



Innovation and the New Service Economy in Latin America and the Caribbean

Luis Rubalcaba



**Inter-American
Development Bank**

Competitiveness and
Innovation Division,
Institutions for
Development

DISCUSSION PAPER

No. IDB-DP-291

June 2013

Innovation and the New Service Economy in Latin America and the Caribbean

Luis Rubalcaba



Inter-American Development Bank

2013

<http://www.iadb.org>

The opinions expressed in this publication are those of the authors and do not necessarily reflect the views of the Inter-American Development Bank, its Board of Directors, or the countries they represent.

The unauthorized commercial use of Bank documents is prohibited and may be punishable under the Bank's policies and/or applicable laws.

Copyright ©[2012] Inter-American Development Bank. All rights reserved; may be freely reproduced for any non-commercial purpose.

Innovation and the New Service Economy in Latin America: Challenges and Policy Implications

Abstract*

The service sector has become one of the most important economic activity in the world economy in both developed and developing economies. Services are crucial for further developing the Latin American and Caribbean countries, providing a strong economic dynamism and creating the source for job creation and welfare. Service innovation is incremental for ensuring strong and competitive growth of services in the region. Agriculture and manufacturing industries also need service innovation to become more competitive. Service innovation shows some particularities, distinctive from innovation in goods, such as the relatively less importance of R&D and patents. Service innovation policies are justified by a wide range of reasons, including the existence of market and systemic failures. A number of developed and developing countries have recently promoted service innovation policies, following various strategies. Both horizontal and vertical policies need to be used, together with systemic policies to fully integrate services in the existing innovation policies. The case studies coordinated by the Inter-American Development Bank study on services and productivity in Latin American and the Caribbean suggest the need for understanding the peculiarities of different subsectors and countries to promote innovation, maximize its impact, and face a wide range of obstacles hampering innovation in services. The first policy priority would be to raise the awareness of the topic in the policy and business agendas.

Keywords: services, service innovation, LAC, policy

JEL codes: L80, O30

* The author, Professor Luis Rubalcaba, is from University of Alcalá in Spain.

INTRODUCTION

Services have become the most important economic sector in the world economy, in both developed and most developing economies. Even in regions where agriculture or manufacturing predominates, the growth of services in the last 30 years has been extraordinary. Today, the service economy provides more than half of all employment and value added in most countries.

The international division of labor that emerged after the oil crisis of the 1970s and early 1980s initially suggested that while developed economies would become increasingly specialized in services, developing countries would specialize in agriculture and manufacturing. However, the growth of services in all types of economies has been staggering.

In Latin America, services may play a more significant role than in other developing regions:

- The share of services is much higher than in other developing economies and more closely resembles those in Europe and other developed economies than those in Asian or African countries. Moreover, most Caribbean economies are now almost entirely service economies. Thus, their competitive strategies are based to a great extent on what services can bring in terms of growth and welfare.
- Nonetheless, sluggish productivity growth in the service sector has been a major constraint in Latin America, as in most European economies. The lack of productivity growth in services has had a negative effect on aggregate productivity growth in Latin America, where a structural shift toward services may continue for several decades before reaching a share typical of developed economies.
- Over the last decade, and even more so since the 2007 world financial crisis, specialization in commodity exports to Asia, particularly China, has accelerated. This is particularly the case in South American economies. The expected growth spurred by commodity exports opens up a new window of opportunity for the promotion of service activities that could become internationally competitive, contributing to export diversification and structural change.

In this context, service innovation is particularly important. Service innovation includes both innovations in the dominant services sectors and the ways in which agriculture and manufacturing can become more competitive by adding value through services. Service

innovation can transform any industry. Myths, such as the non-innovative nature of services, the merely technological role of innovation, and the compartmentalization of innovation between innovation in goods and innovation in services, need to be dispelled.

Section 1 of this paper presents the main trends in the service sectors in Latin America and the Caribbean (LAC). It also summarizes the main conceptual frameworks that explain the driving forces behind the development of the service economy. Section 2 presents the role of innovation in the service economy and summarizes the contributions of the different schools of thought that have attempted to explain it. Section 3 focuses on the main failures that justify innovation policy in the service economy, and Section 4 presents several policy frameworks that have been used to support service innovation. Finally, Section 5 presents some policy implications for LAC based on the preliminary results from the ongoing IDB-IDRC project on service innovation.

1. What Explains the Emergence and the Importance of the Service Economy? A Review of the Literature

In 1870, most countries were largely agricultural. Services represented about 25 to 35 percent of GDP in the main developed economies (Elfring, 1998; Maddison, 2000).¹ Since that time, manufacturing grew steadily, accounting for 40–45 percent of employment by the 1960s. Then, manufacturing began to decline in relative terms, never again reaching that high a share. Today, manufacturing accounts for about 20 percent of GDP in developed economies. Generally, the share of manufacturing in developed economies is similar to what it was more than a century ago. The main difference, however, is that to a large extent, the weight of agriculture has been replaced by the weight of services. Even more striking is that this process of structural transformation is repeating itself across the developing world at an even faster pace. The role of agriculture is decreasing, while services are gaining in importance even in countries that are still experiencing growth in their manufacturing base.

A key driving force in the shift toward services is the integration of services in all kinds of productive processes. Therefore, “the new service economy” does not refer to the growth of services as a separate sector, but rather to the growth of service activities embedded within different economic activities (Rubalcaba, 2007). What is “new” is (i) the increasing presence of services in business and consumption processes, and (ii) the capacity of services to become innovative, productive, and tradable. This new service economy is not only reinforcing, but also transforming the shift toward services initiated by developed economies more than a century ago.

