Financial Sector Development and Industrialization in Tanzania

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Abstract

This paper examines the causal relationship between financial sector development and industrialization in Tanzania from 1990 to 2020 using Granger causality and autoregressive distributed lag (ARDL) estimation. Granger causality results showed domestic credit to the private sector, and broad money Granger-caused industry value-added. The joint effect of financial sector development Granger-causes industry and manufacturing value-added. Moreover, industry value-added Granger-causes financial sector development. Therefore, a bidirectional causal relationship exists between domestic credit to the private sector, and industry value-added. On the other hand, there is a unidirectional causal relationship moving from financial sector development to manufacturing value-added. The causality results support the supply-leading hypothesis. The ARDL estimation results showed a significant negative short-run effect of broad money on manufacturing and industry value-added. Furthermore, domestic credit to the private sector significantly positively affected manufacturing value-added in the short-run. In the long-run, there is a significant positive effect of domestic credit to the private sector on industry value-added, and a significant negative effect of broad money on industry value-added. The results imply the need for the government and financial sector players to address financial sector challenges to enhance credit provision to the industry and manufacturing sector, and transform the economy through the industrial and manufacturing sub-sector of the economy.

Keywords: *financial sector development, industrialization, industry value-added, manufacturing value-added.*

Introduction

There exists a cross-country diversity in industrialization trends. According to Kruse et al. (2021), there has been an expanding share of employment in manufacturing in Sub-Saharan Africa (SSA) between 2010 and 2018, indicating an essential reversal to the long-run de-industrialization trend. Kruse et al. (2021) pointed out that manufacturing is recovering; however, the heterogeneity within regions and across decades is vital for broader regional trends. Therefore, findings cannot be generalized to all countries within a region. The variation among countries is attributed to small unregistered manufacturing firms contributing to the manufacturing renaissance in SSA, and domestic demand is driving the manufacturing renaissance. Tanzania has long relied on the agricultural sector; however, there has been a shift towards industrialization as one of the policy prioritization agendas in recent years. It is

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reflected in the long-term five-year development plan themes on unleashing Tanzania's latent growth potential, followed by nurturing an industrial economy and realizing competitiveness-led export growth.

The industrial sector is paramount as it enables the production of goods and services that enhance the trade potential of countries. Furthermore, manufacturing generates externalities in technology development, skill-creation, and learning (MIT & UNIDO, 2012; Msami & Wangwe, 2016). It enhances the utilization of raw materials from other sectors, such as agriculture. Thus, industrialization development must be accompanied by sufficient demand for new products. As a result, the consumption of new products set in motion a virtuous circle of industrial development, demand diversification, and income creation: hence, the improvement of the well-being of individuals (UNIDO, 2017). Despite the importance of the industrial sector, its contribution to GDP in Tanzania remains low. According to the UNIDO (2017), Tanzania's Competitive Industrial Performance Index (CIP) was in the bottom quintile with an index of 0.008. Also, the CIP remains in the bottom quintile with a decline in rank from 126 in 2015 to 127 in 2016; with a score of 0.0053 (UNIDO, 2019). Thus, the industrial and manufacturing sector has a low competitive position. The sector has been challenged by technological, financial, policy, and administrative constraints (Wangwe et al., 2014). Despite various efforts to enhance credit, the manufacturing sector remains stagnant, averaging 7.2 percent in its share of GDP for the past ten years. In addition, the manufacturing share in GDP has declined from 8.3 percent in 2012 to 5.9 percent in 2018, with a slight recovery to 6.8 percent in 2019 (BoT, 2020).

Increasingly, policymakers and economists consider industrialization vital to enhancing economic growth and improving the standard of living. According to ADB (2019), the industry introduces new equipment and techniques, increases the workforce's capabilities, and diffuses these improvements into the broader economy. Moreover, Africa is coupled with favorable demographics, growing internal markets, urbanization, and technological developments that accelerate the pace of industrialization. The importance of credit for development is well articulated (McKinnon, 1989; Ang, 2008; Beck, 2011). It enables entrepreneurs to undertake innovative businesses, and hence contribute to the economy's growth through enhanced resource allocation and improvement in productivity. Furthermore, pooling savings through financial institutions and markets helps overcome investment invisibilities, and allows upgrading scale economies. However, the emphasis on the importance of lending and borrowing activities and the role of interest rates is without challenges, as McKinnon (1989) noted that borrowing and lending at high interest rates are not easy, and are full of potential pitfalls.

There has yet to be a consensus on the relationship between financial sector development and industrialization. While some find a unidirectional movement from industrialization to the financial sector (Ewetan & Ike, 2014), others have found bidirectional causality (Shahbaz et al., 2018); and some find a complex non-linear relationship (Kothakapa et al., 2020). In addition, Ustarz and Fanta (2021) explain that

a certain threshold of financial development must be reached before it can positively contribute to the growth of the industrial sector. This study investigates the relationship between financial sector development and industrialization. It focuses on the relationship between broad money and domestic credit to the private sector by banks and industrialization measured as manufacturing value-added, and industry value-added using World Development Indicators (WDIs) from 1990 to 2020.

There are studies that contribute to the broader literature on financial sector development and economic growth (Eric & Zhongxiu, 2017; Ewetan & Ike, 2014; Guru & Yadav, 2018; Ohiomu & Oligbi, 2020) on one hand, and industrialization and financial sector development (Bell & Rousseau, 2000; Ewetan & Ike, 2014; Folarin, 2019; Svilokos et al., 2019; Kothakapa et al., 2020), on the other. These studies cut across regions and countries of different levels of industrial development, such as India and China, and BRICS (Bell & Rousseau, 2000; Shahbaz et al., 2018; Guru& Yadav, 2018). For instance, China is in the top quintile, and India is in the upper-middle quintile index, being more competitive than Tanzania. Furthermore, studies from Tanzania examining industrialization, such as Mwang'onda et al. (2018) on financial development in connection with economic growth, ended in 2011; which marked the start of the Tanzania five-year development of 2011/12–2015/16 (FYDP I). However, this is limited due to the ongoing industrial strategy implementation extending to FYDP II from 2016/17–2020/21. Hence, there is a need for an extended examination of the current period covering FYDP II. Since industrialization policies have been implemented in phases, it is crucial to understand how Tanzania's industrialization has evolved and performed along the different phases. Thus, the current study provides empirical evidence on the causality relationship between financial development and industrialization in a developing country from 1990 to 2020.

This study found that domestic credit to the private sector and broad money Granger-cause industry value-added. The joint effect of financial sector development Granger-causes both industry and manufacturing value-added. In addition, industry value-added Granger-cause financial sector development. Therefore, on the one hand, there is a bidirectional causal relationship between domestic credit to the private sector, and industry value-added. On the other hand, there is a unidirectional causal relationship moving from financial sector development to manufacturing value-added. Thus, there is a bidirectional causality in the case of industry value-added, and a unidirectional causal relationship in the case of manufacturing value-added. Furthermore, results also showed a significant negative short-run effect of broad money on both manufacturing and industry value-added, and a significant positive effect of domestic credit to the private sector on manufacturing value-added. In the long-run, there is a significant positive effect of domestic credit to the private sector on industry value-added, and a significant negative effect of broad money on industry value-added. The results are relevant to various policy debates, particularly credit provision, and industrialization. Policies must address challenges in the financial sector to enhance credit provision. While manufacturing is a subcomponent of industrial sector development, the results

imply that in terms of credit provision, credit should be supplied to trigger the development of the manufacturing sector. It supports the supply-leading hypothesis. The bidirectional causality between financial sector development and industry value-added indicate a support for the demand-following hypothesis. Thus, an increase in industrialization activities triggers an increase in the demand for credit.

