UNITED NATIONS UNIVERSITY
UNU-WIDER

WIDER Working Paper 2023/87

Drivers of services sector growth acceleration in developing countries

Gideon Ndubuisi,[1] Solomon Owusu,[2] Rex Asiama,[3] and Elvis Korku Avenyo[3]

July 2023

United Nations University World Institute for Development Economics Research
wider.unu.edu

Abstract: The services sector is dominant and continues to experience unprecedented growth in many developing economies. However, in-depth empirical analysis of the drivers of services sector growth acceleration is limited. This paper examines and identifies the underlying factors that explain services sector growth accelerations and episodes in developing countries, and how these factors may differ across services types (market services and non-market services) and regions. Using the Economic Transformation Database for 50 developing countries for the period 1990–2018 and applying probit estimation models, the authors identify several macro and institutional factors that are important drivers of market services sector growth acceleration. The results also suggest that there is a heterogeneous set of drivers that are key for total market services sector growth acceleration and non-market services sector growth acceleration. The paper concludes by discussing the policy implications of these emerging findings.

Key words: services, services sector, economic growth

JEL classification: L8, O14, O49

Acknowledgements: We thank UNU-WIDER and the ETD Project Team for support for this research.

[1] Delft University of Technology, Netherlands; [2] Oxford Martin School, University of Oxford, United Kingdom; [3] University of Johannesburg, South Africa; corresponding author, Elvis Korku Avenyo; elvisa@uj.ac.za

This study has been prepared within the UNU-WIDER project ETD – Economic Transformation Database.

ISSN 1798-7237 ISBN 978-92-9267-395-6

https://doi.org/10.35188/UNU-WIDER/2023/395-6

Typescript prepared by Joseph Laredo.

United Nations University World Institute for Development Economics Research provides economic analysis and policy advice with the aim of promoting sustainable and equitable development. The Institute began operations in 1985 in Helsinki, Finland, as the first research and training centre of the United Nations University. Today it is a unique blend of think tank, research institute, and UN agency—providing a range of services from policy advice to governments as well as freely available original research.

The Institute is funded through income from an endowment fund with additional contributions to its work programme from Finland and Sweden, as well as earmarked contributions for specific projects from a variety of donors.

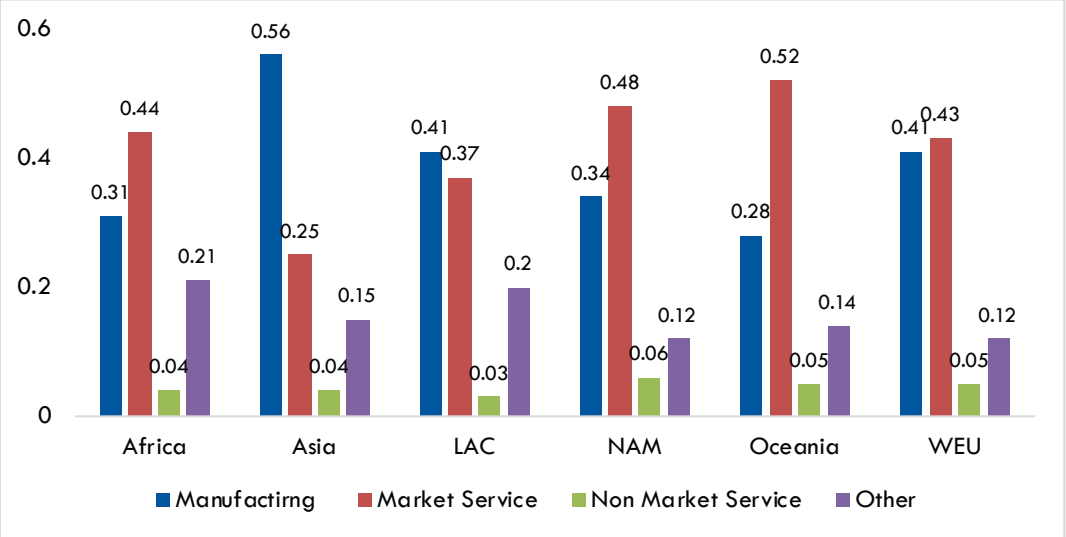
Katajanokanlaituri 6 B, 00160 Helsinki, Finland

1 Introduction

The global economy is experiencing an unprecedented expansion of the services sector, which in many developing economies is growing even faster than manufacturing. In 2019, services accounted for 55 per cent of GDP and 45 per cent of employment in developing economies (Nayyar et al. 2021).[1] The global economy has also seen growth in the role of services.[2] In Africa, for instance, since 1990, the share of employment in market services (trade, telecommunications, real estate, transport, financial intermediation, insurance, and business processing services) has increased from 11.7 per cent to 23.4 per cent compared with a rise from 6.4 per cent to 7.6 per cent in manufacturing. Over the same period, the sector's contribution to the region's value added increased from 34.8 per cent to 44.4 per cent, while that of manufacturing declined from 11.5 per cent to 10.1 per cent (Owusu et al. 2021).

Furthermore, the evolution of digital transformation along with the growing geographical fragmentation of production and increasing complexity in the organization of manufacturing production and distribution have increased the services content of many manufactured goods—a scenario often referred to as the 'servicification of manufacturing'. Services are playing a dual role: as an upstream enabler providing vital inputs for manufacturing (production-related services) and as a downstream complement—services developed to support products (product-related services) (Bryson and Daniels 2010). About one-third of the value of manufactured exports is now attributable to services (Nayyar et al. 2021). In most regions of the world, including Africa, services are the most important component of intermediate production, accounting for a significant amount of the value of exports by manufacturing firms (Figure 1).

Figure 1: Share of intermediates in gross output and its composition



Note: LAC = Latin America and the Caribbean, NAM = North America, WEU = Western Europe.

Source: authors' elaboration based on Table 13.9 in Owusu et al. (2021).

[1] In developed economies, services account for an even larger share of economic growth—fully 75 per cent on average (Nayyar et al. 2021).

[2] In 2018, more than 20 per cent of the tradable industry's share of employment in the US was attributed to services compared with 14 per cent in manufacturing (Krugman et al. 2018).

Conventionally, the services sector, unlike the manufacturing sector, is stagnant and productivity-resistant (Baumol 1967). This implies that the increasing dominance of the services sector described above may not spur growth and development, but more recent studies have debunked this idea by arguing that the services sector is heterogeneous and that services-driven economic transformations in the modern, dynamic, and tradable services sector offer new opportunities for scale, innovation, and spillover effects similar in scope to those that made manufacturing more productive in the past (Nayyar et al. 2021; Owusu et al. 2021). Indeed, in a recent study, Owusu et al. (2021) found that the productivity growth in service activities is equal to or higher than that in manufacturing and other sectors. There is also growing evidence that productivity improvement in services is more important than productivity growth in manufacturing (e.g. Timmer and de Vries 2009). Underpinning this argument is the complementary and interdependent role that the services sector plays in other sectors, which has intensified in recent times due to digital transformation and the emergence of global value chains (GVC).

The significance of the services sector along with the enormous opportunities it presents suggests that countries at all levels of development can exploit it to generate quality jobs and productivity growth. This is even more compelling for most developing countries, which prospects of creating quality jobs and attaining inclusive growth through industrialization seem to be eluding. To enable such countries to exploit the opportunities of services-driven economic transformations there is a need for an in-depth understanding of the possible drivers of growth acceleration across these services. An empirical analysis focusing on the drivers of growth of the heterogeneous services sector is warranted since the sector comprises a wide and diverse range of subsectors with huge productivity gaps across them, as well as differences in the potential to generate quality and transformative jobs opportunities and improve income. Bhagwati acknowledged this as far back as 1984, noting that that 'services are a nebulous concept, frequently embracing activities which have differential and opposed characteristics, with respect for instance to their technical progressivity and labor intensity' (Bhagwati 1984: 134).

In this paper, we contribute to the literature by identifying the underlying factors that explain services sector growth accelerations and episodes, and how these factors may differ across services types (market services and non-market services) and regions. Our analysis contributes to the limited evidence in the literature by identifying those services sectors that could serve as growth and development poles in developing countries and the drivers of [growth in] these services. To date, existing studies have largely focused on documenting the rise of the services sector, without making any systematic attempt to model its drivers, especially in the case of developing countries. This is not surprising because development economists in the past have viewed the services sector as a 'post-industrial sector' and since industrialization has not yet taken place or is still at the infant stage (if not prematurely de-industrializing) in many developing countries, only occasional reference has been made to developing countries when discussing the drivers of the sector's growth and its effects on economic development (Marks 2009: 17).

For our analysis, we use the latest version of the GGDC/UNU-WIDER Economic Transformation Database (ETD) developed by de Vries et al. (2021) (Kruse et al. 2022), merged with other datasets. For our empirical methodology, we apply the growth accelerations approach developed by Hausmann et al. (2005) and applied by Haraguchi et al. (2019) to study growth episodes of the manufacturing sector. Unlike Hausmann et al. (2005), however, our focus is on the services sector (total, market, and non-market) value added (SVA) and not on GDP growth episodes.