A key question is the extent to which this transformation is also occurring in the Latin American and Caribbean (LAC) region. This section will provide some evidence and thoughts about the emergence of the new service economy in Latin America and the Caribbean.

1.1 The Service Economy in LAC: Basic Trends

A century ago, agriculture and manufacturing were the most important sectors of the economy, with services comprising the third, or tertiary, sector. Today, services represent about 66 percent of total world value added (UNCTAD, 2010), but the path toward service economies has not been the same in all countries. Developed economies have been moving toward services

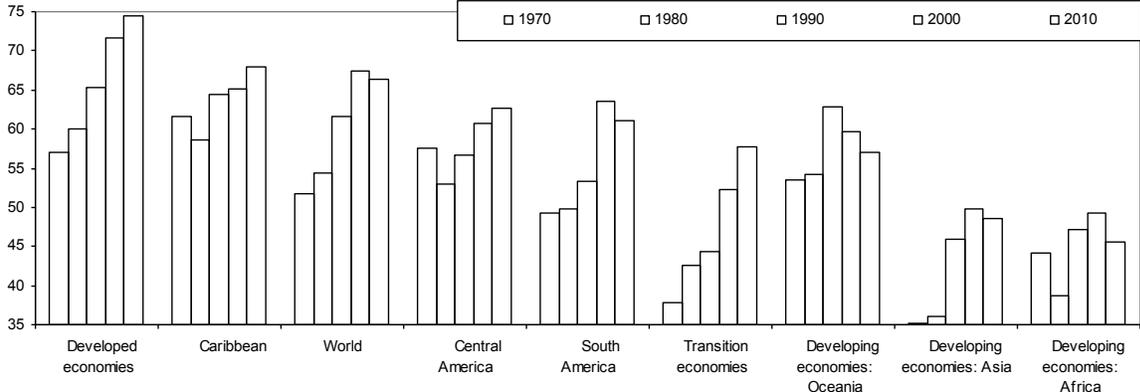
¹ Average of the percentages in France, Germany, Japan, the Netherlands, Sweden, the United Kingdom, and the United States. Elfring (1988) and statistics from Angus Maddison.

continuously, and today they are the most service-oriented economies in the world, generating 75–80 percent of value added in services. Services do not comprise such a large proportion of developing-country economies, however, except for some small countries that specialize in tourism or public services. Caribbean countries produce 74 percent of value added in services.

Overall, developing economies generate 51 percent of value added in services. Services represent 48 percent of value added in Asian countries and 45 percent in African countries, while the figures for transition economies and Oceania are 52 and 59 percent, respectively. The LAC region is among the most service-oriented regions in the developing world, with services comprising 62 percent of value added.

In 2010, LAC countries were between developed economies and other developing economies in terms of services. This is because by 1970 they were already quite service-oriented, unlike Asian or African economies, where services represented less than 40 percent of value added in 1970. Figure 1 shows the different rates of structural change toward services by region. An interesting finding is the reduction in the share of services since 2000, mainly because of the increasing role of agriculture and industry in most developing economies. The reversion to the growth in services in developing economies seems to be particularly intense in the years following 2007 and the economic and financial crisis, concurrent with huge demand for commodities from Asian countries and China in particular.

Figure 1. The Growth of Services as a Share of Total Value Added, 1970–2010

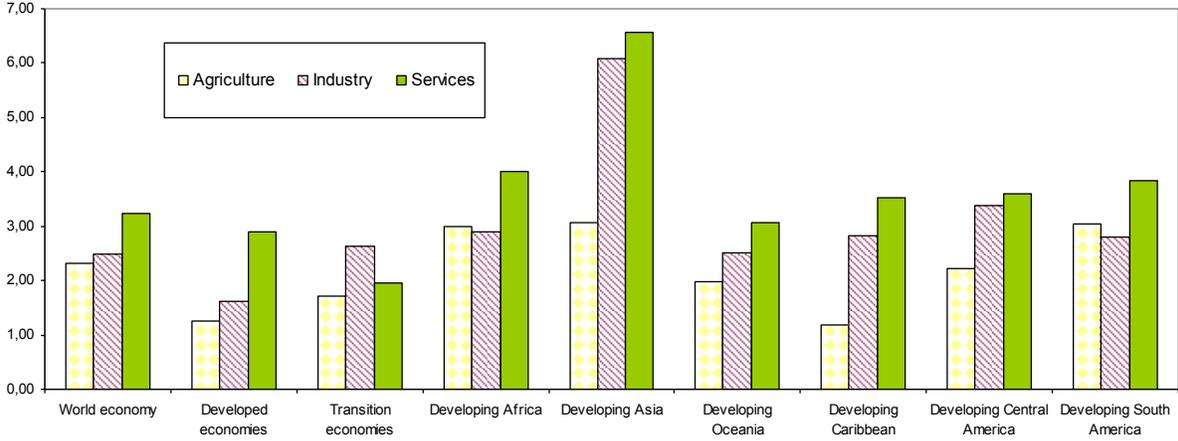


Source: UNCTAD database, April 2013.

In contrast to statistics on value added, employment statistics generally report a slightly lower share of employment in the service sector in developing economies (63 percent for LAC in 2010) due to the large proportion of the population working in agriculture. The opposite is true in the developed economies. The higher productivity growth in agriculture and manufacturing, with fewer and fewer people employed in these sectors, explains the relatively higher shares of services in developed countries.

