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ABSTRACT Using annual data for the period 2000–2018, the study employed an autoregressive distributed lag (ARDL) methodology to examine the long-run cointegrating relations between service subsectors and economic growth in Albania. Results are presented both for the short run and long run. Findings indicate that the transport sector, communication and financial services have a positive impact on economic growth. However, the manufacturing sector has a negative impact. This confirms Baumol's theory on cost disease but does not corroborate Kaldor's theory. Furthermore, agriculture and industry stimulate the Albanian economy whilst expenditure on health have a limited impact. In addition, the Granger causality test indicates a bidirectional causality from transport, communication and financial services to GDP per capita. Lastly, our models are robust to all the conventional battery of tests.

KEYWORDS Economic growth; services sector; Albania; ARDL

JEL CLASSIFICATIONS F43, F63, C01, C32, N14

1. Introduction

The more developed an economy is, the higher the share of the service sector. This is called 'the service economy' or the shift to services.1 When the share of services goes up, not only will the production, employment, consumption and trade increase but even the proportion of services in intermediate inputs to produce industries increases (Kim 2006). As a matter of fact, an economy tends to services as its income per capita rise. However, the reasons for this shift as well as its implications on economic growth are still a hot cake for the researchers, academics and policymakers. Perhaps, the work of Baumol (1967) seems to be prophetic in this regard. According to his 'Cost Disease Hypothesis', the shift to services happens due to sector's lower productivity, higher costs and higher relative prices. Country evidence seem to be numerous with regard to the impact of the service sector as the world gravitates towards Information Technology (IT) and other innovative service industries such as finance, retail trade, communications, tourism among others. Invariably, we are encountering in our daily life innovative forms of services which are progressively developing but do not seem to fit the stagnancy of the service sector. In Albania, the service sector is the main contributor to the gross domestic product (GDP). It is not also surprising that the sector employs approximately half of the active population and has the highest value-addition. To buttress our point, we consider Figure A1 (Appendix), which shows the percentage of each service sub-sector as a percentage of GDP from 2000 to 2018. Another vital sector is industry (including construction) which contributes about 21.3 percent to the GDP of Albania and employs 19 per cent of the active population. The sector's peak performance was in 2001 and 2007. Surprisingly, insurance and financial services, manufacturing and health have remained in the neighbourhood of 10 per cent. Manufacturing value added is estimated to contribute about 6 per cent to the Albanian economy. Albeit the Agriculture sector accounts for about 18.4 per cent to GDP and employs 38 per cent of the workforce, the sector suffers from the lack of modern equipment, fragmented land ownership and