Our analysis is developed in two stages: first, we identify growth episodes of SVA in the sampled countries by the year of initiation of such episodes; second, we estimate the probit model to explain what factors predict these SVA growth accelerations using a set of economic, institutional, and

policy-related controls. Our main results suggest that urban growth, institutional quality, household expenditure, mobile broadband subscription, trade openness, and the initial structure of the economy (initial manufacturing) are important drivers of market services sector growth acceleration. These factors, except for trade openness and the initial structure of the economy (initial manufacturing), are also important drivers of total services sector growth acceleration. Population size, real GDP per capita, and household expenditure are important drivers of non-market services sector growth acceleration, while inflation acts as a drag on services sector growth acceleration.

The rest of the paper is organized as follows. Section 2 presents the theoretical and empirical justifications of the key drivers of services sector growth. Section 3 presents and discusses the data and empirical strategy employed for our analysis, while Section 4 discusses our econometric results and findings. Section 5 concludes by highlighting the policy implications of our findings and possible areas for further research.

2 Theoretical background

This section is structured in three subsections aimed at providing (i) conceptual clarity about the concepts and classifications used in the paper, and (ii) a theoretical underpinning of the relationships examined in the paper.

2.1 The services sector: conceptions, misconceptions, and composition

Conceptions and misconceptions

Although it is relatively easy to conceptualize and identify what manufacturing is, one soon encounters conceptual ambiguity if any attempt is made to provide a definite and all-encompassing definition of services. This is because, while some services subsectors like restaurants, counselling, and hotels, are known, services still appear to be everything else. To circumvent this difficulty in conceptualizing services, past studies opted to characterize the services sector. Four notable characteristics are often highlighted in this regard, namely intangibility, heterogeneity, inseparability, and perishability (Parasuraman et al. 1985). Intangibility implies that services cannot be counted, tested, or verified before purchase. Heterogeneity implies that the day-to-day production and delivery of the same services varies, as the quality of services depends on who provides them, when, where, and how. Inseparability refers to the production and consumption of services occurring simultaneously. Perishability means that services cannot be produced in advance and then stored to meet demand. In other words, services cannot be kept in stock.

While the above characterization enhanced understanding of services, technological progress has blurred some of the characteristics. For instance, digitalization has made it possible to test and verify services in the entertainment industry before purchase. It has also increased storability and transferability in the software programming and digital electronics services sector. The foregoing suggests that the services sector is a complex, dynamic, and unique sector. Whereas this calls for a deeper understanding about the sector, some notable scholars in the past viewed the sector as a residual sector (McLachlan et al. 2002). Baumol's (1967) claim that the services sector was stagnant and productivity-resistant implied that the sector's growth and expansion would drag aggregate growth. Others considered services such as those of lawyers, physicians, educators, and health workers, which did not produce any physical products, as tradable (Joshi 2008). These prejudices and misdescriptions fuelled misconceptions about the sector and its true value. Hence, for a long

time the sector did not receive the research and policy attention that was given to sectors like agriculture and manufacturing.

Advances in the statistical measurement of economic activities and the corresponding availability of data on these activities, especially at the granular level, have helped to debunk most of these misconceptions and to overcome the statistical ambiguity in the measurement of services. Services are heterogeneous in terms of skill intensity, scalability, tradability, and scope for productivity growth. The sector therefore comprises a diverse range of subsectors that are in no way a mere residual of other sectors. If anything, the effective and efficient functioning of other sectors is dependent on that of services. At the same time, the sector can successfully create its own demand without needing to service the good-producing sectors. This view is consistent with Bryson and Daniels' (2010) conjecture that services play a dual role: as an upstream enabler providing vital inputs for manufacturing (production-related services) and as a downstream complement—services developed to support products such as software (product-related services) provide and training and maintenance support for new products (after-sales services). Available evidence also abounds to debunk the claim that services are a stagnant and productivity-resistant sector, as some services offer similar or greater scope for the type of productivity dynamics that characterize manufacturing (Nayyar et al. 2021; Owusu et al. 2021). While this is largely documented for the tradable sector, technological progress has fundamentally altered the nature of non-tradable services too, which has important implications for the productive efficiency of the services sector in general.

Composition of the services sector

The diverse and heterogeneous nature of the services sector has informed interest and analysis at the disaggregated subsector level, helping us to understand the patterns and dynamics of each subsector. The industry-based classification provided by the International Standard Industrial Classification (ISIC) is a starting point in this regard. However, several studies reclassify the services sector—on the basis of, say, the purpose, skill-intensity, technology-intensity, or value creation of services—to provide insights into key trends and developments both across and within the services sector.

Katouzian (1970), for instance, grouped services into three groups to trace their evolution and stages of development. The three groups were new services (e.g., holiday resorts, hotels, restaurants, cinemas, concerts, and night clubs), complementary services (e.g., banking, finance, transportation, and wholesale and retail trade), and old services (e.g. domestic services such as cleaning and care). As noted by the author, the demand for 'new services' is sensitive to the growth of per capita incomes and is an increasing function of the amount of per capita leisure time. Demand for complementary services rises with the rise of manufacturing production and these are therefore complementary to the process of industrialization, expanding in response to rises in demand in new productive situations.[3] 'Old services', on the other hand, includes all other services, and these are susceptible to substitution due either to employment shifts to manufacturing or to the emergence of alternatives that technology and economic progress provide.[4]

Singelmann (1978) identified four services groups based on their economic and social activities. These were distributive services (e.g., wholesale and retail trade, transport and storage, and

[3] Consistent with this view, a recent study in China by Liao (2020) found that distribution services grow first with the manufacturing sector, followed by personal services, as per capita income rises.

[4] A notable example here is the substitution of personal cleaning services by automated cleaning appliances.

communications), producer services (e.g., real estate, finance, and insurance), social services (e.g., health, education, and government administration), and personal services (e.g., accommodation, restaurants, and hotels).

Jensen et al. (2005) classified services into two groups—tradable and non-tradable—based on the geographic concentration of their activities. Tradable services are considered those whose trade tends to be geographically concentrated (to capitalize on increasing returns to scale and access to inputs such as natural resources), while non-tradable services are those that tend to be more widely distributed. On this basis, they identified subsectors like professional and technical services, real estate, and rent and leasing as tradable, while services such as education, social services, public administration, and accommodation emerged as non-tradable. However, services like wholesale trade and transportation and warehousing had the innate characteristics of both tradability and non-tradability.

Eichengreen and Gupta (2013) distinguished three groups of services according to whether their shares of GDP had fallen, risen slowly, or risen rapidly over time. The first group comprised traditional services (e.g., wholesale and retail trade, transport and storage, public administration, and defence), whose share had, they argued, fallen noticeably. The second group was a hybrid of traditional and modern services (e.g., education; health and social work; hotels and restaurants; and other community, social, and personal services), whose shares showed a tendency to rise slowly with time. The third group was modern services (e.g., financial intermediation, computer services, business services, communication, and legal and technical services), whose shares had risen rapidly in recent times.

Lavopa and Szirmai (2018) grouped all sectors in the economy into modern and non-modern sectors. They argued that the modern sector is composed of activities that have higher levels of productivity than the rest of the economy and show a greater potential for technological upgrading and productivity gains. Their classification identified transport, telecommunications, and financial and professional services as modern services, while wholesale and retail trade, restaurants and hotels, and community, real estate, social, and personal services were non-modern.

More recently, Owusu et al. (2021) classified services into market services (i.e., maintenance and repair, wholesale trade, retail trade, transport, post and telecommunications, financial intermediation, and business activities) and non-market services (i.e., hotels and restaurants, public administration, education, health and other services, and private households). Their classification thus unwittingly combined elements of those of both Jensen et al. (2005) and Lavopa and Szirmai (2018). Importantly, Owusu et al. (2021) concluded that market services might act as new or alternative engines of growth alongside manufacturing, as they found empirical evidence that productivity growth in this sector is equal to or higher than that in manufacturing and other sectors. A similar finding is documented in Timmer and de Vries (2009).

Our empirical analysis builds on the services sector grouping provided by Owusu et al. (2021). We choose this classification because we are more interested in identifying the drivers of those services sectors that are growth and development poles.

2.2 Drivers of services sector acceleration

In this section, we provide a conceptual argument for the potential drivers of services sector acceleration, drawing insights from the existing literature. In this way, we lay the foundation for the choice of variables we consider in the empirical analysis. We frame our discussion around nine broad determinants: (i) sectoral structure and changes in (aggregate) real income; (ii) technological change; (iii) globalization and foreign demand; (iv) geographic centrality; (v) female labour force

participation and household monetization; (vi) urbanization; (vii) population; (viii) institutions and regulations; (ix) macroeconomic factors and conditions.

Sectoral structure and changes in (aggregate) real income

The seminal explanations of services sector growth were provided by Fisher (1935) and Clark (1940). Both studies envisioned it as a natural outcome of economic progress and structural transformation, wherein labour and resources witness outmigration from the agricultural sector to the manufacturing sector, and then from the manufacturing sector to the services sector. In principle, the latter stage is characterized by mass consumption and higher per capita income. Clark (1940) asserts more explicitly that growth in the services sector or the shift towards services consumption is driven by a change in income—a process later known as the 'hierarchy of needs' or 'demand-side' hypothesis. The underlying argument is that, as economies become richer, tastes and preferences switch away from basic needs such as food and shelter to nonmaterial goods such as services. This happens because services have higher elasticity of income, implying that at any relative price, the quantity of services absorbed rises more than the quantity absorbed in commodities as real per capita income increases (Falvey and Gemmell 1996). Put differently, the final demand for services grows faster than the demand for goods and commodities as income rises. This argument is consistent with Engel's Law, indicating that the income elasticity of the demand for goods is less than one, while that of services is greater than one. In this case, societal preferences for services would induce a reallocation of resources into the services sector as well as increase the services sector share in employment to meet the rising demand for services.