Figure 2 shows the annual growth rates of value added in the agriculture, manufacturing, and service sectors in the same regions and in the same period (1970–2010). The impressive growth rates in developing Asia are not only driven by industry, but by services. Services are leading the economic dynamism in all regions, except in transition economies, where industry still shows higher growth rates. In LAC, the main difference is the uneven role played by agriculture, leading to very high growth rates in South America and very low rates in the Caribbean.

**Figure 2. Annual Growth Rates of Value Added in Main Economic Sectors
In Constant Prices, 1970–2010**



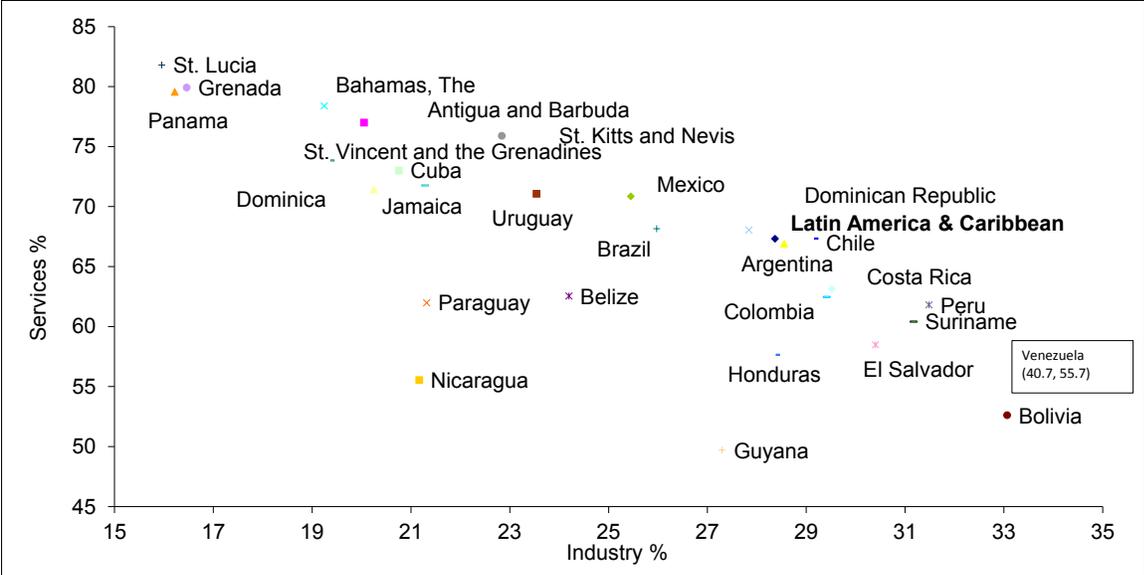
Source: UNCTAD database, April 2013.

Within the LAC region, there are important differences in terms of economic specialization. Figure 3 depicts the shares of services and industry by countries. Most Caribbean countries are highly service-oriented, due to the importance of tourism in their economies. In Central and South America, the situation is heterogeneous. Venezuela, Peru, Bolivia, and Ecuador are the

most industry-oriented countries in the region, while Mexico, Uruguay, Chile, and Argentina are leaning toward services even if they still retain a large share of manufacturing.

Figure 4 presents the growth rates of services and industry in annual value added (in constant prices, 1980–2010). The growth of services is constantly higher than the growth of industry, except in Peru and Ecuador. Apart from these two exceptions, there appears to be a strong correlation between growth in services and growth in manufacturing, although asymmetries (more growth in services per unit growth than in industry) exist. Countries performing well in services perform well in manufacturing, and vice versa. This suggests that economic growth, when present, spreads across all broad sectors (not necessarily the case at the detailed sector level). It also suggests that the inter-sectoral relationship matters. There are a lot of services in industry, which affects the statistics in one way or another.

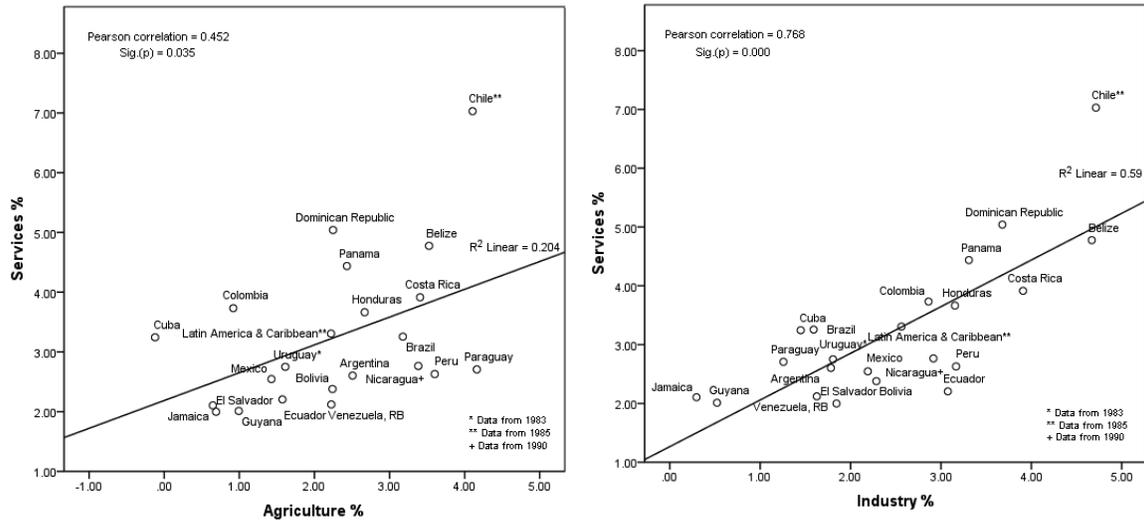
Figure 3. Shares of Services and Industry in Total Value Added, 2010



Source: World Bank database, April 2013.