restricted area of cultivation which led to low productivity. It should be highlighted that agriculture product is higher than its share of the GDP; a large part of the production is consumed by farmers themselves. Other sectors are also booming such as tourism, telephony, insurance and banking. Albania's sectors have been dynamic all over the years as the contribution of industry and manufacturing in the economy have increased together until 2007, whilst afterwards, there is a high discrepancy between them. It is important to highlight that in the early 2000s, the share of manufacturing and agriculture has been high as the economy has gone through a centralized transition to a liberal economy where the highest level of employment is found in these sectors. There is a sharp drop in manufacturing in 2012, perhaps as a result of the eurozone debt crisis. It is highly expected that if the economic growth of the country will fall, the manufacturing will decrease too. The fall in manufacturing is followed by a sudden drop in services share of GDP too, which could be a credit crunch in the economy; it is highly anticipated that in an environment where there is high credit risk, the investors will withdraw their funds leading to capital outflows (capital; flight). Albania is a transitional economy; it has strong economical performances even though it does not yet have deep capital markets. The performance of the Albanian economy has been as a puzzle for researchers and scholars through the years (Muco, Sanfey, and Luci 2001). Trade openness is one of the main factors which makes the intermediary service dynamic. During the transition from a centralized economy to an open economy, Albania has become more integrated in the international market. For instance, whilst in the early 1990s, trade in merchandize and trade in services were, respectively, 39.43 and 2.9 per cent of GDP,2 in 2019, Albania's merchandize trade accounts for 76.72 per cent of GDP and trade in services reached 40.59 per cent of GDP. The country's main exports consist of footwear and their parts, suits, shirts, electrical energy while it imports constitutes motor cars, petroleum products, pharmaceutical products and leather. The European Union (EU) remains Albania's main trading partner (76.3 per cent in 2018) with Italy accounts for more than half of total exports, followed by Serbia (11.3 per cent), North Macedonia (2.8 per cent) and China (1.8 per cent). The bulk of imports come from the EU (60.9 per cent, with Italy accounting for nearly 30%), Turkey and China (8.4 per cent each). Albania's trade balance is structurally in deficit, mainly because exports are neither sufficiently diversified nor competitive in terms of price and because of the country's narrow production base. In 2018, merchandize exports reached USD 2.9 billion (+25.3 per cent), while imports grew at a slower pace (12.4 per cent), to reach USD 5.9 billion. However, the country is a net exporter of commercial services, which stood at USD 3.5 billion against USD 2.2 billion of imports. According to the World Bank, in 2018, the trade deficit on goods and services stood at 13.7 per cent of the country's GDP. Overall, Albanian trade is still hindered by the country's weak energy, transport infrastructure and limited financial access. With the trade openness, innovation especially for financial and transport, intermediary service is increased. E-commerce and Internet intermediaries stimulate employment, entrepreneurship and have become an engine of the economic growth in Albania. In a survey done by the Institute of Statistics of Albania, the highest innovation is in the companies which operate in the service sector accounting for 42.2 per cent as against the industrial sector's 34 per

cent. 3 Moreover, ∼100 per cent of companies operating in transport and industry service use technology. In recent years, the country had to face a series of macroeconomic and fiscal changes, such as underground economy, corruption, organized economy and property rights.4 Albania has entered the 1990s deeply rooted in Stalinist economic practice; a centralized economy for 45 years, state ownership-dominated and private property which was forbidden in most of the cases. All economic decisions related to production, wages, investment and trade were centralized. Another principle of the Albanian economic 'model' was the idea of a self-reliant economy; diversification of production was poor with low technology and weak industrial development background which led to high inefficiency in the economy. Hence, like other Eastern European countries, Albania was oriented towards industrialization, which accounted ∼45 per cent of the net material product and provided employment for around 23 per cent of the population. Industrial production absorbed 42 per cent of the gross investment, its development was hampered by centralization and mismanagement and the internal industrial market was ruled by monopolistic behaviour. The same situation was in agricultural sector, which for long has been one of the most important sectors in the Albanian economy. The comparative advantage of agriculture consists of the cheap labour force and traditional heritage. Agriculture accounted for 33 per cent of the net material product and it employed roughly 50 per cent of the active population. Other sectors such as construction tourism, transportation or other services were not developed. Prior to transition, economic policies were formulated on central planning based on quantitative planning. The fiscal policy was used to mobilize the redistribution of investment, wage bills, social security and price subsidies. Monetary policy was merely passive, the interest rate had no role and rates were unchanged while the exchange rate was fixed officially. In common with the other economies in transition, Albania has gone through several structural reforms. The Albanian economy was supported by two 3-year International Monetary Fund (IMF) programmes with the second one which was completed in 2001. The first liberalization of prices for goods was implemented in Albania in the last quarter of 1991. A certain adjustments of official wholesale prices were introduced and in 1992 where a reliable price index was constructed which reflected the prices in the black markets. The process of liberalization instituted a floating exchange rate with an active market outside the banks while the traditional state monopoly on foreign trade was totally removed. On 1 May 1996, Tirana Stock Exchange was opened. The first major privatization in the banking sector happened when the National Commercial Bank was sold to investors and the Savings Bank was privatized in 2002. The agricultural sector was almost fully privatized by the end of 1994 and was one of the first to respond to price signals, increasing the availability of food in the domestic market. In the early 2000 following the completion of the IMF programme, the Central Bank of Albania in collaboration with IMF under the framework of Poverty Reduction and Growth Facility aimed to keep the inflation within the bounds. However, these structural reforms did not achieve the intended results. Large-scale privatization was proceeding slowly while public governance was weak. The implementation of law and public order was problematic, and the economy was vulnerable to shocks. Structural reforms brought the set-up of the new tax system, banking sector