The rest of the paper is structured as follows. Section two presents a literature review, and section three explains the methodology. Section four presents the empirical results and discussion. Section five presents the conclusions and recommendations of the study.

Literature Review
Industrialization Trends in Tanzania
Tanzania's industrial sector comprises manufacturing, processing, and assembling industries. Manufacturing includes the physical or chemical transformation of materials, substances, or components into new products. The materials, substances, or components transformed are raw materials that are products of agriculture, forestry, fishing, mining, or quarrying; as well as products of other manufacturing activities. Substantial alteration, renovation, or reconstruction of goods is generally considered manufacturing (NBS, 2018). The manufacturing sub-sector is leading in this category. For instance, in 2016 the total number of industrial establishments was 2,462. Also, the manufacturing sub-sector has the highest number of establishments (1,931 (78.4%)) than any other sub-sector, followed by mining and quarrying (385 (15.6%)); water supply, sewerage, waste management, and remediation activities (110 (4.5%)); and lastly by electricity, gas, steam and air conditioning supply (36 (1.5%)).

The rapid growth process has been attributed to the increased share of domestic savings, investments, and exports in GDP. The sectoral distribution of GDP has shifted away from agriculture towards industry and services (Page, 2016). Therefore, this indicates the importance and growth of the industrial sector. Both agriculture and industry are linked, such that industrialization can contribute to higher agricultural production due to the potential demand from agriculture to industry, and the supply from agriculture to industry (Mkenda, 2019). Trends in the industrial sector's contribution to GDP show fluctuation over time. Despite the enhancement of industrialization, various challenges must be tackled to ensure successful industrialization. These include poor infrastructure, a weak business environment, and regional integration hurdles (Mkenda, 2019; Msami & Wangwe, 2016). Other challenges include understaffed and unskilled think-tanks that fail to successfully implement their respective tasks towards stirring industrialization (Mpambije, 2021). Furthermore, inadequate financial resources affect the government's implementation capacity on the one hand, while affordable finance affects the competitiveness of firms, on the other (Kweka, 2018). Thus, strengthening the efficiency of financial intermediation and expanding domestic savings is crucial.

According to Wuyts and Kilama (2014), the economic reforms of the 1980s successfully raised the rate of growth of the economy from the late 1990s onwards. However, the industrial competitiveness of Tanzania—which is partly contributed by exports being dominated by unfinished or semi-processed products—needs to catch up. The manufacturing subsector needs to be more impressive: it has only a small GDP share relative to other sectors (Mwang'onda et al., 2018). Growth in manufacturing primarily needs to be more diversified and to be less vulnerable to variations in agricultural production and commodity prices. Furthermore, the domestic value-addition has been limited by the dependence on imported intermediate goods, signifying limited inter-industry linkages, which are essential for promoting the domestic manufacturing base and employment (Wangwe et al., 2014). Moreover, as noted in UNIDO (2019), it is crucial to use technology effectively with the advancement into the digital age as it increases the market reach through quality upgrading by technology diffusion (Misati & Ngoka, 2021).

Value-added by industrial activity in Tanzania is led by manufacturing food products and beverages (NBS, 2018). In Figure 1, manufacturing as a subcomponent of industry is highest compared to mining, quarrying, electricity, gas, and water. However, the construction subsector surpassed the manufacturing subsector from 2011 to 2019 (Figure 1). Overall, the industrial sector trends show improvement, but are relatively lower than other sectors like services and agriculture, although its total share of GDP is increasing. By 2019, the share of industry in GDP was 28.6, surpassing the share of agriculture (26.6). However, the share of services in GDP led with 36.8 (BoT, 2019; 2021).
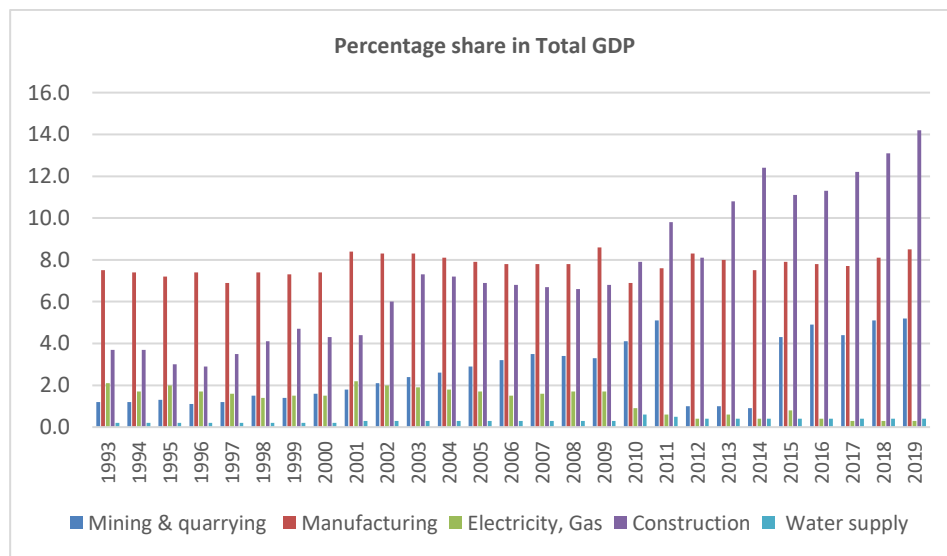

Figure 1: Trends in Share of GDP by Activity in the Industry sector
Source: Bank of Tanzania Annual Reports

Various interventions have contributed to the enhancement of industrialization. These include the 25-year Sustainable Industrial Development Policy (SIDP) for Tanzania (1996–2020). The SIDP accords priority to employment creation, economic transformation, and equitable development; and seeks to strike an appropriate balance between import substitution and export orientation. Under SIDP, the private sector was recognized as the primary vehicle for making direct investments in the sector, while the government was tasked to provide an enabling investment environment. Furthermore, under this arrangement, the government is responsible for making direct investments in industries deemed by the private sector unprofitable but critical to overall development goals. According to MIT (1996), the strategy for implementing and achieving objectives was divided into three phases. Phase I (1996–2000) was a short-term programme to rehabilitate and consolidate existing industrial capacities. Phase II (2000–2010) was a medium-term programme to generate new capacities in areas with the potential for creating competitive advantage through efficient technology and learning process. In this phase, the emphasis was put on initiating the production of intermediate goods and light capital. Phase III (2010–2020) encompassed a long-term programme to achieve significant investments in basic capital goods industries to consolidate the industrial structures developed in the first two phases (Mwang'onda et al., 2018).

