is expected to lower the interest rate, thus raising the stock prices.

Gross Domestic Product Growth Rate (*ln*GDP)

The gross domestic product (GDP) is one of the primary indicators used to gauge the health of a country's economy. It represents the total shilling value of all goods and services produced over a specific period. Usually, GDP is expressed as a comparison to the previous quarter or year. An increase in GPD rate implies that the economy has grown and vice versa.

Data Tests and Analyses

In this study, datasets of Kenya's selected macroeconomic variables will be compiled as well as international remittance inflows from the new and rich World Bank (WB) database, the International Monetary Fund (IMF), the Central Bank of Kenya (CBK) and Kenya Bureau of Statistics (KBS) for the period 2007 – 2016. The studyemployed a combination of tests on the data, including the Random Effects Analysis, Unit Root test, normality, linearity and multicolinearity analysis.

To check for non-stationarity property, the data were subjected to Augmented Dickey and Fuller Test (ADF test). When working with non-stationary time series, there is a need to test the presence of unit roots in order to determine how many times a variable needs to be differenced to result in a stationary series.

Results

Table1: Descriptive Results

Variable	Mean	Maximum	Minimum	Observations	Std. Deviation
Domestic Credit	1.62	3.02	.62	40	.76
Money Supply	1.34	2.52	.56	40	.58
Remittances	86.71	149.81	42.68	40	35.53
Foreign Exchange	84.01	103.89	62.63	40	11.11
Interest rate	8.42	20.17	1.81	40	3.2
Inflation	8.29	19.18	2.63	40	4.78
GDP	5.29	11.60	.79	40	2.16

The descriptive statistics were generated from E-views to illustrate the outputs for the variables in the study and what the expectations are from the literature and based on economic principles. Foreign remittances have shown an upward trend over the recent years. Kenya received a minimum remittancesof USD 42.68 million while a maximum of USD 149.81 million was remitted in the period of study. This indicates that notwithstanding the volatile economic markets in Kenya, a steady increase in the remittances has been witnessed.

Money supply in the study periodrecorded a minimum of Ksh.569, 599.85 million while the maximum recorded was 2,526,691.02. The steadiness in the monetary supply may be attributed to various factors such as diaspora remittances, tourism and increased exports and political stability in the country. From the descriptive statistics in the period of study Kenya experienced a domestic credit of a maximum of Ksh.3019271.00 millions shillings while the minimum in the study period was Ksh. 621327.00.

The exchange rates in Kenya have been documented to having an average of 84.01Kenyan shilling/USD. The lowest Kenya shilling USD exchange rate was recorded at 62.63. The Kenya shilling continued to depreciate against the USD to reach the highest at 103. 89. This result shows that the currency is volatile. The interest rates in Kenya have been stable in the study. However, interest rates recorded a maximum of 20.17%, while the minimum interest rates recorded was 1.82% in the period of study.

The inflation rates have been volatile in the study period as shown in the descriptive statistics. Inflation rate averaged at a rate of 8.29 while the minimum recorded inflation rate was 2.63%. The inflation rates recorded a maximum of 19.18% which is one of the highest inflation rates in Kenya in the recent history.

GDP Growth in Kenya has been in a fluctuating trend over the recent years. The country has experienced upward and downwards trends. The lowest GDP growth rate of 2.16% was documented while the maximum GDP growth rate reached a maximum of 11.6% in the beginning in the study period. The GDP however recorded after that and later retained a mean rate to close at 5.29%.

Pearson Correlation Results

The Pearson correlations results it was established that remittances was found to be positively and significantly correlated with domestic credit ($p<0.01$). While it was found that remittances was positively correlated with money supply. This implies that as remittances increase the amount of money in the country increases and so does the domestic credit.

Foreign exchange rate was found to have a positive and significant correlation with domestic credit and money supply ($p<0.01$). This implies that when the exchange rate is high more money is available in local economy and thus more credit. The interest rate was positive and significantly correlated with both money supply and domestic credit. This could mean that when the interest rate are high more money is available locally and thus more domestic credit. Probable reasoning could that high interest rates attracts foreign investments and thus more money in the local economy.

Table 2: Pearson Correlation Coefficients

Correlations

	Domestic Credit	Money Supply	Remittances	Foreign Exchange	Rate of interest	GDP	Inflation
Domestic Credit	1						
Money Supply	.692**	1					
Remittances	.571*	.375*	1				
Foreign Exchange	.633**	.510*	.670**	1			
Rate of interest	.351*	.330*	.417**	.394*	1		
GDP	.188	.194	.133	.203	-.338*	1	
Inflation country	-.237	-.251	-.216	-.099	.444**	-.643**	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

The data was subjected to a number of tests to ensure its suitability for analysis. The first step in analysis is making sure that the data used in the analysis is correctly specified. One of the problems that were addressed is the non-stationarity of certain variables being integrated of order 1.The unit root test is a test of stationarity or non-stationarity for the variables used in the

statistical regressions applied. Data used is said to be stationary if its mean and variance are constant over a certain period of timeGujrati (2003). To check if unit roots are present, it is necessary to convert a non-stationary time series into a stationary one by using the difference estimation. Foreign exchange and interest rates was found to be stationary and hence suitable for forecasting and modelling. To correct for non stationarity in domestic credit, money supply, interest rate, and inflation the first difference of the variables [D (var)] were used in the regression models.By using Augmented Dickey and Fuller (ADF) test to identify non-stationarity property of the data. After the first differencing, they became stationary at the 1% significance level, implying that the variables are first order integrated I(1).