and market regulation. However, the case of Albania shows how lack of market economy and developed democracy are important to realize the impact that institutional changes have at the beginning of the transition process (Muco, Sanfey, and Luci 2001). What makes the Albanian economy and its structural changes unique is the magnitude of impact and the tools followed by the monetary policy to respond to contemporaneous shocks. We can find other similarities with other Balkan countries which represent a key supplier in Western Europe with cost competitiveness and high productivity. The service sector, especially transport, tourism and construction, started to flourish in the region. This was the major driving force for the relatively high levels of economic growth after the 2000s. Nevertheless, up until the present day, the growth of these sectors has not been sufficient to counter the overall demand for imports. Not surprisingly, most of these countries run a considerable trade deficit (Mihes, Popova, and Roch 2011). The main challenges that the region must face is infrastructure and skills gaps which impose a drag on sectors and economic growth. Time to market and policy barriers, the system is low and bureaucratic, in favouring an easy environment to set up a business, low value-added tax reimbursement which makes the companies to have lower cash flows and margins. Another issue which makes the economies and their structural changes similar is access to finance. It is difficult to obtain affordable financing for investors. 5 The European Investment Bank is the main financier of the Balkan region, with 7 per cent to industry, ∼5 per cent to service, 3.37 per cent to health which support growth, employment, regional cohesion and sustainability. 6With the notable exception of 1997 and low inflation in 1994, the Albanian economy has enjoyed high annual growth which has been achieved in an environment with financial development at the early stage and informal markets which are flourishing (Muco, Sanfey, and Luci 2001). There are vast discussions among researchers and scholars for the impact of service subsectors to economic growth. Kuznets (1966, 1971), Rostow (1971), Chenery (1979), Baumol et al. (1989) and Echevarria (1997) alluded that the share of services and their composition are considered as the main accelerators of the economic growth of a country. Given the importance of services sector for economic growth, it has caught the attention of academics and researchers all around the world. In reference to the Albanian economy, a recent report from the World Bank in 2019 states that economic growth was accompanied by job creation, particularly in industry accounting for 3.9 and 2.5 per cent in services.7 Even though there is a growing importance of the service sector to the Albanian economy, there are only few studies which estimate the impact of the services sector on the economic growth in Albania. Muharremi, Madani, and Pelari (2013) showed that services are vital as the Albanian economy transitions from an agricultural economy to a service-oriented economy. On the one hand, Illeris (1996) and Qin (2006) argued that in order to develop an economy, the country should evolve into a service-oriented economy. On the other hand, Baumol (1967) indicates that the share of services as a percentage of GDP has a negative impact on economic growth in the framework of the unbalanced growth model. Qin (2006) declares that this unbalanced growth model defines that the growth of services can decrease the productivity of the economy which might reduce the economic growth of a state. Pugno (2006) follows the same approach as Baumol et al. (1989). That is, stagnant services are characterized by low