In our empirical analysis, we examine the services sector acceleration effect of structural transformation and income elasticity. We use initial manufacturing and per capita income to operationalize the respective effect of sectoral changes (structural transformation) and income elasticity.

Technological change

The importance of technological change as a source of services sector growth is well established in the literature. Święcki (2017) examined how sector-biased technological progress, non-homothetic tastes, international trade, and changing wedges between factor costs across sectors affect structural change. The author found that sector-biased technological change is overall the most important mechanism, and it is essential for understanding the decline of the manufacturing labour share and the corresponding growth in services. More recently, Ndubuisi et al. (2021) found a positive association between digitalization and higher services sector employment shares. The growth-enhancing effects of technological change result from its impact on the quality and efficiency of service delivery, and the servicification of manufacturing, among other factors. But services sector gains from technological change lie not only in its driving growth but also in its expanding the variety of services products, resulting from either the creation of new services products or the tradability of existing services products. Bhagwati (1984) had already hinted at this, noting that technological change and the splintering and disembodiment of services had made many services tradable.

Technological progress has also fundamentally affected service production activities. While modern services are mostly digitalized, technological progress has influenced the working format of most traditional services. Concomitantly, this has increased the need for factor capital in the service production process, thus debunking the claim that services are not capital-intensive. Currently, technological change in the form of digitalization has removed a lot of barriers in the cross-border delivery of several services, as well as creating additional service options. For instance, digitalization and financial innovations have increased the tradability of the arts, entertainment,

and tourism sector. Today we speak of non-fungible tokens (NFT) that have disrupted the arts industry by increasing the securitization of property rights to the arts, the transferability of the arts, and the tradability of the arts (Urom et al. 2022; Wilson et al. 2022). Digital streaming platforms for movies, music, and other entertainment have also increased the tradability of the entertainment industry.

Digital platforms have transformed the traditional services sector more generally. Notable examples are Airbnb in the hospitality industry, Uber in the transport sector, Uber Eats in the food delivery industry, Netflix in the entertainment industry, Facebook in the communications industry, and Amazon in the retail trade sector (Fu et al. 2021). Digital financial innovations such as credit cards, ATMs, and mobile money have also fundamentally affected the production and delivery of financial services, while digitalization has enabled data automation and processing services to substitute traditional booking systems and create new service options in data analytics.

Globalization and foreign demand

The growing geographical fragmentation of production has contributed significantly to services sector expansion. Bhagwati (1984) was among the first to formally acknowledge this through a process he called 'splintering' of production. The describes a change in production patterns wherein aspects of business operations that were done internally are split into tradable tasks and outsourced. This, in combination with urbanization, results in an increase in net input demand for services from the industrial sector, and the services sector grows proportionately faster than other sectors. More generally, in the GVC framework, this could be associated with the fragmentation of production into separate 'tasks' that has brought to the surface many service activities that were previously 'hidden', digital transformation enabling these services either to be unbundled as separate business entities or outsourced to contract manufacturers (UNCTAD 2017). Moreover, fragmentation of production often results in such long and complex supply or value chains that its resilience requires efficient 'network' services, such as: a transport, finance, and business services system to facilitate transfers between buyers and sellers; a well functioning telecommunications infrastructure to monitor the delivery and receipt of goods; legal consulting services to take care of licences, patents, and franchises; human capital and government services to guarantee property rights and contract enforcement and to boost investor confidence. Besides this, globalization in the form of trade openness and liberalization of the services sector can impact services sector growth through a combination of competition and learning effect change.

Geographic centrality

Geographic centrality in terms of proximity to global financial hubs is an important driver of services sector growth, especially for market services such as financial intermediation and insurance. A study by Eichengreen and Gupta (2013) showed that a country's proximity to major financial centres, among other variables, is an important driver of modern services acceleration. Degl'Innocenti et al. (2012) examined the relationship between bank performance and geographical location in two major global financial centres: New York and London. They found that banks that are located at a greater distance from these major global financial centres present a lower technical efficiency than banks that are closer to them, because a shorter distance to major financial centres creates an impetus for a bigger in-person clientele base by increasing mobility to hubs and opportunities for knowledge spillover. This argument is consistent with the economic geography literature suggesting that proximity to agglomeration and co-location reduces transaction costs and engenders knowledge spillover and diffusion of innovation (Storper and Venables 2004). The transaction cost argument is even more relevant to financial intermediation and insurance services, as geographic and physical proximity to clients is conventionally required in these markets to collect requisite information about clients and local economic conditions.

Nevertheless, it is important to recognize that advances in transportation and ICT have facilitated the transmission of information across large distances.

Female labour force participation and household monetization

Evidence in support of the nexus between female labour force participation and services sector growth is both anecdotal and empirical. For instance, studies by Hammes et al. (1989) and the OECD (2000) showed empirically a positive association between services sector growth and female labour force participation, while Ghani (2010) found that countries with higher services sector employment shares have higher female labour force participation rates. Conceptually, Fuchs (1980) provided one of the foremost explanations for these findings, noting that the association between services sector growth and female labour force participation is driven by income growth and a substitution between home production and market work. The theoretical underpinning to this view lies in seeing time as a scarce resource, such that every minute more that a woman spends on unpaid household production and services represents one minute less that she could be spending on market-related activities and earning additional income. In this case, as women are absorbed into the labour force, most of the unpaid household production and services they were previously providing are replaced by their market alternative. All other things being equal, this would increase the tradability of the various service activities that used to be produced and consumed within the household.

Similarly, females' participation in paid economic activities results in higher household income—a process that has come to be known as household monetization. This offers households an opportunity to reallocate expenditures for services consumption—not only personal services (e.g., cleaning, caregiving, food vending, and beauty treatments) but also producer services such as finance, insurance, and real estate.[5] Arguing along this line, Fuchs (1980) notes that families with working wives tend to spend a higher proportion of their income on services. Kongsamut et al. (2001) also postulate that as a household's income increases, it not only spends proportionately less on food but also desires to spend more on services. This has the potential to drive services sector growth, in terms of employment and output, especially that of market services.

Urbanization

Urbanization not only entails an increase in the urban population but also a transition from rural to urban systems in terms of changes in the industrial structure, employment, living conditions, and public services (Mendez et al. 2022). Urbanization therefore drives services sector growth both directly and indirectly. Directly, urban population growth positively drives non-market services such as education and health. More generally, urbanization is often associated with changes in household consumption patterns, which entail a shift to agro-processed foods (supermarkets) and the demand for an array of traditional and modern services, among other things. These changes are driven by two factors: (i) increasing shares of the urban population graduating to middle-class status, and (ii) substitution of home production by its market alternatives due to either urban (as opposed to rural) living conditions or the reallocation of time to paid work. In either case, the envisioned changes in household consumption patterns are accompanied by changes in economic structure, with the share of employment in agriculture declining and that in industry or urban-based services rising (Ndubuisi and Owusu 2022). Similarly, some services, such as leisure services,

[5] Note that the income increase here is caused not just by income growth but also, and mainly, by structural changes such as the increase in female participation in the labour force.

are typical of urban cultures and therefore their expansion is closely associated with the process of urbanization (Messina 2005).

Indirectly, urbanization can intensify services sector growth through its effect on structural change and agglomeration. The nexus between urbanization and structural change has been the focus of a few studies (Gollin et al. 2016; Michaels et al. 2012). Gollin et al. (2016) distinguish between consumption and production cities, arguing that the former are characterized by a larger fraction of workers and related spending in non-tradable services, while production cities are characterized by more workers in the manufacturing and tradable services sectors. The nexus between manufacturing and services in production cities is based on the provision of complementary and modern services that are essential for the growth and competitive advantage of manufacturing. Urbanization engenders this through co-location, which ensures client–service provider proximity while acting as a natural incentive for new market entry as the dense and diverse business settings associated with urbanization and agglomeration are market-pulling factors for the services sector.

Population

Closely related to the discussion in the previous section are the services sector growth effects of population growth and density. Population growth and density can have a significant impact on the services sector, as they affect the demand for and availability of various types of services. Thus, population growth and density can affect services sector growth both directly and indirectly. Directly, they are associated with an increase in the demand for services such as healthcare, transportation, education, and retail. When population growth is associated with productivity or income growth, it can also drive an increase in market services. The foregoing, put together, would lead to the expansion of existing services, the emergence of new businesses, and a corresponding increase in the demand for workers in these sectors.

Indirectly, population growth and density can put pressure on the infrastructure required to provide services. The demographic pattern of a country such as the age structure of its population or workforce also has important implications for services sector development. Other things being equal, a younger population is the driver of modern services sector expansion in terms of use and innovation. The more educated and incorporated into the workforce this younger population is, the higher the services sector share in output and employment will be. Conversely, as the population ages and people withdraw from the labour force, they tend to reduce consumption of work-related goods and services, while their demand for and consumption of healthcare services, including medical care, long-term care, and home health services, rise (Hurd and Rohwedder 2008). Our empirical analysis considers the effect of population growth and density on services sector growth acceleration.