With respect to agriculture, the correlation is not so evident or significant. There is some correlation, but many countries do not follow the expected path. This is because agriculture has its own peculiarities, and its integration with services is less important than in the case of industry. The graphs support the idea that growth in countries with a high natural resource base and agriculture and a high industrial base is correlated with growth in services.

**Figure 4. Annual Growth Rates of Value Added, LAC 1980-2010:
Services vs. Agriculture and Services vs. Industry**



Source: UNCTAD database, April 2013.

1.2 Drivers of the New Service Economy

The fast growth of services in the world economy is undeniable. However, the reasons why services have gained such prominence are different from country to country, and the empirical evidence suggests that there is no single, dominant explanation for all countries and services.

There are eight main reasons explaining the growth of services:

1. Sector-specific productivity trends (Baumol's cost disease)
2. Income growth
3. Human capital accumulation
4. Technological change and ICTs
5. Organizational change
6. Service integration
7. Trade globalization
8. State, regulations, and institutional change

Traditionally, attention has focused on the first and second reasons, but recently, more attention has been paid to factors such as the nature of inputs and outputs, the productive and consumer processes, and the markets in which services operate.

1.2.1 Sector-specific Productivity Trends (Baumol's Cost Disease)

The primary reason for the growth in services is the change in intersectoral productivity. As explained by Maroto and Rubalcaba (2012), the argument dates back to the 1940s (Fourastié, 1949 in particular). This thesis reached its peak with Baumol (1967). Baumol explained the differences in sectoral productivity growth among sectors as a result of the role played by labor input in different sectors. In “progressive” sectors (which Baumol identified as manufacturing), labor is a mean, while in “stagnant” sectors (identified as part of services) labor is an end in itself. Therefore, in an economy where wages are set according to the growth of productivity in the manufacturing sector, costs in these less dynamic sectors systematically grow over time. If demand in the less dynamic sectors is not affected by their relatively higher prices (low demand price elasticity), labor will shift toward services in a continuous flow. Baumol's cost disease predicts a secular decrease in economic growth due to the slow growth of productivity in services and its growing influence in productive sectors, concomitant with a systematic increase in the price of service (See Box 1).

Box 1. The Low Productivity of Services According to Baumol

*From “Must the Growth Rate Decline? Baumol’s Unbalanced Growth Revisited.”
by N. Outlon, 1999, Bank of England, pages 14-15.*

“For purposes of illustration, suppose there are only two industries which for concreteness we label cars and haircuts. Suppose that labor is the only input. Assume that productivity is rising in cars but not in haircuts. Incomes are rising over time because there is productivity growth in one sector even if not in the other. Suppose that people’s demand for the two products rises at an equal rate. (We shall see in a moment that this common growth rate must be declining over time.) Assume that total employment is constant. Then, since people want to have their hair cut more frequently as they grow richer, more hairdressers will be employed. Since total employment is fixed, this means that fewer car workers will be employed. This is possible since the productivity of car workers is rising: the growing demand for cars can be satisfied by progressively fewer car workers.

As long as these assumptions continue to apply, the proportion of the workforce employed in hairdressing will go on rising, approaching one asymptotically. Given that total resources are fixed, the overall growth rate of the economy must slow down. This is because aggregate productivity growth is a weighted average of productivity growth in the two sectors, where the weights are shares in total employment. We have already seen that the employment share of haircuts is rising over time. So the sector with zero productivity growth gets an ever-increasing weight and the overall productivity growth rate must therefore decline. Because total employment is fixed, the growth rate of aggregate output must decline too.

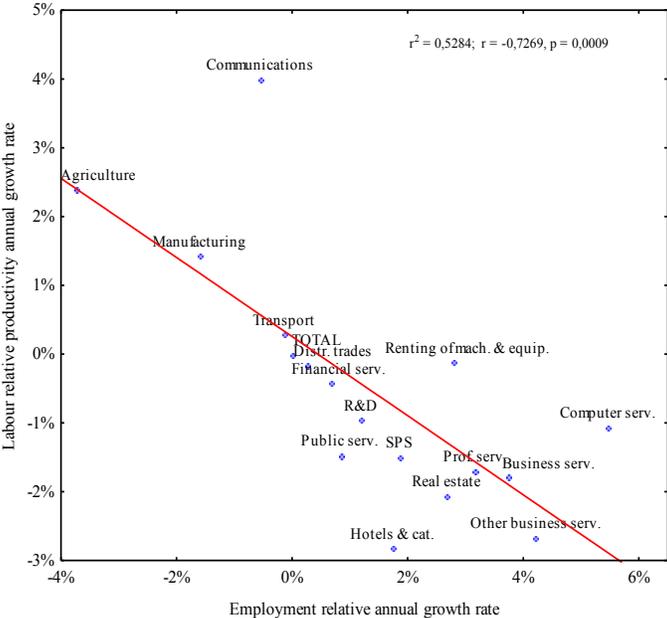
What is happening to costs and prices? Assume that wages in the two industries move in step with each other. Then, since it always requires the same amount of labour to cut someone’s hair, but progressively less labour to produce a car, the relative price of a haircut must be rising. It follows that the proportion of consumers’ expenditure which falls on haircuts must also be growing, approaching one asymptotically. Since the product which forms an ever larger share of expenditure is subject to zero productivity growth, the rate at which the standard of living is rising must be declining. More precisely, the growth rate of the standard of living is falling asymptotically to zero.”