productivity and increased prices but at the same time with an output growth which is proportional to the rest of the economy. In other studies, Jalil, Manan, and Saleemi (2016) using a similar approach as Pugno (2006) evaluated the impact of business and household-related services on economic growth in Pakistan. Their results indicate that the services sector contribute positively to economic growth in Pakistan. Mcmillan and Rodrik (2011) argued that the structural change in low-income economies with high rates of growth had a negative impact for potential economic growth. The authors state that the share of low productive workplaces, especially in informal activities, has increased in the period of rapid growth. This has developed at the same time with deindustrialization; the share of the labour force in manufacturing has fallen from an already low level. Whilst earlier research findings revealed that the services sector has a positive impact on economic growth in various countries, scholarly studies on the Albanian economy are scant. Motivated by this gap in the literature, this study follows the modelling approach of Jalil, Manan, and Saleemi (2016) to evaluate the causal relationship between the services and economic growth in Albania. The purpose of this paper is in two-folds. First, we try to identify the current situation of service subsectors in Albania. Secondly, we analyse the impact that service sectors have on the Albanian GDP per capita. The results of this study could extend the boundary of economic policy debates for the Albanian economy. Although we follow Jalil, Manan, and Saleemi (2016), we deviate from their bivariate model to estimate a multivariate model which includes transport; insurance and financial services; computer, communication and other services; manufacturing; agriculture; industry and health services. Further, we add gross capital formation, trade openness and inflation as additional covariates. Also, we extend the data from 2000 to 2018 which could be a good indicator of service progress through the years.8 The empirical findings suggest that there is a positive impact of transport, computer communication, insurance and financial services on economic growth. These results confirm those of Jalil, Manan, and Saleemi (2016) who found a positive impact of business and household-related sectors in Pakistan. However, we found a negative impact of manufacturing on the economic growth of Albania. The findings support the work of Baumol (1967), Dutt and Lee (2006) and Kim (2006) but do not confirm those of Kaldor (1966, 1967). We find a positive impact of agriculture which confirm those of Mucavele (2009), Douglas (2010) and Awan and Alam (2015). Theories and previous studies have examined different relation among economic growth and inflation, but we do find a positive relationship following the approach of Mallik and Chowdhury (2001). In the neoclassical view, inflation has a positive impact on growth by shifting the income distribution and favouring higher savings. The increase in saving enhances economic growth. On the other hand, Keynesians note that inflation increases economic growth by increasing the rate of profit, hence, by increasing the level of private investments. Our models pass all battery of tests. We perform the Granger causality test which indicates bidirectional causality from transport, computer communication services; insurance and financial services, industry and investment to GDP per capita. There is a unidirectional causality from manufacturing to GDP per capita. Moreover, we find a unidirectional causality from trade openness and inflation to economic growth. The rest of the paper is structured as follows:

Section 2 presents a review of the closely related literature and Section 3 outlines the empirical strategy, the model specification, and describes the data and its sources. The main results are presented in Section 4 and Section 5 concludes.

2. Literature review

In the last decade, the service sector has caught the attention of researchers and academics all over the world as its share in GDP and the employment is increased. A plethora of research have considered the importance of services in different angles. The work of Baumol (1967) seems to be prophetic in examining the impact of the services sector on economic growth. It states that as the share of services increases, the economic growth decreases in an unbalanced growth model. The model defines that the growth of the service sector reduces the overall productivity of the economy, which lowers the economic growth. Baumol, Blackman, and Wolff (1985) posit that the 'rising share of services' is somewhat illusory, and the cost disease of the stagnant services can affect the economy more than was previously thought. Oulton (2001) sets out an unbalanced growth model when all goods are final and following the approach of Baumol (1967), the author shows the conditions under which, if output in all industries grows at the same rate, resources will shift to the stagnant industries, with a consequent slowing of the aggregate productivity growth rate. The author in a two-industry example explains how matters change when some industries produce intermediate products. Further, he goes ahead and does a distinction between two concepts of productivity growth at the industry level, one based on gross output and the other on value-added. The main finding is that an increase in the share of resources absorbed by an industry producing intermediate products raises the rate of the aggregate growth. The paradox in the result is the shift of resources towards a stagnant industry that produces intermediate goods enhances the growth rate. In this study, the question 'When will a shift in resources towards industries producing intermediate products actually occur?' is addressed. The model is a two-industry model and the answer to the question is that depends on the elasticity of substitution in the second industry between the primary input and the one intermediate. It requires the total factor productivity (TPF) growth in the first industry to be positive even though it might be slower than other industries. The paper goes further and quantifies the effects of the structural changes on the UK growth rate from 1973 to 1995 and defines that the shift to finance and business services could have raised the UK growth. Qin (2006) states a positive contribution of the service sector to growth and this is largely due to shifts of labour from the primary sector into services but sign of cost disease is visible from weak responses to price signals in demand for services, wage determination and labour input demand of the service sector ,while Pugno (2006) provided a model that studies the service paradox and the net effect of household services in the overall productivity growth. It assumed that household preferences shift as income grows. The results reveal that productivity and the quality of services are both significant for the economic performance in the long run. Different from the previous studies, Singh (2010) studies the short- and long-run relationship services (services and nonservices) – GDP in India. The author finds a