Institutions and regulations

Institutions and regulations are the set of rules, policies, and guidelines that govern and shape human interactions.[6] They can affect services sector growth by impacting economic actors' decision to uptake investment in services business as well as affecting the activities and operations of the services sector. For instance, regulations that promote competition and prevent monopolies can spur innovation, increase efficiency, and improve the quality of services, which will ultimately affect services sector employment and output shares. This view is in line with the evidence in Messina (2005), which suggested that laws and institutions such as product market regulations,

[6] This includes rule of law, property rights (especially IP laws and enforcement), contracting institutions and labour market regulations, market-entry regulations, and regulations on conduct and operational procedures.

unions, and more coordinated wage-setting systems were hampering the expansion of service employment (also see D'agostino et al. 2006). Van der Marel (2012) also showed that cross-country differences in regulations on operational procedures explain diverging services sector productivity growth across countries, while evidence from Gordon and Gupta (2004) underscored services sector deregulation and liberalization as important predictors of services sector growth. Such experience is earmarked by two factors. First, deregulation and liberalization of the services sector, as in any other sector, provide an opportunity for an economic agent to reallocate resources to those sectors. Second, they create an impetus for both domestic and foreign competition, which is an important determinant of technological change.

Further, an institutional environment characterized by reliable contract enforcement, effective property rights protection, and efficient and effective dispute resolution mechanisms provides diverse benefits that are fundamental to the growth and expansion of the sector. For instance, a stable and predictable business environment encourages investments and entrepreneurship and ultimately contributes to the growth of market services. This conjecture is in line with Ndubuisi et al. (2021), who found a positive association between better institutional quality and services sector employment shares. A good institutional environment also engenders better access to external credit, which is of the utmost importance to capital investment. Besides these generic benefits, its existence is a prelude or even pivotal to the functioning of most market services due to their innate contract-intensive and institutional-dependent nature. For instance, financial intermediation depends on the legal enforceability of contracts, since credit is an exchange of money today for a promise to return more money in the future. Real estate also depends on the legal enforceability of land property rights, while the entertainment sector depends on the legal enforceability of copyrights to function.

Macroeconomic factors and conditions

The impact of the macroeconomic environment on economic activities is well established in the literature. The black market premium as well as inflation rate, exchange rate, and interest rate variability are widely used proxies for macroeconomic conditions, with a country's poor performance in any of these indexes indicating poor macroeconomic conditions. Poor macroeconomic conditions increase uncertainty and the cost of doing business. This reduces the amount that can be allocated to productive economic activities and/or disincentivize economic actors from engaging in economic activities. Horwitz (2003) adds that actors also divert resources away from direct wants in an attempt to either prevent or cope with poor macroeconomic conditions such as the increased degree of uncertainty imposed by inflation. Hence, a stable and well functioning macroeconomic environment is key for active and efficient business functioning, including that of market services.

Our empirical analysis considers the role of macroeconomic conditions, paying particular attention to the inflation rate. Existing studies on the cost of inflation suggest that businesses and households perform poorly when inflation is high and unpredictable (Horwitz 2003; Temple 2000). We therefore expect a negative effect of inflation on both market and non-market services.

3 Methodology

In this section, we describe the data sets and econometric strategy used in identifying the determinants of services sector growth accelerations and episodes in developing countries.

3.1 Data

The paper uses five main secondary data sources. First, we use the latest version of the GGDC/UNU-WIDER Economic Transformation Database (ETD) on 50 developing countries covering the period 1990–2018 (Kruse et al. 2022). The ETD served as our parent database and determined the number of countries included in our sample as well as the period covered. The ETD comprises three regions, Africa (21 countries), Asia (21 countries), and Latin America (9 countries), which we explore in our analysis.[7] Table A1 in the Appendix lists the countries in the sample and their associated regions.

We rely on the ETD database because, to the best of our knowledge, it is the only database that provides comparable value-added and employment statistics for both the total services sector and the subsectors for many developing countries. As one of the major interests of our study is to explore heterogeneities that may emerge from regional differences and services sector types (i.e. market and non-market services), the database provides an ideal setting to address our research objectives.

There are seven broad services subsectors in the ETD (trade services, transport services, business services, financial services, real estate, government services, and other services), which we use to identify the four services sector groups we explore in the analysis. The four groups are market services, non-market services, other services, and total services. We define market services as the sum of five of the seven subsectors: trade services, transport services, business services, financial services, and real estate. Non-market services comprise only government services. The ETD describes 'other services' as 'arts, entertainment, recreation, other services activities and household activities'. Because these can either be market or non-market activities, we include 'other services' in neither market nor non-market services but as a separate category.[8] A detailed explanation of the components of these sectors is contained in Table A2 in the Appendix.

Data for other macroeconomic, social, geographic, and political control variables used in the empirical analysis are sourced from the databases of the World Bank (World Governance and the World Development Indicators), Penn World Tables, CEPII, and UNCTAD (see Table A3 in the Appendix).

3.2 Econometric strategy

To model the determinants of services sector growth accelerations and episodes in developing countries, we employ the growth acceleration approach developed by Hausmann et al. (2005). We primarily use the method to identify growth episodes of services sector value added for market, non-market, and other services types across different regions in the data.

Theoretically, Hausmann et al. (2005) identified three conditions that define growth episodes:

$$g_{t,t+7} \geq 3.5\% \text{ [growth is rapid]} \tag{1a}$$

[7] Due to a lack of comparable data on the control and explanatory variables we are interested in, Chinese Taipei drops out of our analysis, leaving us with observations on 50 countries to work with.

[8] In fact, part of the listed components of these subsectors, such as those of arts and entertainment, are market-related, while others, like those of recreation and household services, are often considered non-market-related. This further disincentivizes us from incorporating the 'other' category into either the market or non-market services group.

$$\Delta\ (g_{t,t+7} - g_{t,t-7}) \geq 2\%\ \text{[growth accelerates]} \quad (2a)$$

$$y_{t+7} \geq max\ (y_i), i \leq t\ \text{[post-acceleration output exceeds pre-episode peak]} \quad (3a)$$

where y_{t+7} is real per capita GDP, while $g_{t,t+7}$ is the average annual growth rate of real per capita GDP between years t and $t+7$. $\Delta g_{t,t-7}$ is the average annual growth rate of real per capita GDP between years $t-7$ and t. 3.5 per cent and 2 per cent represent cut-offs, which, albeit arbitrarily chosen, are justified by 'stylized facts'. Arguing along this line, Haraguchi et al. (2019) note that the 3.5 per cent and 2 per cent thresholds in Equations (1a) and (2a) correspond roughly to the long-term average growth rate of OECD countries. Brück and Xu (2012) also argue that the 2 per cent in Equation (2a) is consistent with steady-state GDP per capita growth.

Our identification of episodes of services sector growth is essentially identical to that of Hausmann et al. (2005), but with some modifications inspired by Haraguchi et al. (2019). Rather than use the 3.5 per cent threshold in Equation (1a), Haraguchi et al. (2019) used average manufacturing value-added growth of income groups in their sample to identify acceleration episodes in low-, lower-middle-, and upper-middle-income countries. Following both Hausmann et al. (2005) and Haraguchi et al. (2019), we calculate acceleration thresholds for different services sectors (total services, market, non-market, and other services). To do this, we redefine Equations (1a–3a) as follows:

$$sg^T{}_{t,t+7} \geq \overline{sg^T}\ \text{[growth in services sector } T \text{ is rapid]} \quad (1b)$$

$$\Delta(sg^T{}_{t,t+7} - sg^T{}_{t,t-7}) \geq 2\%\ \text{[growth in services sector } T \text{ accelerates]} \quad (2b)$$

$$sy^T{}_{t+7} \geq \left(\max sy^T{}_i\right), i \leq t\ \text{[post-acceleration output in services sector } T \text{ exceeds pre-episode peak]} \quad (3b)$$

where $sg^T{}_{t,t+7}$ is the average annual growth rate of real value added of a services sector type *T*—i.e., total services, market-services, or non-market services—and $\overline{sg^T}$ is the sample average annual growth rate of the real value added of a services sector type *T*.

Further, we follow McAuliffe et al. (2012) and Haraguchi et al. (2019) and define sustained growth episodes of the services sector using Equation (4a). Thus, an episode of services sector growth that satisfies the above conditions is further characterized as a *sustained growth episode* if Equation (4a) is fulfilled.[9]

$$sg^T{}_{t+7,t+14} \geq 3\%\ \text{[growth of services sector } T \text{is sustained]}^{10} \quad (4a)$$

Extending this analysis to the regional level requires a fresh estimation of regional thresholds of services value added. So, the identification of the growth episodes for the region is identical to the

[9] A sustained growth episode is 1 if services sector value added for market, non-market, and other service types is greater than or equal to 3 per cent per annum after the 14th year of an episode for each country in our sample and 0 otherwise.