Several interventions were noted by the Ministry of Finance (2016) to augment these efforts toward fostering manufacturing. These interventions include establishing Special Economic Zones (SEZs) and Export Processing Zones (EPZs), creating a logistics center and industrial parks, strengthening research and development institutions, promoting MSMEs; and developing productive capacities in building, construction, and agro-processing industries. All these interventions aimed at creating an enabling environment and robust systems to support planned manufacturing activities. The objectives of EPZs were to attract and promote investments for export-led industrialization, increase foreign exchange earnings, create and increase employment opportunities, attract and encourage the transfer of new technologies, and to promote the processing of local raw materials for export (value-addition).

Tanzania aims to become a semi-industrialized country by 2025. The Vision 2025 recognizes the leading role of the industrial sector in transforming Tanzania's economy. In conjunction with the Development Vision 2025, the Second Five-Year Development Plan, 2016/17–2020/21, is a principal and shared tool in the realization of fostering industrialization. Its theme is '*Nurturing Industrialization for Economic Transformation and Human Development,*' with the primary objective of enhancing progress toward the Tanzania's Development Vision 2025. Furthermore, the Integrated Industrial Development Strategy 2025 aims to provide concrete strategies to implement the SIDP objectives, and achieve Tanzania's Development Vision 2025 by analyzing the potential of natural resource endowment and location.

These initiatives towards enhancing the industrial sector have positively affected economic growth. According to Sansa (2019), economic openness linked to industrial policy showed that industrial policies significantly contributed to the economic growth of Tanzania, but failed to contribute to the industrial sector's GDP. However, it should be noted that the implementation of such policies is highly reliant on the availability of finances, which can limit their effectiveness. For instance, according to MIT and UNIDO (2012), Tanzania's industrial competitiveness needs more funds to develop infrastructure for EPZs. Industrialization in different countries has been attributed to the transformation of the financial sector. For instance, the financial sector's role was instrumental in promoting aggregate investment and output, and in the steady shift towards industry that characterized the development of India (Bell & Rousseau, 2000).

Furthermore, the financial sector was necessary for developing the Central and Eastern European countries (Svilokos et al., 2019) and Nigeria (Folarin, 2019). This is also observed in Tanzania. For instance, financial sector development and the promotion of macroeconomic and institutional stability have been identified as variables that policymakers can control. These play a crucial role in driving successful industrialization. In addition, Martorano et al. (2017) explain that successful industrialization is driven by a combination of factors, including a country's initial economic conditions, its factor endowments, and other characteristics. Furthermore, policymakers' control over other factors—such as the promotion of investments in capital (both public- and privately-funded) and education, the management of trade and capital openness, financial sector development and the promotion of both macroeconomic and institutional stability—is crucial. Institutional quality, as was found in China, is essential in designing policies to improve the depth of financial development towards enhancing industrialization (Shahbaz et al., 2018).

The adoption of financial sector reforms in Tanzania from 1991/92–1993/94 was critical to improving credit provision. Furthermore, other initiatives that involved deepening the financial sector with steps to develop money and capital markets also enhanced credit provision (ADF, 2000). The financial sector adjustment program—through privatization, parastatal restructuring, and the elimination of directed credit policies—was equally crucial in developing credit to the private sector via increased lending. In Tanzania, bank lending is concentrated in corporate and a few economic sectors, mainly trade, construction and real estate, and manufacturing (IMF, 2018). The importance of the banking sector is reflected in a variety of initiatives. For instance, the government strengthened the Tanzania Investment Bank (TIB) and propositioned to establish an industrial development bank to accelerate industrialization in the country. These strategies highlight the importance of the banking sector, especially in providing credit to the economy for industrial development. Furthermore, various measures have been undertaken to improve the supply side of private lending, such as reducing the discount lending rate from 16 percent to 12 percent in March 2017, and further to 9 percent in August 2017 (URT, 2020). Affordable finance is critical to developing a competitive

manufacturing sector (Kweka, 2018). Trends in credit by commercial banks to the industrial sector subsectors show increasing trends in mining, quarrying, and manufacturing. The increase could be attributed to the high number of establishments in manufacturing. Figure 2 indicates the sectorial lending, which shows that, on average, lending in commercial banks is highest towards the trade sector, followed by personal and other services sector; then mining, quarrying, manufacturing, and lastly the agriculture sector.
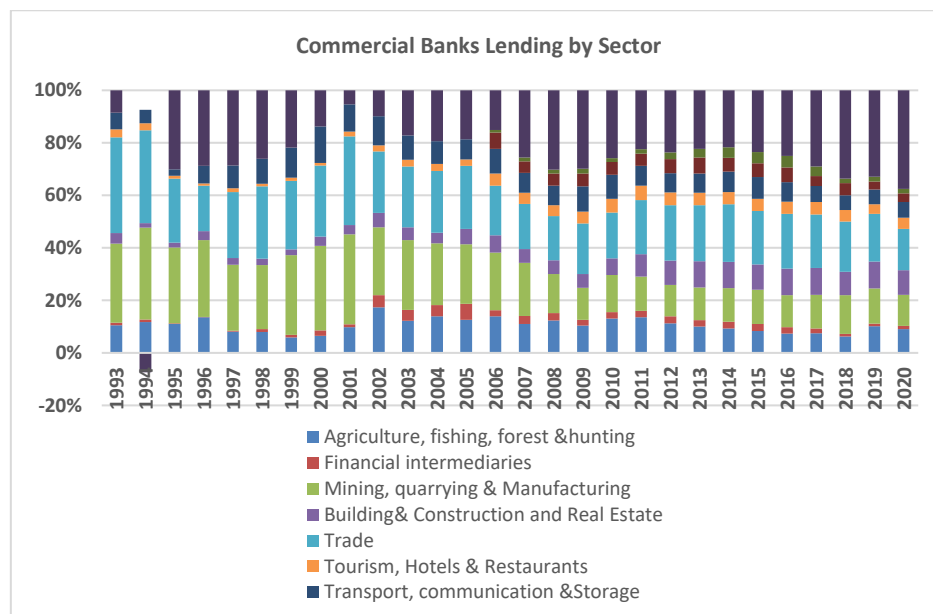

Figure 2: Commercial Banks Lending by Activity
Source: Bank of Tanzania Annual Reports

Theoretical and Empirical Literature Review
The nexus between financial development and industrial growth remains a subject of discussion. Studies point out the direction of the causal relationship between financial sector development and industrial development, with evidence of a long-run relationship between financial sector development and industrialization. A critical transmission channel is the role of financial development through improved access to capital for industries, especially long-term sources of finance. Financial deepening and enhanced financial intermediation that encourages savings for long-term investment are fundamental for industrialization. The banking sector plays a critical role in transmitting financial resources through intermediation. It facilitates the provision of credit to deficit units, thereby enabling production, consumption, and capital formation. As a result, it enhances the development of employment opportunities and strengthens the economy's competitiveness. Therefore, financial intermediation enhances economic growth by providing resources for real investment.