cointegrating relationship between both relations. Further, the growth of services sector is crucial to absorb the exogenous shocks of whether shocks in agriculture and industry and provide resilience to the economy. Existing contributions to the literature focused on the core variables that might influence economic growth: Roubini and Sala-i-Martin (1992) focus on financial repression and inflationary finance, on financial sector (Levine 1997; Levine, Loayza, and Beck 2000; Jalil, Feridun and Ma 2010), on sectoral composition, Munell (1992), Gramlich (1994), Echevarria (1997) and Pradhan and Bagchi (2013) focus on transport infrastructure, Lee and Warwick (2014) consider labour productivity and lastly, Asafo and Matuka (2019) and Asafo, Matuka, and Nyendu (2019) focus on external debt. The current literature highlights various subsectors that positively affect economic growth. The work of Kaldor (1966, 1967) seems to be the reference in the contribution of manufacturing sector to economic growth. Following the work of Arrow (1962) and Young (1991), was put forward in 1966 and 1967 Kaldor's law and the results show that manufacturing sector is the main engine of growth. Author's ideas states that the growth rate of GDP is related positively to the growth rate of the output of the manufacturing sector. Hence, the expansion of manufacturing sector creates GDP growth. Dasgupta and Singh (2006) examine the role of manufacturing and services in developing countries using a Kaldorian framework. They take further the work presented in Dasgupta and Singh (2005) using an extended data set of 48 countries from 1990 to 2000. Their findings confirm the significance of manufacturing and services overall and individual services, which make a positive contribution in the economic development in several developing countries. Unlike Dasgupta and Singh (2005), they go deeper and examine the country differences in the manufacturing share of employment. di Meglio et al. (2015) prove that Kaldor's old ideas remain still valid in the developing economies, manufacturing is the main engine of growth in the Asian, Latin-American and African countries. The authors focus on a panel of 29 countries from 1975 to 2005 and they perform a decomposition of labour productivity growth. The main question to answer is the importance of services as the main drivers of productivity growth. They find strong relationship of the GDP growth with the growth of some service subsectors (Thirlwall 2003, 2013) while it is hard to find a relation between agriculture sector and the economic growth. Further, business service sectors allow the productivity growth by the same Kaldorian mechanisms that drive the manufacturing to be the key determinant of growth. As a matter of fact, the results are related to their inter-industry linkages and the use of knowledge and technology and the heterogeneity of the service subsectors should be taken in account in checking how the productive structure of developing countries affects growth. Their conclusion has policy implications stating that a core manufacturing sector is critical for growth, as well as the promotion of capabilities in certain specific knowledge-based and innovative service sectors. This confirms (Felipe et al. 2007) that the composition of services is the key driver in determining the sustainability of their contribution to growth. In their study, Giovanni and Arend (2017) question if there is a Kaldor's fifth law and if the intermediate services sector contributes to the growth of the industrial sector. Their new law is based on a panel VAR for eight developed countries from 1980 to 2009. The laws proposed by Kaldor confirm that the industrial sector