A major problem with respect to services is how to measure their productivity. Problems with the measurement of both inputs and output call for caution in interpreting the data. Alternative approaches should be used as well. Using national accounts statistics, when employment and productivity growth are compared in relative terms across economic sectors, Baumol’s cost disease has some validity in explaining the growth of the service sector. But this hypothesis may only explain 53 percent of employment growth, with a correlation of – 0.7. This is shown in

Figure 5, based on the comparison between relative employment and relative productivity growth in 15 EU countries in the period 1979–2003. Some sectors, such as ICT, had higher-than-expected productivity growth, while others saw lower-than-expected performance (hotels, public services, and social and personal services).

This is confirmed by Maroto and Rubalcaba (2010), who find a dualism at the sectoral level. Using traditional productivity statistics from the OECD, some service sectors register similar or even higher productivity growth than some industries in certain periods and in certain countries. This is the case with transport services, computer and related services, communication services, and financial services. However, other service, such as a number of business services, distributive trades, tourism, personal services, and others, perform very badly.

Figure 5. Relative Productivity Growth and Relative Employment Growth, EU15, 1979–2003: Cross-sector Comparison



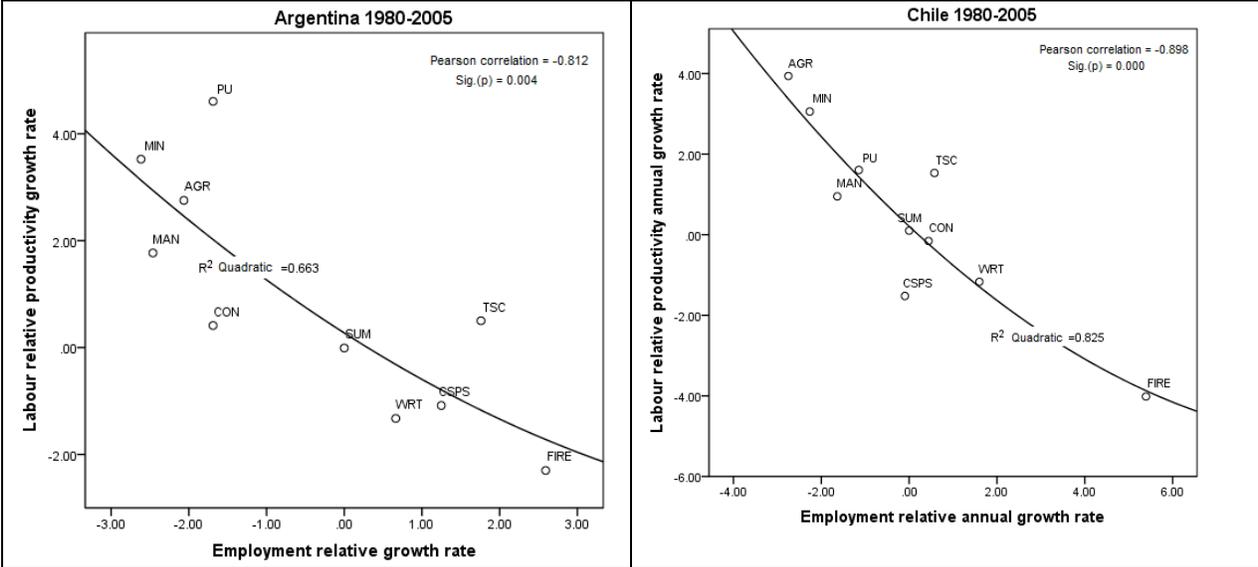
Source: Rubalcaba (2007) based on OECD and GGCD National Accounts Statistics.