Two theoretical arguments concern the credit and growth nexus—the demand-following and supply-leading hypotheses (Adeyeye et al., 2015; Patrick, 1966). The demand-following hypothesis explains that, as the real economy grows, the increasing demand for financial services tends to induce expansion in the financial sector. On the other hand, the supply-leading hypothesis explains that the supply of financial services leads to economic growth, assuming that financial development is the driver of economic growth (ibid.). The availability of funds from financial institutions enables efficient entrepreneurs to assume more debt and engage in more productive investments. As a result, this enhances employment opportunities and strengthens the economy's competitiveness. Thus, the supply-leading hypothesis supports bank credits to affect such aspects as sub-sectors of industrial production, causing economic growth (Patrick, 1966). The application of the demand-following and supply-leading hypothesis have varied in countries. For instance, the demand-following hypothesis is dominant in Nigeria, while the supply-leading hypothesis is weak, though confirmed (Adeyeye et al., 2015). On the other hand, Fakudze and Tsegaye (2021) confirmed the demand-following hypothesis in South Africa, where economic growth exerted a positive and significant influence on financial development.

Empirical studies have shown mixed results concerning the effect of financial development on industrialization. In Nigeria, Ewetan and Ike (2014) used the vector autoregressive (VAR) and vector error correction model (VECM) from 1981 to 2011, and found a long-run relationship between financial sector development and industrialization. However, results also showed that, based on the type of measure of financial development, there is a difference in the effect on industrial output in that the ratio of private sector bank credit to GDP had a positive relationship with industrial output, while the ratio of the broad money stock to GDP had a negative relationship with industrial output. A Granger causality test revealed a long-run unidirectional causal link from industrialization to financial development. Differences between the long-run and short-run relationships between financial sector deepening and economic growth are also observed by Ohiomu and Oligbi (2020) in Nigeria using the autoregressive distributed lag (ARDL). They found that financial deepening, measured as credit to the private sector, has a positive effect on economic growth in the short-run, and a negative effect on economic growth in the long-run. Udoh and Ogbuagu (2012) examined financial development and industrial production in Nigeria from 1970–2009 using ARDL. They found that financial depth, as measured by broad money stock, had a significant adverse effect on the GDP of the industrial sector, both in the long- and the short-run.

Guru and Yadav (2018) also observe variations among countries in the BRICS (Brazil, Russia, India, China, and South) from 1993–2014. They found that the credit deposit ratio and direct credit to the private sector significantly and positively determine economic growth. Furthermore, they found a complex non-linear relationship between financial sector development and industrialization (Kothakapa et al., 2020). Using the panel system Generalized Method of Moment

(GMM) in low- and middle-income countries, the relationship was negative where financial development negatively affects industrialization, and later the relationship is positive. Therefore, this indicates that inadequate financial development is detrimental to manufacturing growth; while improved financial development has a positive effect. Comparing India and China, Shahbaz et al. (2018) incorporated institutional quality, government size, trade openness, and services sector growth from 1970–2013. Using the ARDL bounds testing, they found similarities and differences between the two countries. In particular, there was a bidirectional causal relationship between industrialization and financial development for both China and India. Svilokos et al. (2019) examined the financial sector's role in industrialization in Central and Eastern European countries using panel data from 2005–2015. They employed GMM and instrumental variable estimation, and used manufacturing value-added as the dependent variable. The results showed that trade openness had a significant positive effect. Also, a country's weighted average currency relative to an index/basket of other major currencies adjusted for the effects of inflation was significantly negative. At the same time, the real interest rate ratio was significantly negative. However, foreign direct investment had no significant effect on the manufacturing sector.

Eric and Zhongxiu (2017) examined the causal relationship between financial sector development and industrialization in Cameroon based on the aggregate production framework and autoregressive distributed lag (ARDL) from 1970–2014. They found a co-integration relationship between the financial sector development data and industrial output. Folarin (2019) also makes a similar observation in Nigeria when examining the role of financial reforms toward industrialization, using a financial reform index based on credit control and requirements, interest rate control, entry control, bank regulation control and supervision, privatization account and security market on one hand, and manufacturing value-added in GDP on the other. Using ARDL, the results showed that financial reforms stimulate industrialization in the short- and long-run. Furthermore, foreign direct investment had negatively affected industrialization. Bell and Rousseau (2000) examined Indian development to see whether financial intermediaries played a leading role in influencing India's economic performance, and used VAR and VECM to evaluate the strength and direction of the links between measures of formal intermediation and various economic aggregates. They found that the financial sector was instrumental in promoting aggregate investments and outputs, and in the steady shift toward an industry that has characterized India's development. Furthermore, the operative channel was one of debt accumulation rather than improvements in total factor productivity.

On their part, Mwang'onda et al. (2018) examined the manufacturing sector in Tanzania. The analysis shows that the manufacturing sector remains significant for the growth of Tanzania's economy despite its small GDP share relative to other sectors like agriculture and services. The stagnant contribution share of the sector

is associated with: implementation lags on ambitious uncoordinated plans; a slow transforming economic structure dominated by agriculture; and competition from low-priced manufactured imports from Asian economies. Furthermore, they examined the impact of financial sector development on economic growth using ARDL from 1967–2011. The results showed no existence of causality between financial development and economic growth.

The above literature shows that the countries examined are at different levels of industrialization, with study periods varying between 1967 and 2020. Moreover, these studies commonly apply ARDL (Ohiomu & Oligbi, 2020; Florin, 2019; Eric & Zhongxiu, 2017; Mwang'onda et al., 2018), while others apply VAR and VECM (Ewetan & Ike, 2014; Bell & Rousseau, 2000). Tanzania is still nascent, scoring low in its industry competitiveness compared to developed economies. Furthermore, studies in Tanzania are limited in terms of the latest investigation ending in 2011, despite the implementation of various strategies towards industrialization and achieving Tanzania's Vision 2025, which has well extended beyond 2011. Hence, the current study examines an extended period from 1990 to 2020 to capture recent advancements in industrialization by examining three development phases: 1990–2000, 2001–2010, and 2011–2020.

Methodology
The data were collected from1990–2020 from World Development Indicators of the World Bank. The primary variableswere industrialization as the dependent variable, and financial sector development variables as the independent variables. Industry value-added was used to measure industrialization. In addition, manufacturing value-added (MVA) was used as a critical component of industrialization. According to the MOF (2016), it is noted that within industry, manufacturing is the leader in the industrialization process. This is because, historically, the sector has been a vital driving force to economic development; has been the most knowledge-intensive sector of the economy and recipient of technological progress; exhibits higher productivity and scope for innovation; and that competitiveness of manufacturing is one of the fundamental determinants of long-run sustainable growth. Hence, both manufacturing and industry value-added were used as industrialization measures, as has been employed by several studies (Folarin, 2019; Svilokos et al., 2019; Kothakapa et al., 2020).

Financial development entails development in the functioning of the financial sector. It includes increased access to financial intermediation, more significant diversification opportunities, and better incentives in lending and monitoring. Financial development comprises financial flows, the composition of instruments and institutions, and the interplay of markets (Reid, 2010). Enhancing financial development has been linked to increased investment through increased savings. Well-functioning banking systems and well-developed stock markets provide different but complimentary growth-enhancing financial services, including credit to the economy. Thus, financial development measures include credit provided by

banks to the private sector and money supply. Some of the measures on financial sector development by authors include financial sector credit (Ewetan & Ike, 2014), domestic credit to the private sector (Kothakapa et al., 2020), and also broad money supply (Mwang'onda et al., 2018; Ewetan & Ike, 2014; Udoh & Ogbuagu, 2012). Therefore, the current study used two measures of financial sector development: broad money supply, and domestic credit provided by banks to the private sector.