contributes to economic growth and affirm that the growth of this sector depends on the existing demand for industrial products. Their findings confirm that the service sector Granger cause industrial productivity, industrial density and economic complexity. The causality test shows that there is a bidirectional causal relationship between the growth of the service sector and the industrial density and between the growth of the service sector and the Economic Complexity Index. Attiah (2019) examines the impact of manufacturing and service sectors in economic development of 50 countries. The results show that the share of manufacturing of GDP is positively related to economic growth. Service sectors have a role too, but its impact is less important than manufacturing. Several studies have investigated the impact of new communication technologies in terms of changes in sectoral composition in favour to service intermediaries such as Francois and Reinert (1996), Franke and Kalmbach (2005), Castellacci (2007) and Francois and Woerz (2008). Francois and Reinert (1996) examine the changes in the structure of production and trade, and the overall relationship of services to these patterns. The authors work with a cross-country sample of national income data for 15 countries, that are organized as a set of social accounting matrices. Their results state that income levels are positively related with employment shares for intermediate services and the share for indirect labour in total manufacturing employment. Further, the share of value added in services, involving the private sectors and trade, transport and communication services are positively related to the level of development. Income levels are particularly related to the demand of firms for intermediate of producer services, especially in manufacturing and the changes in the allocation of service activities between manufacturing and service firms explain a small share of the service sector growth but is the main fundamental changes in the structure of production. Lastly, the significance of services for export performance depends on the level of development. Moving from middle-income to upper-income countries, private services, trade, transport and communication services are the most important sectoral elements of exports. Franke and Kalmbach (2005) employ an input–output framework to identify the contribution of changes in technology and international trade to sectoral output growth in Germany from 1990 to 2000. The results show that both factors, the role of technology and the increase of import penetration in the intermediate demand, have a significant impact on the German economy. Technological changes have a positive impact on output, with the only exception of the sub-sector ‘manufacturing’ which is negative while import penetration has a negative relation with the output. There is a strong impact of the business-related services. In the second part of the paper, different scenarios were conducted. Firstly, coefficients in the change of technology sector can change, while the other experiment includes the changes in import and export shares. The findings suggest that business-related services are the winners from technological change in the manufacturing industries on the one hand, and from the export strength of German manufacturing on the other. Castellacci (2007) seeks to combine manufacturing and service industries in the same general framework to study the increasing importance of vertical linkages and inter-sectoral knowledge exchanges. The paper points out significant peculiarities in the process of knowledge creation in services. The author highlights the importance of customization and interactivity in the role of

user–producer interactions and policies that can strengthen this relation. Further, there seems to be a relevant impact of human resources and capabilities for the performance of service firms in the training activities and organizational changes, these factors are crucial for competitive advantage in services rather than the number of resources spent by them for Research and Development investments. Francois and Woerz (2008) examine the role of services as inputs in manufacturing particularly on indirect exports of services through merchandise exports and on the interaction between service sector openness and the overall pattern of manufacturing exports. The authors work builds a mix of panel data with a set of 78 countries combined with social accounts data. The findings state a positive and significant effect of business service openness on industries like machinery, motor vehicles, chemicals and electric equipment supporting the fact that business services can increase the competitiveness of the most skilled and the industries which are technology-intensive in the OECD countries. Industrial literature acknowledges the impact that intermediary service has on economic growth. Deindustrialization is considered as a particular form of structural change and it is often seen in the literature as a fall in the share of manufacturing in a country's total employment (for instance, Rowthorn and Ramaswamy 1997; Saeger 1997; Alderson 1999; Rowthorn and Coutts 2004; Dasgupta and Singh 2005), while Tregenna (2009) suggest a decline in the share of manufacturing in both employment and GDP. Rodrik (2013) describes the consequences of recent growth performance on the global income distribution. The findings show that growth in developing countries (especially in China) has been a blessing to the 'average citizen' of the world and has created a global middle class. It highlights the importance of different patterns of industrialization in shaping the divergence in the world between poor and rich countries. The author goes deeper and defines the quantitative limits to industrialization. Tregenna (2015) reviews the literature and the empirical evidence on deindustrialization and focus on a certain issue pertaining to deindustrialization such as deindustrialization and industrialization in the process of structural change, the relation between sectoral and activity specificity in the growth process; the particularity of premature deindustrialisation; various trends across countries in the shares of manufacturing in employment and GDP; heterogeneity of deindustrialization internationally; causes and sources of deindustrialisation; its impact on growth and the policy implications. The author focuses in the heterogeneity of deindustrialization; the deindustrialization that is driven by a faster rate of productivity growth in manufacturing than other sectors is a very different phenomenon to a collapse of manufacturing output and employment. The study goes deeper and considers the stage of development that deindustrialization sets in. Premature deindustrialization has a negative impact than the deindustrialization in advanced economies. Further studies highlight the importance of services for innovation which are defined below: Antonelli (1999) elaborates the notion of localized technological knowledge, based on a distinction between information, competence, knowledge and it investigates the emergence of the new knowledge industry. The analysis of the development of the organisation of knowledge production is done through four modes: scientific entrepreneurship, institutional variety, vertical integration and technological cooperation. Moreover, the trends towards the growth of knowledge-intensive business service