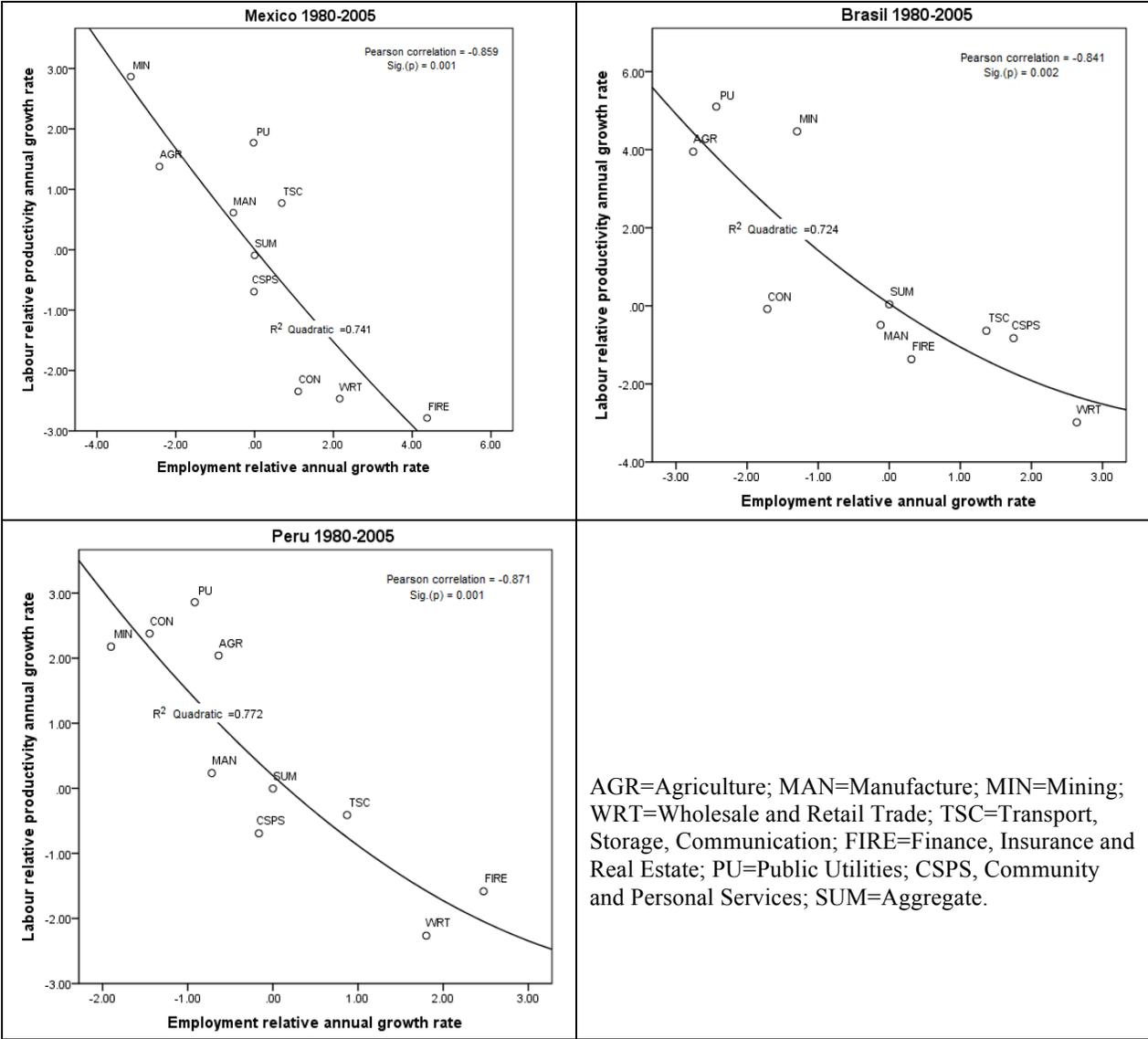
Similar results are obtained when using available data from national accounts statistics for individual LAC countries (Figure 6). Correlations are stronger in LAC countries where available data (on Argentina, Mexico, Brazil, Chile, and Peru) show coefficients between -0.8 and -0.9, than in Europe, where the coefficient is 0.72. Regressions explaining employment growth by changes in relative productivity explain more variance in the LAC countries selected (from 66

percent in Argentina to 82 percent in Chile) than in the EU case (53 percent). These differences can be partly explained by statistical effects, since the sectors included in the analyses are not the same in all cases, as well as by the greater influence of price and cost factors in LAC when explaining the shift in employment toward service sectors following Baumol’s model.

It is clear that the model does not explain everything, but it may explain a significant part of the growth of services. For the LAC countries selected, the correlations are strong because of the relatively high productivity of agriculture, manufacturing, and public utilities and the relatively low productivity of most services, specifically financial and business services and wholesale and retail services.

Figure 6. Labor Productivity and Employment Growth in LAC





Source: Groningen database on sectoral aggregates in April 2013.

1.2.2 Income Growth

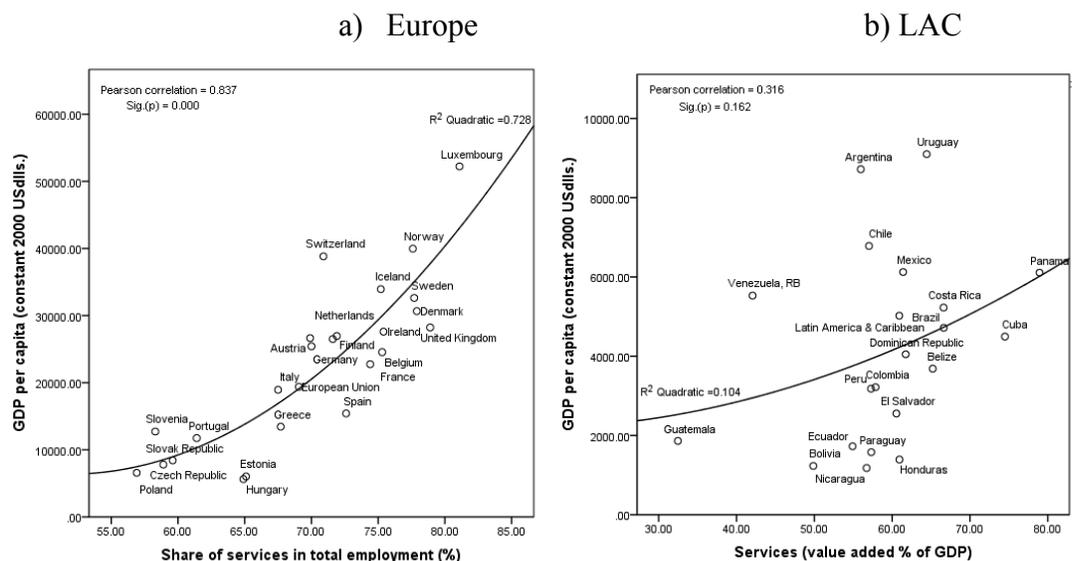
Apart from productivity, the growth of the service sector is often explained by the income rises and less relative consumption of basic goods (Engel’s law). In countries with higher per capita income, the participation of the service sector in employment is also higher. This has been proven in many cases (Maddison, 1980; OECD, 2005). The reason is that the final demand for some services registers high income elasticity, particularly those services that contribute to improvement of the quality of life (leisure, education, health, travel, among others). At the same time, demographic changes in the richest economies, specifically related to the aging of the population, have increased the demand for certain services, such as health care and personal

services. Finally, the welfare state concept in some developed countries has affected the demand for a number of services, particularly education and health care.