[10] Haraguchi et al. (2019) adopted a final step to classify countries as having successful or unsuccessful manufacturing growth episodes. However, this is equivalent to fulfilling Equations (2a) and (4a). This paper does not use this final step because countries that fulfil Equation (2a) also fulfil Equation (4a), making the latter the ultimate indicator of growth accelerations.

steps in Equations (1b–3b) and (4a). Equations (1c–3c) and (4b) present new conditions for regional services growth acceleration after accounting for the geographical regions of countries in the data. That is, the thresholds vary across each region and are determined by the respective region's average services value-added growth.

$$sg^{TR}{}_{t,t+7} \geq \overline{sg^{TR}} \text{ [growth of services sector } T \text{ in region } R \text{ is rapid]} \quad (1c)$$

$$\Delta\,(sg^{TR}{}_{t,t+7} - sg^{TR}{}_{t,t-7}) \geq 2\% \text{ [growth of services sector } T \text{ in region } R \text{ accelerates]} \quad (2c)$$

$$sy^{TR}{}_{t+7} \geq \left(\max sy^{TR}{}_{i}\right), i \leq t \text{ [post-acceleration output of services sector } T \text{ in region } R \text{ exceeds pre-episode peak]} \quad (3c)$$

$$sg^{TR}{}_{t+7,t+14} \geq 3\% \text{ [growth of services sector } T \text{ in region } R \text{ is sustained]} \quad (4b)$$

We rely on the sustained episodes of service value added as the measure of services sector growth accelerations, for each services type and region. To empirically estimate the drivers of services sector acceleration for the specified types of services and the geographical regions, we employ a probit model, following Haraguchi et al. (2019) . The empirical model is presented in Equation (5) as:

$$Pr\,(servaccl_{it} > 0) = \beta \sum W_{it} + \gamma_t + \delta_{it}, 0 \text{ if } servaccl^{*}_{it} \leq 0 \quad (5)$$

where Pr ($servaccl_{it} > 0$) is a dummy variable that classifies countries in the sample as having sustained growth episodes of services or otherwise. Furthermore, W_{it} represents the vector of explanatory variables for country (i) in year (t), based on the services growth literature earlier discussed. Table A1 in the Appendix provides detailed descriptions of these variables and their sources. The model also captures time-fixed effects (γ_t) due to country-invariant shocks that may have occurred over the sample period, such as global financial crises and commodity price fluctuations. Finally, δ_{it} represents the stochastic error term of the model.

4 Results and discussion

This section presents and discusses the econometric results obtained from our empirical estimation. First, we present and discuss our results on the determinants of services sector growth acceleration by type and then consider the results on the drivers by region.

4.1 Drivers of services value added growth acceleration—total vs market-related vs non-market-related

The baseline estimation results showing the determinants of services sector growth acceleration for emerging and developing countries are reported in Table 1. As noted, we estimate and report the econometric results for the total services sector in column 1, and the services sector groupings—market, non-market, and other services—in columns 2, 3, and 4 respectively.

The baseline results reported in Table 1 show interesting findings. Focusing on total services growth acceleration in column 1, our results suggest that level of development, measured by real GDP per capita, household monetization, and proximity to a financial hub, plays a statistically insignificant role in the acceleration of total services sector growth in our sampled countries. We

observe an interesting mix of heterogeneity in the factors that influence services sector growth between our three services type groupings and, in comparison, total services sector growth.

Table 1: Drivers of services value-added growth acceleration (marginal effect)

	[1]	[2]	[3]	[4]
	Total	**Market**	**Non-market**	**Other**
Real GDP_pc (log)	0.0633	-0.2279***	0.1473***	0.1144***
	(0.042)	(0.044)	(0.035)	(0.035)
Urban growth	0.0143*	0.0483***	0.0120	0.0119
	(0.008)	(0.011)	(0.009)	(0.008)
Institution quality	0.2114***	0.0880***	-0.0759***	-0.0499***
	(0.025)	(0.024)	(0.021)	(0.019)
Household monetization	-0.0097	0.0060	-0.1922***	-0.0979***
	(0.026)	(0.026)	(0.021)	(0.021)
Inflation	-0.0209*	-0.0213*	-0.0698***	-0.0463***
	(0.012)	(0.012)	(0.010)	(0.010)
Population size	0.1563***	-0.0958***	0.1321***	0.1592***
	(0.023)	(0.024)	(0.020)	(0.019)
Initial structure (manufacturing)	-0.0585*	0.1214***	0.2513***	0.2229***
	(0.031)	(0.031)	(0.024)	(0.024)
Mobile broadband subscription	0.0810***	0.0566***	0.0251	0.0341**
	(0.020)	(0.020)	(0.016)	(0.015)
Household expenditure	0.8026***	0.8364***	0.6928***	0.6521***
	(0.084)	(0.099)	(0.082)	(0.082)
Trade openness	-0.0786***	0.1238***	0.0375	0.0227
	(0.028)	(0.028)	(0.024)	(0.023)
Financial hub (proximity)	-0.0723	0.1056**	-0.2575***	-0.3740***
	(0.046)	(0.047)	(0.037)	(0.038)
Observations	1,400	1,400	1,400	1,400

Note: all specifications include year-fixed effects. Robust standard errors are in parentheses. *** *p<0.01,* ** *p<0.05,* * *p<0.10*.

Source: authors' construction.

Comparing and contrasting our results in Table 1, columns 2–4, we find that increases in real GDP per capita inhibit growth in market-related services acceleration while enhancing acceleration in non-market-related as well as other services growth in our sampled countries. We argue that these results may be due to a thriving informal sector in many developing countries, which mostly pursue non-market service transactions despite increases in household incomes and financial depth. Thus, growth in the informal sector has thrived more as incomes have increased and households look to pay more for services outside the market directly. However, market services growth acceleration has been boosted by proximity to financial hubs because of the security of payments and transfers that are offered by financial services providers. In addition, we find that growth in population size, mobile broadband subscriptions, and household expenditure, due to higher demand for services, enhance the acceleration in total services sector growth.

Our results also show that countries with a relatively large initial manufacturing base and those integrated into the global trading network tend to be less likely to experience rapid acceleration in total services sector growth, suggesting that the initial manufacturing base and the liberalization of developing economies tend to pull back total services sector growth acceleration. These findings

contrast with the growing blurring of modern manufacturing and services, as well as the role of GVC-based trade in enhancing the expansion of the services sector in developing countries.

Our results further show a significant and positive effect of urbanization on total services sector growth acceleration. This suggests that urban population growth generates higher demand for services and hence the tertiarization of developing economies. Increases in urban population also put pressure on existing services infrastructure and force institutions to work extra hard to meet demand. Hence, we also see that improvements in institutions are found to drive demand for services and total services sector growth, while inflation curtails total services sector growth, as individuals demand fewer services with a decline in their real incomes, an effect that appears consistently across the market, non-market, and other services sector accelerations.

Looking now at the disaggregated services sector results for market-related and non-market-related services, our results show that growth in urbanization and improvement in institutional quality both drive the acceleration in market-related services sector growth (similar to our findings when we use total services sector growth acceleration), while improvement in institutional quality reduces the likelihood of acceleration in non-market-related and well as other services sector growth. This result is plausible because institutions and urbanization contribute to promote market-related services. Service providers in the market become increasingly confident in top-quality institutions, which also provide safety for market-related services. Furthermore, our findings show that increases in household expenditure increase the likelihood of services sector growth accelerations for total, market, non-market-related, and other services sectors. We attribute this result fundamentally to Engel's Law, whereby households spend more of their increased income on related services.

We also find a similar enhancing effect of population size on the likelihood of non-market-related and other services sector growth accelerations—in line with total services sector growth accelerations but in contrast with market-related services sector growth accelerations, where we find a negative effect. We find this plausible because population growth and its associated market failures contribute to the proliferation of the informal sector. Although the government intervenes to reduce the cost to consumers, unemployment that results from rapid population growth also forces people to establish non-market services as a means to survive.

Increases in mobile broadband subscriptions also enhance the likelihood of market-related and other services sector growth accelerations, while increases in household expenditure generate growth accelerations across all services sector types. In line with the extant literature, trade liberalization and proximity to a financial hub drive growth acceleration in market-related services sector activities. However, the results show that proximity to a financial hub, on the contrary, leads to a slowdown in the growth acceleration of non-market-related and other services sector activities. We also link this result to the proliferation of the informal sector and its slowdown when there are safer market services that can be accessed around financial hubs. Thus, increased proximity to financial hubs encourages people to rely on market services where they can enjoy the safety and security of payments, transfers, and other financial services.

In contrast with our earlier total services sector growth finding, our results suggest that a relatively higher initial manufacturing base enhances the likelihood of experiencing services sector growth acceleration across all service type groupings. This result is in line with the premature de-industrialization hypothesis and highlights the expansion of the services sector in developing countries. Thus, while there has been a decline in industry and heavy manufacturing, support services for light manufacturing of food and related consumables have expanded in several developing countries. So, while the initial manufacturing base was not strong enough in developing countries to propel more sophisticated services that rely on heavy industries (high-technology,

artificial intelligence, machine manufacturing, etc.), the light manufacturing of consumer goods supports market, non-market, and other services in developing countries.

To further explore the heterogeneity in our analyses, we extended our baseline analyses to: (i) control for the initial shares of agriculture and services to examine the independent effects of these structural factors; (ii) conduct sub-sample analyses for Africa and Asia to identify and understand the possible regional heterogeneities in the factors that influence services sector growth acceleration.

Table 2 reports the results from the model where we separately introduced the initial shares of the agriculture sector and services into our baseline model: columns 1–4 control for the share of the agriculture sector while columns 5–8 include the initial share of services in an economy. As can be observed across all columns, all our baseline results remained the same—in terms of both sign and significance. The additional results show that countries that had a larger initial share of agriculture tended to experience less total services sector growth acceleration (column 1), suggesting a 'pull-down' effect of the agricultural sector on the growth of the services sector. On the contrary, our additional results when we consider the initial share of services generate interesting insights. The estimation results show that developing countries with a larger initial share of services are more likely to generate higher services sector growth acceleration across all our measures than otherwise. These additional findings further reiterate the point that the initial condition and structure of the economy matter for service-led structural transformation.