industries are defined. These trends are considered as the outcome of the institutional formation of a market for knowledge upon the process of increasing appropriability of localized knowledge based on the blending of generic scientific information and competence and growing scope of applicability via computer communication systems; deverticalization of research activities from the boundaries of corporations; the specification of a demand for technological competence; and the specializing of independent firms in the production of technological competence and knowledge. Czarnitzki and Spielkamp (2000) look at business services and their role in the innovation process at their interaction and long-term relationship between business services and other actors in the innovation system. Capacity, knowledge, creativity, market and management skills seem to be key to become a bridge for innovation. Further, by taking advantage of information and communication technologies, knowledge-intensive business service firms play the role of 'converters' of technological information within the economy. They are providers, purchasers or partners in the context of innovation. Hertog (2000) shows that in some innovation systems, some knowledge-intensive business services act as coproducers of innovation in interaction with their client firms. It was also shown that this basically two-way knowledge exchange involves a great number of tangible and intangible knowledge flows. The author hypothesized that KIBS might act as a second knowledge infrastructure next to the formal and institutionalized first knowledge infrastructure. Miozzo and Soete (2001) focus on the theoretical and policy treatments of the service sector and the increasing internationalization of services, and the role of transnational corporations in this process. Hence, the authors outline a taxonomy of services based on their technological relation with manufacturing and other service and they define a certain number of services which use intensively the technology and the impact of information is essential to growth. Based on a set of 28 countries, Peneder (2003) seeks for an investigation of the impact of variation in industrial structure on aggregate income and growth through a dynamic panel estimation applied to a standard growth model augmented by structural variables. The author defines various mechanisms for the linkage between meso-structure and macro-performance are identified such as the income of elasticity of demand, the structural bonus versus burden hypothesis, differential propensities towards entrepreneurial discovery and user-related hypothesis. The findings indicate that industrial structure is a significant determinant of macroeconomic development and growth in the 1990s. Miles (2005) examines knowledge-intensive business services as KIBS in the European economy and states the contribution to the performance of the sectors which are their clients. The author distinguishes KIBS from other services and other knowledge activities; the statistics related to KIBS in the EU are examined by highlighting similarities and differences in their development between members. The results state that the changes of KIBS are related to outsourcing, internalization of services and growth in demand for certain types of knowledge. As KIBS supply a variety of services, their overlap and convergence across KIBS is increased. Moreover, as some KIBS become more involved with their strategies for the clients, some services are more specialized while others use inputs for clients. Miles (2008) use input/output data and other data in order to define how service industries such as products, markets, work organization and technological characteristics differ

from primary and secondary industries. The data from the innovation data highlight that certain service organizations behave more like high-technology manufacturing, especially the knowledge-intensive business services (T-KIBS). There is a distinction between KIBS based more on professional knowledge and by large network-based service firms whilst small firms conform to a supplier-driven pattern. There is only a small segment of service innovation that conforms the manufacturing-based model in which innovation is largely organized and led by formal research, development departments and production engineering.