Figure 8a illustrates the strong positive relationship between per capita GDP measured by purchasing power standards (PPS) and the participation of services in total employment for OECD countries. In high-income countries, the contribution of services in employment is high. In contrast, employment in the service sectors in Poland, Slovakia, the Czech Republic, and Hungary is low.

According to previous studies (Rubalcaba, 2007), the relationship shown in Figure 8a becomes less evident when more countries are included in the sample. Some small, rich countries (i.e., some Arab countries) have a poorly developed service sector, while many countries with a relatively low GDP have a higher proportion of services, notably, tourism and public services. In Latin America, the picture is quite different than in Europe (Figure 8b). Again, higher income may demand more services, although the income thesis is not valid across all countries. Countries with higher per capita GDP per capita are not necessarily those with the greatest proportion of services in their economy.

Figure 8. Relationship between per Capita GDP and Services. 2010



Source: World Bank database, data April 2013.

The graphs suggest that Latin American countries may begin to follow the path of European economies, where correlations between per capita GDP and the share of services in the economy are robust, even in large countries. Similarities can be seen between Luxembourg and some small and relatively rich islands in the Caribbean. The interesting comparison is between large European countries (France, Germany, the UK, Italy, Spain, and Poland) and large countries in Latin America (Brazil, Mexico, Colombia, Argentina, Peru, Venezuela, and Chile). The common structural shift toward more services (oil-rich Venezuela is an exception) appears to occur even if Latin American economies are more oriented to agriculture and manufacturing than those in Europe.

In addition, the evidence of a stronger relationship in Europe could also be explained by the larger market size and business for services in Europe, even if the internal market for services is far from being saturated. The GDP variable captures a demand variable related to market size. In goods and commodities, markets are genuinely global, while markets in services are much more local and regional, affecting the growth of competitive services.

In short, the more that per capita GDP rises the LAC region, the more services are expected to grow, following the path of developed economies. The synergies between income and services can be particularly rich, more so if the service economy becomes more diversified and focused on knowledge-intensive business services (Rubalcaba and Kox, 2007) beyond tourism and public services.

1.2.3 Human Capital Accumulation

To a large extent, the growth of services is based on the availability of human capital. Production in the tertiary sector requires higher-skilled labor than manufacturing (Messina, 2004 and OECD, 2005). However, heterogeneous situations exist within the manufacturing and tertiary sectors. Knowledge-intensive services demand specialized skills and are therefore more closely linked to the urban and regional areas where higher-skilled workers are found. Nevertheless, while some business services require highly skilled staff, such as management consultants, others use low-skilled employees, as in industrial cleaning. The importance of human capital in explaining services growth is that service work has become more and more specialized. The emergence of more professionalism and expertise in services has promoted the growth of new service jobs.

1.2.4 Technological Change and ICTs

Technology and innovation are key elements in economic growth. New ICTs have revolutionized the tertiary sector. The enormous technological progress of the last 20 years has coincided with the consolidation of the service economy and the emergence of more sophisticated services. This coincidence suggests that substitution processes have not reduced the growth of services, and may even have contributed to their expansion. Some sectors have benefited from economies of scale, owing to the increasing use of new technologies. They include financial services, health care, distribution services, and telecommunications. One of the sectors most closely linked to this process is business service.

Engineering, computer and related activities, and e-commerce are the business services most strongly associated with the “technological revolution.” They facilitated the production, expansion, and use of new technologies that have become the infrastructure for e-economy technologies. Many new services, such as ICT, have been and remain the forerunners of Internet-related businesses. Their growth is based on the incorporation and improvement of this technology. Technology has also paved the way for new services, such as offshoring, which become more marketable and grow even at a distance. In summary, technological changes promote the emergence of new tertiary activities through innovation.

1.2.5 Organizational Change

Due to their dynamic nature, production systems evolve continually. Flexibility is the key element of what many would call a new productive paradigm. The introduction of new ICT, the integration of goods and services, and other processes of change are accompanied by flexibility. Although flexible systems have existed since the industrial revolution (Gertler, 1988), the foundations for a completely new work environment are being laid (Giarini and Stahel, 1993). The initial theories put forward by Taylor (1911) and Fayol (1916), based on the efficient organization of labor, are obsolete in productive systems where information and meta-information play a predominant role. In this context, new concepts of programming, communication, excellence, Z theory, reengineering, and others derive from the bounded rationality principle introduced by Herbert Simon (1945). The concepts of flexible specialization (Piore and Sabel, 1984) and flexible integration (Cooke, 1988; Valery, 1987) have turned the word flexibility, also related to modularity, into the new name of the industrial production game.

In new, more open and decentralized businesses, business management is increasingly using a service-dominant logic (Vargo and Lusch, 2008), making the role of services much more visible.