Broad money entails the sum of all financial instruments held by money-holding sectors that are the mediums of exchange widely used in an economy, or close substitutes for the mediums of exchange that are reliable stores of value. Financial instruments included in broad money must be both liquid and reliable store of value. The widely used mediums of exchange are currency coins and banknotes. The close substitutes for the mediums of exchange, which are liquid and reliable stores of value, are savings and term deposits, short-term debt securities, and non-transferable shares or units in money market funds. Credit entails loans extended to households, businesses, or the government by banks or other financial intermediaries. Therefore, the study to refers credit as the credit provided by banks to the private sector.

There is a difference between bank credit and broad money. On the one hand, credit provided by banks is related to banking intermediation efficiency, which reflects the ability of banks to transform deposits into credit (Iheonu et al., 2020). On the other hand, broad money captures the money supply in an economy, and reflects the financial depth or the overall size of the financial intermediary (Udoh & Ogbuagu, 2012; Daway-Ducanes & Gochoco-Bautista, 2019). Broad money and credit affect investments differently, whereby broad money is more likely to finance consumption spending than growth-inducing activities (Daway-Ducanes & Gochoco-Bautista, 2019). In their study, Iheonu et al. (2020) revealed that broad money significantly and negatively affected domestic investment. Literature also shows co-movement between money and credit, but regional differences exist. It is thus appropriate to examine lending and money separately (Ryczkowski, 2020).

To examine the causality between financial sector development and industrialization, the VAR was used to investigate whether one variable helps predict another variable (Stock & Watson, 2001). A variable X is said to Granger-cause a variable Y if given the past values of Y. The past values of X are useful for predicting Y. Testing for co-integration is essential to eliminate the problem of spurious regression results as a result of integrated variables. The Johansen co-integration test was used to test for co-integration. To test Granger causality, a system of equations was used for each measure of financial sector development as elaborated in equations (1) and (2):

$$Y_t = \propto_1 + \sum_{i=1}^{k} \beta_{1i} X_{t-i} + \sum_{i=1}^{k} \delta_{1i} Y_{t-i} + \varepsilon_t \qquad (1)$$

$$X_t = \propto_2 + \sum_{i=1}^{k} \beta_{2i} X_{t-i} + \sum_{i=1}^{k} \delta_{2i} Y_{t-i} + \varepsilon_t \qquad (2)$$

When first-level variables are non-stationary, the first difference variables are used. ΔX_t and ΔY_t are the first difference values of financial sector development and industrialization for each regression equation tested. Furthermore, the values of δ, α, and β, are the parameter estimates to be estimated, and t and $t - i$ are the current and lagged values of the variables. The first difference equations are elaborated in equation (3) and (4):

$$\Delta Y_t = \propto_1 + \sum_{i=1}^{k} \beta_{1i} \, \Delta X_{t-i} + \sum_{i=1}^{k} \delta_{1i} \, \Delta Y_{t-i} + \varepsilon_t \qquad (3)$$

$$\Delta X_t = \propto_2 + \sum_{i=1}^{k} \beta_{2i} \, \Delta X_{t-i} + \sum_{i=1}^{k} \delta_{2i} \, \Delta Y_{t-i} + \varepsilon_t \qquad (4)$$

In testing for Granger causality, the null hypothesis tested the hypothesis that 'X does not Granger-cause Y' and 'Y does not Granger-cause X', as summarized in equations (5) and (6). A rejection of the hypothesis supports the presence of granger causality.

$$H_0: \sum_{i=1}^{k} \propto_i = 0; \; H_1: \sum_{i=1}^{k} \propto_i \neq 0; \qquad (5)$$

$$H_0: \sum_{i=1}^{k} \delta_i = 0; \; H_1: \sum_{i=1}^{k} \delta_i \neq 0; \qquad (6)$$

In examining the long- and short-run relationship between industrialization and financial sector development, the study applied the ARDL model. The ARDL model incorporates the long-run relationship among the variables. According to Shrestha and Bhatta (2018), the ARDL model can capture both long-run and short-run relations of the co-integrated variables. The ARDL is also used with all non-stationary variables. The ARDL is advantageous as it has a parameterization in error correction form. Furthermore, the bounds testing procedure allows drawing conclusive inferences without knowing whether the variables are integrated of order zero or one (Pesaran et al., 2001). The ARDL model for manufacturing value-added and industry value-added is summarized in equation (7).

$$\Delta Y_t = \alpha_0 + \lambda_k \sum_{k=1}^{k} \Delta Y_{,t-k} + \lambda_k \sum_{k=1}^{k} \Delta X_{t-k} + \lambda_k \sum_{k=1}^{k} \Delta Z_{t-k}$$
$$+ \delta_1 Y_{t-1} + \delta_2 X_{t-1} + \delta_3 Z_{t-1} + \varepsilon_t \qquad (7)$$

Where, Δ is the first difference variable, X and Z are credit to the private sector and broad money, respectively; ε_t is the error term; and Y_t is the dependent variable being industry and manufacturing value-added. The first three parts are the short-run dynamics of the model, while the remaining part is the long-run relationship. α_0 is the constant term, while λ_k and δ_k are the parameters to be estimated, and ε_t is the stationary white noise process.

The error-corrected ARDL model for manufacturing and industry value-added is summarized in equations (8) and (9). The error-corrected model integrates the short-run dynamics with the long-run equilibrium without losing long-run information, and avoids problems such as spurious relationships due to non-stationary time series data (Shrestha & Bhatta, 2018). The ARDL representation of the relationship is specified as follows:

$$\Delta VA_{Industry_t} = \alpha_0 + \lambda_k \sum_{k=1}^{k} \Delta VA_{Industry_{k,t-1}} + \lambda_k \sum_{k=1}^{k} \Delta DCREDIT_{k,t-1}$$

$$+ \lambda_k \sum_{k=1}^{k} \Delta BROADMONEY_{k,t-1} + \delta_k VA_{Industry_{t-1}}$$

$$+ \delta_k DCREDIT_{t-1} + \; + \; \varepsilon_t \qquad (8)$$

$$\Delta VA_{Manuf_t} = \alpha_0 + \lambda_k \sum_{k=1}^{k} \Delta VA_{Manuf_{k,t-1}} + \lambda_k \sum_{k=1}^{k} \Delta DCREDIT_{k,t-1}$$

$$+ \lambda_k \sum_{k=1}^{k} \Delta BROADMONEY_{k,t-1} + \delta_k VA_{Manuf_{t-1}}$$

$$+ \delta_k DCREDIT_{t-1} + \; \varepsilon_t \qquad (9)$$

Empirical Results

The unit root problem can cause doubt in the validity of causality tests between variables. The DF-GLS test for unit root test was used to test for stationarity (Baum, 2005). The DF-GLS performs a modified DF test for a unit root in which the series is transformed by a generalized least squares regression, and has a significantly greater power than the augmented Dickey-Fuller test. In addition, the unit root test with structural break is also examined. The Zivot Andrews test was used to test stationarity considering structural breaks. The results of the DF-GLS in Table 1 show that level variables were not stationary. At first difference, results revealed that variables were stationary at 5 percent significance. In addition, testing for breaks in the unit root is essential, and thus the Zivot Andrews Test of the unit root was used.