3. Empirical analysis

3.1. Empirical strategy

We analyse the impact of service subsectors within the framework of a production function-type model, which foundations have been developed and tested the significance of service subsectors on economic growth variables over the years. The work of Baumol (1967) and Baumol, Blackman, and Wolff (1985) found the basis of service importance on economic growth. Whilst (Kaldo 1966, 1967; Oulton 2001; Dasgupta and Singh 2005; di Meglio et al. 2015; Giovanni and Arend 2017) focus on manufacturing as a determinant of growth, communication technologies as determinants of growth were explored by Francois and Reinert (1996), Franke and Kalmbach (2005), Castellacci (2007) and Francois andWoerz (2008); the industrial literature acknowledges (Rowthorn and Ramaswamy 1997; Saeger 1997; Alderson 1999; Rowthorn and Coutts 2004; Dasgupta and Singh 2005; Rodrik 2013; Tregenna 2009, 2015) consider the impact of intermediary services, while Antonelli (1999), Czarnitzki and Spielkamp (2000), Hertog (2000), Miozzo and Soete (2001), Peneder (2003) and Miles (2005, 2008) highlight the importance of services for innovation. At the production function modelling framework, we can evaluate and quantify the impact of service subsectors on the economic growth of Albania. We follow the approach of Jalil, Manan, and Saleemi (2016), and we estimate a multivariate ARDL approach to investigate the significance of services in the Albanian economy. One may ask, why this selection of service subsectors. Certain reasons play: we have chosen transport, insurance and financial service, computer and other communicationrelated services, agriculture, industry, manufacturing and health services. Service sector is the largest in Albania in terms of contribution to GDP and in terms of employment of the active labour force. Further, our choice of services subsectors is also due to data availability. As a matter of fact, Albania prior to the 2000s has undergone various structural changes such as the transition from communism in the early 1990s, the civil war of 1997–1998 followed by Ponzi schemes and the Kosovo war crippled the Albanian economy. Therefore, the data before 2000 are limited. Moreover, we have intentionally excluded this time from our study, as its inclusion can highly influence our results. We begin with a descriptive analysis at levels, in order to investigate how our variables at their natural form will behave. Testing for unit root in the data is the natural start for our empirical analysis. Therefore, we will follow Dickey and Fuller (1979, 1981), Phillips and Perron (1988) and Perron (1989) and we perform two tests: augmented DickeyFuller (ADF) and Phillips–Perron (PP)

test. Before we proceed with the estimation, we must define the order of lags of the variables. Defining the appropriate lag length for our dependent variables requires the estimation of an unrestricted VAR as any autoregressive model is sensitive to the number of lags. The lags were chosen based on the conventional lag selection criteria available in the literature.9 Further, we proceed by setting the theoretical framework of our study. Following Jalil, Manan, and Saleemi (2016), we consider the production function-type relationship between GDP, transport; insurance and financial services; computer, communication and other services; agriculture, industry manufacturing and health services.

GDPt = f(TRANSPt,INSt,COMPt,AGRt,INDt,MANUt,HLTHt) (1)

where TRANSPt represents the output for transport services, INSt is the insurance and financial service output, COMPt indicates the output of computer and communicationrelated services, AGRtrepresents the output of agricultural, forestry and fishing, INDt is the industrial output (including construction), MANUt is the output of manufacturing and HLTHt is the output of the health sector.

The total differentiation for the linearization is written as follows:

dGDPt = FAdTRANSPt + FBdINSt + FCdCOMPt + FDdAGRt + FEdINDt + FFdMANUt + FGdHLTHt (2)

where FA, FB, FC,FD, FE, FF, FG are the partial derivatives of transport, insurance and financial service, computer and other communication-related services, agriculture, industry, manufacturing service and health service sectors, respectively.

We divide equation (2) by GDP which indicates the economic growth:

dGDPt GDP = FA GDP dTRANSPt + FB GDP dINSt + FC GDP dCOMPt + FD GDP dAGRt + FE GDP dINDt + FF GDP dMANUt + FG GDP dHLTHt (3)