Table 2: Drivers of services value added growth acceleration (marginal effect)

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
	Total	**Market**	**Non-market**	**Other**	**Total**	**Market**	**Non-market**	**Other**
Real GDP_pc (log)	0.0220	-0.2313***	0.1535***	0.1076***	0.0651	-0.1847***	0.1381***	0.0311
	(0.043)	(0.044)	(0.035)	(0.036)	(0.041)	(0.045)	(0.035)	(0.031)
Urban growth	0.0167**	0.0487***	0.0116	0.0125	0.0217***	0.0632***	0.0115	0.0238***
	(0.008)	(0.011)	(0.009)	(0.008)	(0.008)	(0.011)	(0.009)	(0.008)
Institution quality	0.1761***	0.0854***	-0.0711***	-0.0565***	0.1855***	0.0809***	-0.0754***	-0.1172***
	(0.024)	(0.024)	(0.021)	(0.020)	(0.023)	(0.022)	(0.021)	(0.020)
Household monetization	0.0019	0.0075	-0.1935***	-0.0954***	-0.0119	0.0204	-0.1819***	-0.1504***
	(0.025)	(0.026)	(0.021)	(0.021)	(0.025)	(0.026)	(0.021)	(0.018)
Inflation	-0.0241**	-0.0215*	-0.0694***	-0.0466***	-0.0295**	-0.0232*	-0.0748***	-0.0135
	(0.012)	(0.012)	(0.010)	(0.010)	(0.012)	(0.012)	(0.010)	(0.009)
Population size	0.1934***	-0.0922***	0.1274***	0.1673***	0.2309***	-0.0351	0.1441***	0.1149***
	(0.024)	(0.025)	(0.022)	(0.021)	(0.023)	(0.023)	(0.021)	(0.018)
Initial structure (manufacturing)	-0.0670**	0.1209***	0.2533***	0.2190***	-0.1144***	0.1440***	0.2126***	0.2289***
	(0.031)	(0.031)	(0.024)	(0.024)	(0.028)	(0.030)	(0.029)	(0.021)
Mobile broadband subscription	0.0791***	0.0566***	0.0256	0.0338**	0.0621***	0.0475**	0.0169	0.0086
	(0.020)	(0.020)	(0.016)	(0.015)	(0.019)	(0.019)	(0.016)	(0.014)
Household expenditure	0.7385***	0.8321***	0.6940***	0.6489***	0.3307***	0.4170***	0.6674***	0.5366***
	(0.085)	(0.099)	(0.082)	(0.082)	(0.096)	(0.107)	(0.083)	(0.078)
Trade openness	-0.1091***	0.1208***	0.0412*	0.0157	-0.1454***	0.0245	0.0375	0.1019***
	(0.028)	(0.029)	(0.025)	(0.024)	(0.027)	(0.029)	(0.024)	(0.022)
Financial hub (proximity)	-0.0869*	0.1044**	-0.2548***	-0.3784***	-0.1846***	0.0387	-0.2919***	-0.3168***
	(0.047)	(0.047)	(0.037)	(0.038)	(0.044)	(0.045)	(0.038)	(0.031)
logagric	-0.1178***	-0.0100	0.0175	-0.0247				
	(0.022)	(0.023)	(0.017)	(0.017)				
Initial services					0.7420***	0.5717***	0.0791***	0.2693***
					(0.061)	(0.050)	(0.028)	(0.013)
Observations	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400

Source: authors' construction.

4.2 Drivers of services value-added growth acceleration—regional analyses

In Table 3, we present our regional analyses examining the determinants of services sector growth acceleration for Africa (columns 1–4) and Asia (columns 5–8). The results show some interesting heterogeneities between the two regions. They reveal that growth in real GDP per capita in Africa has tended to inhibit both total and market-related services sector growth accelerations (columns 1 and 2) while enhancing the likelihood of non-market-related services sector growth accelerations (column 3). In Asia, growth in real GDP per capita has had no significant effect on total services sector growth acceleration (column 5); has tended to reduce market-related services sector growth accelerations (column 6); and has enhanced the likelihood of both non-market-related and other services sector growth accelerations (columns 7 and 8). We find this result interesting because it also points to the expanding role of the informal sector in Asian economies, which has been discussed by other scholars (Qayyum et al. 2021).

This leads us to the results of the urbanization variable. Urbanization has a higher likelihood of accelerating total and market-related services sector growth in Africa (columns 1 and 2) but drives only market-related services sector growth in Asia (column 6). While improvements in institutional quality tend to reduce the likelihood of non-market-related services sector growth accelerations in both Africa and Asia (and in other services only in Asia), they generate a higher likelihood of other and total services sector growth acceleration in Africa and Asia, respectively.

Household monetization has the same effect on all service groupings across both regions: a higher likelihood of total and market-related services sector growth accelerations; and less likelihood of non-market-related and other services sector growth accelerations. Inflation negatively affects services sector growth accelerations in both regions: reduces the likelihood of growth in non-market-related and other services in Africa as well as total services sector growth accelerations in Asia. Population growth generally drives the probability of higher services sector growth accelerations across all groupings in both regions, except for market-related activities in Asia, where we find a negative likelihood.

An initial base of manufacturing activity is critical for services sector growth accelerations in both regions. Our results suggest that countries with a higher initial share of manufacturing have a higher likelihood of experiencing services sector growth accelerations across all service groupings except in the total services sector in Asia. This result further highlights the importance of first developing some critical level of manufacturing activity before the tertiarization of economic activities. Growth in mobile broadband subscriptions enhances the likelihood of services sector growth accelerations in Africa, but only non-market-related and other services sector growth accelerations in Asia. These results may be due to the differences in the rate and scale of diffusion of mobile broadband technologies in these regions.

Trade liberalization has mixed effects on services sector growth accelerations in both regions. In Asia, trade liberalization has a higher probability of spurring services sector growth acceleration across all service groupings except for our total services measure, where we observe a negative probability. On the contrary, we observe that liberalization tends to reduce the probability of African economies achieving services sector growth accelerations. We argue that this result could be driven by the high levels of capital flight that African countries generally experience (Leykun Fisseha 2022; Ndikumana 2016; Ndikumana and Sarr 2019), as a result of the wealth of natural resources and the positive marginal product of capital.

Table 3: Drivers of services value-added growth acceleration (marginal effect)

	Africa				Asia			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
	Total	**Market**	**Non-market**	**Other**	**Total**	**Market**	**Non-market**	**Other**
Real GDP_pc (log)	-0.2737***	-0.4074***	0.2161***	0.0063	-0.0350	-0.5349***	0.4708***	0.3708***
	(0.061)	(0.063)	(0.058)	(0.055)	(0.072)	(0.082)	(0.037)	(0.057)
Urban growth	0.0550***	0.0493***	-0.0053	0.0107	0.0103	0.0443***	0.0033	0.0043
	(0.014)	(0.014)	(0.007)	(0.007)	(0.017)	(0.017)	(0.010)	(0.020)
Institution quality	-0.0057	0.0533	-0.1057***	0.0655**	0.2663***	-0.0106	-0.4005***	-0.3005***
	(0.043)	(0.037)	(0.034)	(0.033)	(0.041)	(0.031)	(0.030)	(0.030)
Household monetization	0.1853***	0.2409***	-0.3194***	-0.1433***	0.1960***	0.2887***	-0.3280***	-0.2280***
	(0.034)	(0.036)	(0.031)	(0.031)	(0.045)	(0.047)	(0.026)	(0.026)
Inflation	0.0258	-0.0087	-0.0646***	-0.0866***	-0.0510***	-0.0231	-0.0258*	-0.0248*
	(0.019)	(0.018)	(0.015)	(0.015)	(0.019)	(0.021)	(0.013)	(0.013)
Population size	0.1248***	0.1556***	0.1873***	0.2287***	0.1236***	-0.3829***	0.1463***	0.1363***
	(0.038)	(0.035)	(0.036)	(0.039)	(0.041)	(0.050)	(0.031)	(0.032)
Initial structure (manufacturing)	0.2805***	0.4842***	0.1211**	0.2769***	-0.1294**	0.2932***	0.2521***	0.2421***
	(0.054)	(0.044)	(0.048)	(0.056)	(0.051)	(0.057)	(0.039)	(0.040)
Mobile broadband subscription	0.1027***	0.1015***	0.0617**	0.1004***	0.0346	0.0257	0.0696***	0.0596***
	(0.034)	(0.028)	(0.027)	(0.029)	(0.025)	(0.023)	(0.015)	(0.014)
Household expenditure	0.2340*	0.1225	-0.3608***	-0.3995***	0.3371**	0.1298	1.4513***	1.3513***
	(0.137)	(0.145)	(0.107)	(0.131)	(0.156)	(0.162)	(0.096)	(0.100)
Trade openness	-0.1215***	-0.1539***	-0.1506***	-0.0300	-0.1519***	0.1697***	0.1023***	0.0923***
	(0.047)	(0.045)	(0.036)	(0.044)	(0.047)	(0.048)	(0.030)	(0.030)
Financial hub (proximity)	0.0402	0.1121**	0.2452***	-0.4277***	0.8515***	1.9778***	-1.3446***	-1.2446***
	(0.072)	(0.055)	(0.081)	(0.053)	(0.097)	(0.265)	(0.108)	(0.108)
Observations	588	588	588	588	560	560	560	560

Note: All specifications include year-fixed effects. Robust standard errors are in parentheses. *** *p<0.01*, ** *p<0.05*, * *p<0.10.*

Source: authors' construction.