Table1:Level and First DifferenceVariables

Variable	Lags	DF-GLS	1%	5% Critical Values	10%
VA_MANUF	0	-2.633	-3.770	-3.378	-3.050
ΔVA_MANUF	0	-6.269	-3.770	-3.391	-3.061
VA_INDUSTRY	0	-2.700	-3.770	-3.378	-3.050
ΔVA_INDUSTRY	0	-5.386	-3.770	-3.391	-3.061
DCREDITBANKS_GDP	4	-3.095	-3.770	-3.075	-2.738
ΔDCREDITBANKS_GDP	0	-4.504	-3.770	-3.391	-3.061
BROADMONEY	8	-3.59	-3.770	-2.835	-2.414
ΔBROADMONEY	6	-3.402	-3.770	-2.877	-2.508

Consistent with the DF-GLS unit root tests, the Zivot Andrews test results in Table 2 revealed that the variables are stationary at the first difference results of the unit root tests, considering a break in the intercept of the variables. Therefore, the first difference variables analyze the causality between financial sector development and industrialization. The structural breakpoints appeared in 1998 for manufacturing

and industry value-added. Moreover, the financial development break occurred in 1995 and 1997 for domestic credit to the private sector, while that of broad money occurred in 2005 and 2000.

This breakpoint is linked to the various policy and efforts toward the country's economic development. For instance, the regime period from 1995–2005 had a significant emphasis on privatization in Tanzania, thus enabling the growth of the private sector, particularly the growth of credit to the private sector. Moreover, the short-run SIDP priority program emphasized restructuring, with the private sector fully involved through privatization. Given its emphasis, it resulted into the structural break in 1998 for manufacturing and industry. Also, the financial sector reforms contributed to growth in credit. There was also a significant break in financial development variables observed in 1997 and 2000 for domestic credit to the private sector provided by banks and broad money. Thus, the breakpoints could be linked to the financial sector reforms that enhanced credit growth.

In examining the difference across periods, the study considered that the implementation of industrialization strategies had different effects across different periods. Each implementation phase had a specific focus to enhance industrialization overall. To examine the difference across periods, the study accounted for the three program phases for the Sustainable Industrial Development Policy (SIDP) 1996–2020. The SIDP phases were categorized into short-term (first five years), medium-term (between 5th and 10th year), and long-term (beyond 10th year); identified as 1996–2000; 2000–2010; 2010–2020, respectively. Hence, the current study examined differences between 1996–2000, 2001–2010, and 2011–2020. Results in Table 2 show that the period during the first phase had a significant breakpoint observed in 1998 for both manufacturing and industry value-added. Moreover, manufacturing and industry values increased from 1990–2000, as depicted in Table 3. However, during the second and third phases, results show that manufacturing value-added declined on average.

Table 2: Zivot Andrews Test of Unit Root With Structural Breaks

Variable(Level)	Lags	t-statistic	Break	1%	5% Critical Values	10%
VA_MANUF	0	-8.73	1998	-5.340	-4.800	-4.580
ΔVA_MANUF	0	-6.494	1998	-5.340	-4.800	-4.580
VA_INDUSTRY	0	-3.737	1998	-5.340	-4.800	-4.580
ΔVA_INDUSTRY	1	-5.636	1998	-5.340	-4.800	-4.580
DCREDITBANKS_GDP	0	-3.627	1995	-5.340	-4.800	-4.580
ΔDCREDITBANKS_GDP	0	-6.566	1997	-5.340	-4.800	-4.580
BROADMONEY	2	-3.97	2005	-5.340	-4.800	-4.580
ΔBROADMONEY	2	-4.597	2000	-5.340	-4.800	-4.580

Tanzania's long-term perspective plan (LTPL) for 2011–2025 was divided into five years. The FYDP I (2011/12–2015/16) focused on removing binding constraints

to growth; i.e., hard and soft infrastructure, electricity, and markets. The FYDP II (2016/17–2020/21) aimed to deepen industrialization as the vital pillar of socio-economic and political development (intensified industrial development and promotion of structural change – light manufacturing and resource-based strategic industries). The FYDP III (2021/22–2025/26) focused on further promoting the competitiveness of the manufacturing sector, and a substantial improvement in Tanzania's share in global and regional trade. The strategic initiative on industrial development seems to be effective. The results support the strategic initiatives, indicating that industry value-added and domestic credit provided by banks consistently increased during the program phase of 2001–2010 and 2011–2020. While manufacturing increased during the phase 1990–2000, on average, it declined in the 2001–2010 and 2011–2020 periods, as depicted in Table 3. The results imply that more efforts to enhance manufacturing in the country are needed to meet the objectives of FYDP III that focused on the manufacturing sector's competitiveness, and increasing its share in the trade of Tanzania.

Table 3: Description of Variables Across Three Implementation Phases

Period: 1990–2000					
Variable	**Obs**	**Mean**	**Std.Dev.**	**Min**	**Max**
DCREDITBANK_GDP	11	7.3375	4.4547	2.9410	14.0301
ΔDCREDITBANKS_GDP	10	-1.0789	1.8751	-4.2855	1.0524
BROADMONEY	11	19.6422	4.7796	12.5921	25.0887
ΔBROADMONEY	10	-0.6848	2.8301	-7.1183	2.3234
VA_MANUF	11	8.0773	1.6240	6.2778	10.9831
ΔVA_MANUF	10	0.1375	1.6251	-0.7580	4.7053
VA_INDUSTRY	11	15.7866	2.6951	13.0013	20.0749
ΔVA_INDUSTRY	10	0.3056	2.3869	-0.7607	7.0737
Period: 2001–2010					
Variable	**Obs**	**Mean**	**Std.Dev.**	**Min**	**Max**
DCREDITBANK_GDP	10	8.2659	3.0264	3.7621	11.6512
ΔDCREDITBANKS_GDP	9	0.8603	0.7478	-0.6454	1.9001
BROADMONEY	10	20.3214	3.0832	15.7615	24.6479
ΔBROADMONEY	9	0.9874	1.1374	-0.5864	3.1032
VA_MANUF	10	9.0141	0.3129	8.6658	9.4656
ΔVA_MANUF	9	-0.0889	0.0817	-0.2051	0.0089
VA_INDUSTRY	10	22.5148	1.3258	19.3739	23.7375
ΔVA_INDUSTRY	9	0.4647	1.3149	-2.0606	2.1133
Period: 2011–2020					
Variable	**Obs**	**Mean**	**Std.Dev.**	**Min**	**Max**
DCREDITBANK_GDP	10	12.9863	0.6579	12.2088	14.4720
ΔDCREDITBANKS_GDP	9	0.0970	0.7089	-0.9125	1.2456
BROADMONEY	10	21.8729	1.4714	20.0114	24.1242
ΔBROADMONEY	9	-0.3585	1.0567	-2.3274	0.9055
VA_MANUF	10	8.5610	0.7052	7.6590	9.5487
ΔVA_MANUF	9	-0.1161	0.4957	-1.2645	0.4148
VA_INDUSTRY	10	26.1118	1.5225	24.4874	28.6750
ΔVA_INDUSTRY	9	0.2548	0.9582	-0.9826	1.9082

Test of Co-integration
The Johansen trace statistic was used for manufacturing and industry value-added, as shown in Table 4. The results confirmed a long-run relationship between financial sector development indicators and industrialization variables.