In the study the presence of multicollinearity was tested using Variance Inflation Factors (VIF) and tolerance. Multicolliniarity exists when two or more predictor variables are strongly correlated (Field, 2005). Hair *et al.,* (2006) suggested a threshold of VIF values of 10. Field, 2009 also agrees that a tolerance of below 0.10 or a VIF greater than 10 or a correlation coefficient above 0.8 is regarded as indicative of serious multi-collinearity problems Each of the variables used in this study, including the control variables, ranged from 1.34-3.69, suggesting the absence of multicollinearity.

Independence of error terms was tested using a Durbin-Watson statistic, and the results were 2.06 and 2.47, which is within the threshold of 1.5-2.5 (Hair *et al.,* 2006). Outliers were checked using box plots, and the results indicated the absence of outliers in the sample.We tested for normality using J-B test, and White test with cross products for heteroskedasticity. The diagnostics tests indicates the considered models to be well specified.

To test whether the model should be a fixed or a random effect model, the Hausman-test was employed. This refers to the unique errors that can correlate with the regressors. If the p-value is less than 0.05 (significant) the fixed effects model should be applied. A Hausman test suggested that a random effects regression model would be preferable to a fixed effects model. Consistent with the approach used by Kim *et al.,* (2008), the study tested the hypotheses using hierarchical regression analysis because it allows fitting of the model to individual measurements while accounting for systematic unexplained variations.

Hypothesis 1 anticipated a non-significant relationship between remittances and domestic credit. The results indicate a positive and significant relationship between remittances and domestic credit ($\beta=7.181$; $p<0.05$) therefore, the hypothesis is rejected. This implies that when the remittances are enhanced domestic credit is also enhanced. The probable reasoning behind this is that once the remittances are increased there is high chance of more money locally thus domestic credit increases. This result is in support to Anghel et al. (2017)who established an impact of remittances on bank deposits, as well as on bank credit to the private sector, it was found that remittances have a significant and positive impact on bank deposits and credit. Al-Mukit and Islam, (2016) established that in the long run the association between remittance and credit disbursement is positive, with a positive impact of remittance on the credit amount in Bangladesh.

Hypothesis 2 stipulated a non-significant relationship between remittances and money supply. The results however showed positive anda significant relationship between remittances and money supply($\beta=6.659$; $p<0.05$). Hence, the hypothesis is rejected. This result implies with more remittances money supply of the recipient country also increases. The reason behind this argument is that an increase in the supply of money for the remittance for the recipient country, it in turn increases the availability of loanable funds and lowers the interest rates. The result is in tandem with Mukit and Islam, (2016) whose study determined the relationship between remittance and credit disbursements amount of the banking sector in Bangladesh. The result showed that in the long run the association between remittance and credit disbursement is positive, with a positive impact of remittance on the credit amount.

Table 3: Empirical Results

Variables	Domestic Credit	Money Supply
Controls		
Constant	-139.637(-5.916)[**]	-69.298 (-3.823)[**]
C1	25.313 (5.697)[**]	14.742 (3.748)[**]
C2	-1.389 (-3.057)[**] -14.709 (-4.698)[**]	
C3	-8.098 (-1.618)	-4.291(-1.279)
C4	-1.637 (-2.104)[*]	-1.039 (-1.588)
Remittances	1.342 (7.436)[**]	1.174 (7.239)[**]
R Squared	0.637	0.762
Adjusted R	0.627	0.752

F- Statistic	10.146	8.995
Prob. of F-Stat.	0.000	0.000
Durbin Watson Stat.	1.980	2.117

** 1 percent significance level; * at 5 percent level

Figures in parenthesis are t-statistics

Source: Research Data (2017)

Discussion and Conclusions

The study aims to analyse the relationship between remittance and domestic credit and money supply in banking sector in Kenya using a balanced from 2007-2016. The data have been analyzed using time series econometric techniques. The result shows that in the long run the association between remittance and domestic credit is creates a positive impact of remittance on the credit amount. This can be understood that an increase of remittance causes increase in the liquidity position of the banks which enables them to enhance credit disbursement.

The results also indicated a positive and significant relationship between remittances and money supply. Remittances promote growth by providing an alternative way to finance investment to the recipient country.The causality from credit disbursement to remittance indicates an overreaching effect on the overall socioeconomic environment.

Educational development in addition to the growing industrialization is a most important progress as it helps to advance the manpower skills. Developed skills, enhances more opportunities for migrant workers. This could lead to more remittances to the country from skilled and educated emigrants. Moreover, attention should be given to matter and policy changes in order to develop the banking sectors, as this is likely to motivate immigrants to remit through the formal channels.When banking sector policies are more developed it could result into more remittance inflows through formal channelsthus more domestic credit.

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