5 Conclusion

The services sector is a significant and key contributor to economic growth and development in many developing economies. However, there is a general lack of understanding of the services sector and what drives its growth episodes and acceleration. Using the growth acceleration approach and the latest version of the Economic Transformation Database (ETD) merged with other datasets for 50 developing countries, this paper identifies and examines the factors that explain services sector growth episodes and accelerations in developing countries, and how these factors differ across service types (market services and non-market services) and regions. Our analysis proceeded in two steps. We first applied the growth accelerations approach developed by Hausmann et al. (2005) and applied by Haraguchi et al. (2019) to identify growth episodes of services value added in the sampled countries. We then estimated a set of probit models to explain the drivers of service growth acceleration using a vector of economic, institutional, and policy-related controls.

Overall, we find robust evidence that heterogeneous factors explain services sector growth episodes and acceleration in developing countries. However, these differ by services sector type and geographic region. For instance, our results show that urban growth, institutional quality, household expenditure, mobile broadband subscription, trade openness, and initial structure of the economy (initial manufacturing) are important predictors of market-related services sector growth acceleration. These sets of drivers, except for trade openness and the initial structure of the economy (initial manufacturing), are also important drivers of total services sector acceleration. Population size, real GDP per capita, and household expenditure are important drivers of non-market-related services sector acceleration, while inflation acts as a drag on total services sector acceleration.

Given the labour intensiveness and associated job creation impacts of the services sector in developing countries, our findings highlighting the key drivers of services sector growth episodes and acceleration have several policy implications, key among them being managing the role of the informal sector in services value added in developing countries. Informal sector services arise because market service mechanisms fail to allocate resources efficiently, especially when public infrastructure is limited. Therefore, policy-makers in developing countries should focus on refining market-based mechanisms to improve the delivery of services, especially in the public sector. Furthermore, providing market-based services at a socially beneficial price will improve market participation in low-income developing countries and improve the access of citizens to critical services.

The extension of reliable telephony and internet-based services is also crucial to extending market-based services and bridging the gap between urban and rural communities in developing countries. This is evident in the success of internet-based services such as taxi booking, parcel and food delivery services, and courier services in urban areas. Should policy-makers extend mobile telephony and internet services to rural communities, the pressure on governments to provide public transport services would be eased to allow more commerce between urban and rural residents.

Finally, services acceleration (market or non-market) can be propelled by household spending on consumer and capital goods, which in turn depends on the disposable income available to consumers. Therefore, policy-makers looking to promote services acceleration should consider improving financial intermediation to make it cheaper for households to obtain credit for

consumption. Through this, policy-makers will be able to institute additional consumption taxes to sustain public service provision and adequately maintain public infrastructure.

This paper can be extended in several ways. For instance, given the obvious positive relationship between services and economic growth and development, and the emerging evidence that manufacturing is becoming a more difficult route to growth (Szirmai and Verspagen 2015), future studies could examine the effect of services sector growth accelerations on key economic development indicators such as human development and income inequality.

References

Baumol, W.J. (1967). 'Macroeconomics of Unbalanced Growth: the Anatomy of Urban Crisis'. *American Economic Review*, 57(3): 415–26.

Bhagwati, J.N. (1984). 'Splintering and Disembodiment of Services and Developing Nations'. *World Economy*, 7(2): 133–44. https://doi.org/10.1111/j.1467-9701.1984.tb00265.x

Brück, T., and G. Xu (2012). 'Who Gives Aid to Whom and When? Aid Accelerations, Shocks, and Policies'. *European Journal of Political Economy*, 28(4): 593–606. https://doi.org/10.1016/j.ejpoleco.2012.05.011

Bryson, J., and P. Daniels (2010). 'Service Worlds: The "Services Duality" and the Rise of the "Manuservice" Economy'. In P. Maglio, C. Kieliszewski, and J.C. Spohrer (eds), *The Handbook of Service Science*, pp. 79–106. New York: Springer. https://doi.org/10.1007/978-1-4419-1628-0_6

Clark, C. (1940). *The Conditions of Economic Progress*. London: Macmillan.

D'agostino, A., R. Serafini, and M.E. Ward-Warmedinger (2006). 'Sectoral Explanations of Employment in Europe – the Role of Services'. ECB Working Paper 625. Frankfurt: European Central Bank. https://doi.org/10.2139/ssrn.900396

Degl'Innocenti, M., R. Matousek, Z. Sevic, and N.G. Tzeremes (2017). 'Bank Efficiency and Financial Centers: Does Geographical Location Matter?'. *Journal of International Financial Markets, Institutions, and Money*, 46: 188–98. https://doi.org/10.1016/j.intfin.2016.10.002

de Vries, G., et al. (2021). 'The Economic Transformation Database (ETD): Content, Sources, and Methods'. WIDER Technical Note 2/2021. Helskinki: UNU-WIDER. https://doi.org/10.35188/UNU-WIDER/WTN/2021-2

Eichengreen, B., and P. Gupta (2013). 'The Two Waves of Service-Sector Growth'. *Oxford Economic Papers*, 65(1): 96–123. https://doi.org/10.1093/oep/gpr059

Falvey, R.E., and N. Gemmell (1996). 'Are Services Income-Elastic? Some New Evidence'. *Review of Income and Wealth*, 42(3): 257–69. https://doi.org/10.1111/j.1475-4991.1996.tb00182.x

Fisher, A.G.B. (1935). *The Clash of Progress and Security*. London: Macmillan.

Fu, X., E. Avenyo, and P. Ghauri (2021). 'Digital Platforms and Development: a Survey of the Literature'. *Innovation and Development*, 11(2–3): 303–21. https://doi.org/10.1080/2157930X.2021.1975361

Fuchs, V.R. (1980). 'Economic Growth and the Rise of Service Employment'. NBER Working Paper 486. Cambridge, MA: National Bureau of Economic Research. https://doi.org/10.3386/w0486

Ghani, E. (2010). 'Is Service-Led Growth a Miracle for South Asia?'. In E. Ghani (ed.), *The Service Revolution in South Asia*. New York: Oxford University Press.

Gollin, D., R. Jedwab, and D. Vollrath (2016). 'Urbanization with and without Industrialization'. *Journal of Economic Growth*, 21: 35–70. https://doi.org/10.1007/s10887-015-9121-4

Gordon, J., and P. Gupta (2004). 'Understanding India's Services Revolution'. IMF Working Paper WP/04/171. Washington, DC: International Monetary Fund https://doi.org/10.5089/9781451858532.001

Hammes, D.L., J.J. Rosa, and H.G. Grubel (1989). 'The National Accounts, Household Service Consumption, and its Monetization'. *Kyklos*, 42(1): 3–15. https://doi.org/10.1111/j.1467-6435.1989.tb02764.x

Haraguchi, N., B. Martorano, M. Sanfilippo, and A. Shingal (2019). 'Manufacturing Growth Accelerations in Developing Countries'. *Review of Development Economics*, 23(4): 1696–724. https://doi.org/10.1111/rode.12621

Hausmann, R., L. Pritchett, and D. Rodrik (2005). 'Growth Accelerations'. *Journal of Economic Growth*, 10(4): 303–29. https://doi.org/10.1007/s10887-005-4712-0

Horwitz, S. (2003). 'The Costs of Inflation Revisited'. *The Review of Austrian Economics*, 16: 77–95. https://doi.org/10.1023/A:1022961324928

Hurd, M.D., and S. Rohwedder (2008). 'The Retirement Consumption Puzzle: Actual Spending Change in Panel Data'. NBER Working Paper w13929. Cambridge, MA: National Bureau of Economic Research. https://doi.org/10.3386/w13929

Jensen, J.B., L.G. Kletzer, J. Bernstein, and R.C. Feenstra (2005). *Tradable Services: Understanding the Scope and Impact of Services Offshoring*. Washington, DC: Brookings Institution Press. https://doi.org/10.2139/ssrn.803906

Joshi, S. (2008). *Growth and Structure of Tertiary Sector in Developing Economies*. New Delhi: Academic Foundation.

Katouzian, M.A. (1970). 'The Development of the Service Sector: a New Approach'. *Oxford Economic Economic Papers*, 22(3): 362–82. https://doi.org/10.1093/oxfordjournals.oep.a041171

Kongsamut, P., S. Rebelo, and D. Xie (2001). 'Beyond Balanced Growth'. *The Review of Economic Studies*, 68(4): 869–82. https://doi.org/10.1111/1467-937X.00193

Krugman, P.R., M. Obstfeld, and M.J. Merlitz (2018). *International Economics: Theory and Practice*, 11th Edition. London: Pearson.

Kruse, H., E. Mensah, K. Sen, and G. J. de Vries (2022). 'A manufacturing renaissance? Industrialization trends in the developing world'. *IMF Economic Review*, 71: 439–73. https://doi.org/10.1057/s41308-022-00183-7. Data available for download at: https://www.wider.unu.edu/database/etd-%E2%80%93-economic-transformation-database.