Table 4: Johansen Co-integration Test

	Industry Value-added				Manufacturing Value-added		
Maximum rank	eigenvalue		5% critical value		eigenvalue	trace statistic	5% critical value
0	.	43.6708	29.68	0	.	36.6669	29.68
1	0.5935	17.5656	15.41	1	0.54662	13.7272*	15.41
2	0.41182	2.1744*	3.76	2	0.29307	3.6694	3.76
3	0.07224			3	0.11885		

Granger Causality
To run the Granger causality test, the Akaike Information Criterion (AIC) lag selection criteria was used. The Granger causality test results in Table 5 show a bidirectional causality movement that moves from financial sector development to industrialization. Domestic credit by banks and broad money as a proportion of GDP Granger-cause industrialization. In addition, industrialization Granger-causes credit to the private sector and broad money, hence a bidirectional causality. Therefore, the results support the supply-leading hypothesis that the enlargement of credit to the industrial sector plays a crucial role in enhancing the development of the industrial sector. In addition, as industrial activities increase, it leads to an increase in demand for credit.

Table 5: Granger Causality–Industry Value-added

Hypothesis	chi2	df	Prob > chi2
ΔDCREDITBANKS_GDP does not Granger-cause ΔVA_INDUSTRY	36.39	4.00	0.00
ΔBROADMONEY does not Granger-cause ΔVA_INDUSTRY	10.03	4.00	0.04
ALL does not Granger-cause ΔVA_INDUSTRY	71.79	8.00	0.00
ΔVA_INDUSTRY does not Granger-cause ΔDCREDITBANKS_GDP	30.47	4.00	0.00
ΔBROADMONEY does not Granger-cause ΔDCREDITBANKS_GDP	4.62	4.00	0.33
ALL does not Granger-cause ΔDCREDITBANKS_GDP	51.53	8.00	0.00
ΔVA_INDUSTRY does not Granger-cause ΔBROADMONEY	58.63	4.00	0.00
ΔDCREDITBANKS_GDP does not Granger-cause ΔBROADMONEY	82.08	4.00	0.00
ALL does not Granger-cause ΔBROADMONEY	177.33	8.00	0.00

Therefore, there is a need to ensure the supply of credit to the economy to enable the development of the industrial sector. An increased supply of credit will propagate an increase in the establishments of activities. Concerning other studies, the result of the current study is similar to that of Shahbaz et al. (2018) in China, which found a bidirectional relationship between industrialization and financial development. However, the results contradict Ewetan and Ike (2014) in Nigeria, who found a unidirectional causality from industrialization to financial sector development. The results could be attributed to differences in the level of development of the financial sector and the role of institutions in the respective economies.

Similarly, Granger causality in the case of manufacturing value-added showed that domestic credit provided by banks to the private sector Granger-causes manufacturing value-added. The manufacturing value-added causality results show a unidirectional causality that moved from financial sector development to manufacturing value-added. It implies that the supply-leading hypothesis is supported: that an increase in credit leads to an increase in manufacturing value-added. It thus reflects the importance of credit to the private sector. The joint effect of financial sector development Granger-causes manufacturing. However, manufacturing does not Granger-cause financial sector development, as summarized in Table 6.

Table 6: Granger Causality–ManufacturingValue-added

Hypothesis	chi2	df	Prob > chi2
ΔDCREDITBANKS_GDP does not Granger-cause ΔVA_MANUF	17.67	3.00	0.00
ΔBROADMONEY does not Granger-cause ΔVA_MANUF	11.33	3.00	0.01
ALL does not Granger-cause ΔVA_MANUF	28.58	6.00	0.00
ΔVA_MANUF does not Granger-cause ΔDCREDITBANKS_GDP	2.49	3.00	0.48
ΔBROADMONEY does not Granger-cause ΔDCREDITBANKS_GDP	0.62	3.00	0.89
ALL does not Granger-cause ΔDCREDITBANKS_GDP	8.83	6.00	0.18
ΔVA_MANUF does not Granger-cause ΔBROADMONEY	6.02	3.00	0.11
ΔDCREDITBANKS_GDP does not Granger-cause ΔBROADMONEY	11.57	3.00	0.01
ALL does not Granger-cause ΔBROADMONEY	23.07	6.00	0.00

ARDL Estimation Results

In estimating the ARDL regression, the lag selection was based on the Akaike Information Criterion (AIC). The estimation results are summarized in Table 7. Results of the bounds test for co-integration showed the presence of co-integration, as summarized in Table 8. The F-statistic is less than the 10 percent lower bound; hence the null hypothesis of no level relationship is not rejected. Thus, there is co-integration among variables in the case of manufacturing and industry value-added.

Table 7: Long-run and Short-run ARDL Estimation Results

	ΔVA_MANUF	ΔVA_INDUSTRY
ECT		
L.VA_MANUF	-0.538**	
	(-2.96)	
L.VA_INDUSTRY		-0.18
		(-1.51)
LR		
L.DCREDITBANKS_GDP	0.0107	1.416*
	-0.12	-2.18
L.BROADMONEY	-0.203	-1.724
	(-2.05)	(-1.59)
SR		
ΔDCREDITBANKS_GDP	0.135	0.518
	-1.37	-1.8
LΔDCREDITBANKS_GDP	0.226*	0.0906
	-2.29	-0.4
ΔBROADMONEY	-0.284***	-0.719***
	(-3.79)	(-4.08)
LΔBROADMONEY		0.217
		-1.3
Cons	6.835**	8.366*
	-3.01	-2.45
N	29	29
R-squared	0.6776	0.5067
AdjR-squared	0.5896	0.3423
Loglikelihood	-23.6999	-45.1109
t statistics in parentheses; * $p<0.05$, ** $p<0.01$, *** $p<0.001$		
Normality Test	Prob>chi2 = 0.8827	Prob>chi2 = 0.0154
Serial correlation test (Breusch-Godfrey LM test for autocorrelation)	Prob > F = 0.0011	Prob > F = 0.0001
LM test for autoregressive conditional heteroskedasticity (ARCH)	Prob > chi2 = 0.5670	Prob > chi2 = 0.6308
Heteroskedasticity test (Breusch Godfrey LM test)	Prob > chi2 = 0.2716	Prob > chi2 = 0.0102

Table 8: ARDL Bounds Test for Co-integration

Manufacturing value-added			Industry value-added		
F	3.254		F	1.948	
I(0)	I(1)		I(0)	I(1)	
10%	3.415	4.575	10%	3.403	4.597
5%	4.271	5.619	5%	4.268	5.661
1%	6.394	8.188	1%	6.426	8.298
p-value	0.114	0.242	p-value	0.329	0.539

The estimation results in Table 7 show that variation in manufacturing value-added is explained by 58.96 percent of the variables as depicted by the Adjusted R-square.

The results also show serial correlation using the autocorrelation test with the null hypothesis stating that no serial correlation was rejected since p<0.05. Thus, there was a serial correlation for manufacturing and industry value-added. However, the results of the models also showed that the LM test for autoregressive conditional heteroscedasticity (ARCH) accepted the null hypothesis that the error is not autoregressive conditional heteroscedasticity.

Moreover, the results show a significant short-run relationship between financial development and manufacturing value-added. However, there was a long-run relationship between financial development and industry value-added with respect to broad money. In the short-run, the results show a significant positive effect of domestic credit on manufacturing value-added. The positive results are similar to Ohiamu and Oligbi (2020), who observed short-run positive effect of credit to the private sector. The results imply that, in the short-run, credit is crucial for the growth of manufacturing in the economy of Tanzania. The results also show that the short-run dynamics of the effect of financial sector development are not maintained in the long-run. The positive significant effect of credit on manufacturing could be supported by the high lending to the industry and manufacturing sector compared to other sectors of the economy. In the long-run, a significant positive effect of domestic credit to the private sector on industry value-added is also observed. In 2018, the BoT directed banks to undertake loan classification and restructuring. The activity aimed to curb general slowdown in private sector credit growth. Therefore, with such strategies undertaken, the importance of credit to the economy is being supported.

In the long-run, results also show that broad money significantly reduces industry value-added. It implies that the supply of money in the economy harms industrialization. This result is similar to Ewetan and Ike (2014) and Udoh and Ogbuagu (2012), who found a negative relationship between broad money and industrial output. The negative relationship indicates that increased broad money significantly reduces manufacturing and industrial activity because broad money has been found to reduce domestic investment significantly (Iheonu et al., 2020). Moreover, in the long-run, results show that broad money had a non-significant effect on industry and manufacturing value-added.

The error correction term (ECM) coefficient explains the speed with which the variables return to equilibrium. In manufacturing value-added, the ECM is negative and significant; and estimates the speed of adjustment to reestablish a stable equilibrium. The significant negative value shows that 53.8 percent of the adjustment in manufacturing value-added is corrected each year.

Results of the stability of the models show that at the 5 percent significance level, the cusum squares test for the manufacturing value-added and industry value-added models is satisfactory, as depicted in Figures 3 and 4.
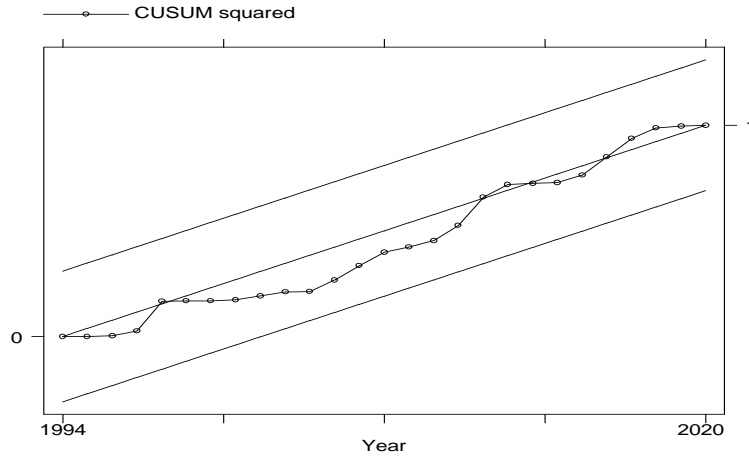
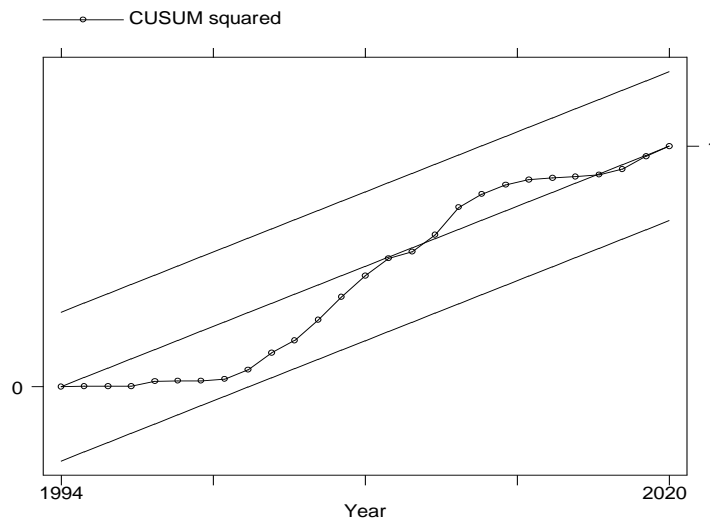**Figure 3: Manufacturing Value-added Stability of Model**

Figure 4: Industry Value-added Stability of Model

Conclusions and Recommendations

This paper attempted to examine the causality relationship between financial sector development and industrialization in Tanzania. The Granger causality test was used to examine the causality, and ARDL estimation was used to examine the effect of financial sector development on industrialization. It was found that domestic credit to the private sector and broad money Granger-caused industry value-added. The joint effect of financial sector development Granger-causes both industry and manufacturing value-added.

Moreover, industry value-added Granger-causes financial sector development. Therefore, a bidirectional causal relationship exists between domestic credit to the private sector, and industry value-added. On the other hand, there is a unidirectional causal relationship moving from financial sector development to manufacturing value-added. The ARDL results showed that credit to the private sector had a significant positive effect on manufacturing value-added in the short-run, and a significant long-run effect on industry value-added in the long-run. However, in the short-run, broad money had a significant negative effect on both manufacturing and industry value-added. The results support the financial sector enhancement given evidence for the supply-leading and demand-following hypothesis.

The results have implications for policy and practitioners. The unidirectional causality from financial sector development to manufacturing, and the bidirectional causality between credit and industry value-added imply that credit should be supplied to trigger the development of the manufacturing sector. As manufacturing grows, it also triggers growth in industry activities, triggering demand for credit. Regulators and financial sector players should consider ensuring adequate credit provision for manufacturing growth. Furthermore, as demand for industry activities increases, credit expansion is crucial. Though the Tanzanian economy has small-scale firms, emphasizing the importance of domestic financial sector development is crucial to minimize financial constraints to small firms. Additionally, the decline in manufacturing value-added in both the 2001–2010 and 2011–2020 phases, despite the increase in domestic credit in connection to minimizing financial constraints, calls for dedicated efforts toward building capacities in areas of competitive advantage to allow the proper use of resources directed to production areas with a competitive advantage. Policies on investment should also be directed towards enabling businesses to acquire capital goods to enhance the manufacturing environment. Tanzania has recently emphasized supporting credit recovery to the private sector, and expanding economic activities. Therefore, the results of this study provide evidence for lending activities to consider the manufacturing and industrial sectors. The negative impact of broad money on industry value-added calls into question its effectiveness in stimulating economic activities and aggregate demand.

The current study focused on financial sector development using credit provided by banks and broad money. Measures involving the growth of the financial markets can also be included to provide further insight into financial development's linkage to industrialization. Moreover, there is potential for other factors affecting manufacturing value-added competitiveness in lower-income countries like Tanzania that limit the development of vibrant infrastructure and technology. Therefore, future studies should consider examining the effect of institutional quality and governance aspects, such as voice and accountability, political stability, absence of violence or terrorism, government effectiveness, regulatory quality, the rule of law, and control of corruption on manufacturing and industry value-added.

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