Lavopa, A., and A. Szirmai (2018). 'Structural Modernization and Underdevelopment Traps: an Empirical Approach'. *World Development*, 112: 59–73. https://doi.org/10.1016/j.worlddev.2018.07.005

Leykun Fisseha, F. (2022). 'Effect of Capital Flight on Domestic Investment: Evidence from Africa'. *Cogent Economics & Finance*, 10(1): 2105975. https://doi.org/10.1080/23322039.2022.2105975

Liao, J. (2020). 'The Rise of the Service Sector in China'. *China Economic Review*, 59: 101385. https://doi.org/10.1016/j.chieco.2019.101385

Marks, A.J. (2009). 'Accounting for Services: the Economic Development of the Indonesian Service Sector, ca. 1900–2000'. Dissertation. Utrecht University. https://doi.org/10.2307/j.ctt6wp5vf

McAuliffe, C., S. Saxena, and M. Yabara (2012). 'The East African Community: Prospects for Sustained Growth'. IMF Working Paper 12/272. Washington, DC: International Monetary Fund. https://doi.org/10.5089/9781475539424.001

McLachlan, R., C. Clark, and I. Monday (2002). 'Australia's Service Sector: a Study in Diversity'. Productivity Commission Staff Research Paper 1701. https://doi.org/10.2139/ssrn.304304

Mendez, P., M. Atienza, and F. Modrego (2022). 'Urbanization and Productivity at a Global Level: New Empirical Evidence for the Services Sector'. *Regional Science Policy and Practice*, online. https://doi.org/10.1111/rsp3.12620

Messina, J. (2005). 'Institutions and Service Employment: a Panel Study for OECD Countries'. *Labour*, 19(2): 343–72. https://doi.org/10.1111/j.1467-9914.2005.00298.x

Michaels, G., F. Rauch, and S.J. Redding (2012). 'Urbanization and Structural Transformation'. *The Quarterly Journal of Economics*, 127(2): 535–86. https://doi.org/10.1093/qje/qjs003

Nayyar, G., M. Hallward-Driemeier, and E. Davies (2021). 'At Your Service: the Promise of Services-Led Development'. Washington, DC: World Bank Publications. https://doi.org/10.1596/978-1-4648-1671-0

Ndikumana, L. (2016). 'Causes and Effects of Capital Flight from Africa: Lessons from Case Studies'. *African Development Review*, 28(S1): 2–7. https://doi.org/10.1111/1467-8268.12177

Ndikumana, L., and M. Sarr (2019). 'Capital Flight, Foreign Direct Investment and Natural Resources in Africa'. *Resources Policy*, 63: 101427. https://doi.org/10.1016/j.resourpol.2019.101427

Ndubuisi, G., and S. Owusu (2022). 'Sub-Saharan Africa's Prospect of Economic Development through Global Supply Chains'. Sustainable Global Supply Chain Report. https://doi.org/10.2139/ssrn.4116677

Ndubuisi, G., C. Otioma, and G.K. Tetteh (2021). 'Digital Infrastructure and Employment in Services: Evidence from Sub-Saharan African Countries'. *Telecommunications Policy*, 45(8): 102153. https://doi.org/10.1016/j.telpol.2021.102153

OECD (2000). 'Employment in the Service Economy: a Reassessment'. In *Employment Outlook*, Ch. 3. Paris: OECD. https://doi.org/10.1787/9789264182516-en

Owusu, S., A. Szirmai, and N. Foster-McGregor (2021). 'The Rise of the Service Sector in the Global Economy'. In L. Alcorta, N. Foster-McGregor, B. Verspagen, and A. Szirmai (eds), *New Perspectives on Structural Change: Causes and Consequences of Structural Change in the Global Economy*. Oxford: Oxford University Press. https://doi.org/10.1093/oso/9780198850113.003.0013

Parasuraman, A., V.A. Zeithaml, and L.L. Berry (1985). 'A Conceptual Model of Service Quality and Its Implications for Future Research'. *Journal of Marketing*, 49(4): 41–50. https://doi.org/10.1177/002224298504900403

Qayyum, U., S. Sabir, and S. Anjum (2021). 'Urbanization, Informal Economy, and Ecological Footprint Quality in South Asia'. *Environmental Science and Pollution Research*, 28: 67011–21. https://doi.org/10.1007/s11356-021-15111-x

Singelmann, J. (1978). *From Agriculture to Services: the Transformation of Industrial Employment*. Thousand Oaks, CA: Sage Publications.

Storper, M., and A.J. Venables (2004). 'Buzz: Face-to-Face Contact and the Urban Economy'. *Journal of Economic Geography*, 4(4): 351–70. https://doi.org/10.1093/jnlecg/lbh027

Święcki, T. (2017). 'Determinants of Structural Change'. *Review of Economic Dynamics*, 24: 95–131. https://doi.org/10.1016/j.red.2017.01.007

Szirmai, A., and B. Verspagen (2015). 'Manufacturing and Economic Growth in Developing Countries, 1950–2005'. *Structural Change and Economic Dynamics*, 34: 46–59. https://doi.org/10.1016/j.strueco.2015.06.002

Temple, J. (2000). 'Inflation and Growth: Stories Short and Tall'. *Journal of Economic Surveys*, 14(4): 395–426. https://doi.org/10.1111/1467-6419.00116

Timmer, M.P., and G.J. De Vries (2009). 'Structural Change and Growth Accelerations in Asia and Latin America: a New Sectoral Data Set'. *Cliometrica*, 3: 165–90. https://doi.org/10.1007/s11698-008-0029-5

UNCTAD (2017). 'World Investment Report'. Geneva: United Nations Committee on Trade and Development (UNCTAD).

Urom, C., G. Ndubuisi, and K. Guesmi (2022). 'Dynamic Dependence and Predictability between Volume and Return of Non-Fungible Tokens (NFTs): the Roles of Market Factors and Geopolitical Risks'. *Finance Research Letters*, 50: 103188. https://doi.org/10.1016/j.frl.2022.103188

Van der Marel, E. (2012). 'Trade in Services and TFP: the Role of Regulation'. *The World Economy*, 35(11): 1530–58. https://doi.org/10.1111/twec.12004

Wilson, K.B., A. Karg, and H. Ghaderi (2022). 'Prospecting Non-Fungible Tokens in the Digital Economy: Stakeholders and Ecosystem, Risk, and Opportunity'. *Business Horizons*, 65(5): 657–70. https://doi.org/10.1016/j.bushor.2021.10.007

Appendix

Table A1: List of countries in ETD

Africa	**Asia**	**Latin America**
Botswana	Bangladesh	Argentina
Burkina Faso	Cambodia	Bolivia
Cameroon	China	Brazil
Egypt	Hong Kong, China*	Chile
Ethiopia	India	Colombia
Ghana	Indonesia	Costa Rica
Kenya	Israel*	Ecuador
Lesotho	Japan*	Mexico
Malawi	Korea (Rep. of)*	Peru
Mauritius	Lao PDR	
Morocco	Malaysia	
Mozambique	Myanmar	
Namibia	Nepal	
Nigeria	Pakistan	
Rwanda	Philippines	
Senegal	Singapore*	
South Africa	Sri Lanka	
Tanzania	Chinese Taipei♣	
Tunisia	Thailand	
Uganda	Turkey	
Zambia	Viet Nam	

Note: ♣ not included in the analysis; * advanced country.

Source: authors' construction.

Table A2: Sectors in the ETD

ISIC Rev. 4 code	**ETD sector name**	**ISIC Rev. 4 description**
A	Agriculture	Agriculture, forestry, fishing
B	Mining	Mining and quarrying
C	Manufacturing	Manufacturing
D+E	Utilities	Electricity, gas, steam, and air conditioning supply; Water supply; Sewerage, waste management, and remediation activities
F	Construction	Construction
G+I	Trade services	Wholesale and retail trade; Repair of motor vehicles and motorcycles; Accommodation and food service activities
H	Transport services	Transportation and storage
J+M+N	Business services	Information and communication; Professional, scientific, and technical activities; Administrative and support service activities
K	Financial services	Financial and insurance activities
L	Real estate	Real estate activities
O+P+Q	Government services	Public administration and defence; Compulsory social security; Education; Human health and social work activities
R+S+T+U	Other services	Arts, entertainment, and recreation; Other service activities; Activities of households as employers; Undifferentiated goods- and services-producing activities of households for own use; Activities of extraterritorial organizations and bodies

Source: authors' construction.

Table A3: Variables and data sources

Variable	Source	Description
Per capita income	Penn World Table	Ratio of real GDP to total population
Urban growth	WDI Database	Urban population growth (annual %)
Institutional quality	Authors' computation using governance indicators from WGI Database	Principal component of the 6 WGI
Household monetization	WDI Database	Wage and salaried workers, female (% of female employment)
Inflation	IMF Database	Inflation rate, average consumer prices (annual per cent change)
Population size	WDI Database	Population, total
Initial structure (manufacturing)	Authors' computation using data from the ETD	Initial share of manufacturing value added in total value added
Initial structure (agriculture)	Authors' computation using data from the ETD	Initial share of agriculture value added in total value added
Initial structure (services)	Authors' computation using data from the ETD	Initial share of services value added in total value added
Mobile broad subscription	WDI Database	Mobile cellular subscriptions (per 100 people)
Household expenditure	UNCTAD Database	Household final expenditure (% GDP)
Trade openness	WDI Database	Total exports and imports of goods and services (% GDP)
Proximity to the financial hub	Authors' computation using distance indicator from CEPII Data	Average of the Euclidean distance to the USA and UK
Gross fixed capital formation	UNCTAD Database	Gross fixed capital formation (% GDP)
Government consumption	UNCTAD Database	Government fixed final expenditure (% GDP)

Source: authors' construction.