The emergence of this flexible productive environment contributes to the development of the service economy by means of gains resulting from specialization and organizational changes. Flexibility explains the growth of certain services, largely due to its facilitation of integrated specialization. As production is organized in more horizontal and decentralized units—in which departments, companies, and offices increasingly share production—production services have gained the necessary space to develop. In part, the gains in specialization, derived from more flexible production systems, have been channeled toward outsourcing of services. The most important issue regarding service outsourcing is that it has served as a key argument to explain the growth of business services. In fact, many manufacturing companies have delegated some tertiary activities, such as financing, research and development, and logistics, to specialized suppliers delivering these services at lower cost and with higher quality. However, outsourcing only partly explains the growth of business services (Rubalcaba and Kox, 2007).

1.2.6 Service Integration

Goods and services are more and more integrated. Final products are changing in composition and nature. Many manufactured goods are accompanied by new value-added services and are using services intensively. Examples of service integration include value-added services that accompany sales of vehicles, such as maintenance contracts, financial and insurance services, logistics services, renting, and leasing. This trend varies by sub-sector, but the general trend is about servitization and encapsulation of products into services (Howells, 2004). Products are regarded as part of the goods-services continuum, a joint association of tangibles and intangibles. Moreover, changes in markets and globalization require more differentiation to be competitive. Today, this differentiation stems to a significant degree from the integration of services in products.

1.2.7 Globalization and Trade in Services

Competitive pressures associated with market globalization have changed relationships among companies, increasing the need for modernization and interaction. The internationalization process increases the size of businesses, facilitates the distribution of labor, provides opportunities for economies of scale and specialization, and establishes the need for

incorporating services in production and distribution (François, 1990). In this sense, internationalization contributes in part to the increase in the demand for services, particularly business services (Bryson, 2004; Rubalcaba and Van Welsum, 2007).

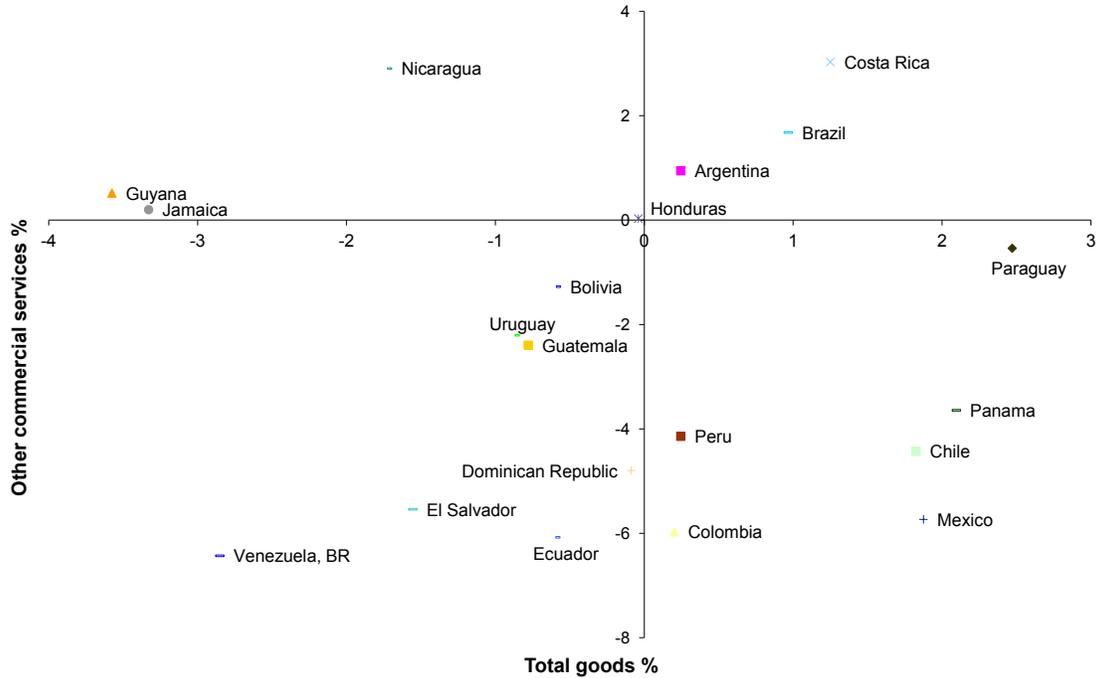
The growth of service exports is partly associated with the growth of exports in other sectors. One example from Latin America is Chile, where the mining sector has grown from exporting US\$8.7 billion in 2003 to exporting US\$48.9 billion in 2011. This impressive growth mirrors the equally impressive increase in exports of engineering services, from US\$12 million in 2003 to US\$209 million in 2011 (Korinek, 2013). The role of mining-related suppliers and services has been highly important in this sector, as exemplified by Enaex, which has led the transformation of mining providers into service-related companies.

The growth of services in international trade is thus not limited to travel and transport. Other market services are exporting more and more services: the emergence of offshoring in 2000 has opened up new competitive opportunities for developing economies. Not all countries are obtaining the same advantages from the new markets for services. Brazil, Argentina, and Costa Rica increased their market shares in both goods and service exports between 1980 and 2010. However, Bolivia, Uruguay, Guatemala, El Salvador, Ecuador, and Venezuela lost market share in both manufacturing and agriculture goods and other market services (Figure 10).

In any case, international trade in services is partly limited by the services preference – due to both natural and trade regulatory factors- for foreign direct investment (FDI). Compared to goods traded, services traded globally comprise 20–25 percent of total trade. To a large extent, a higher proportion of services in the world market can be explained by FDI, which has surpassed manufacturing in recent years (the weight of services in FDI is similar to the weight of services in GDP overall). Due to these FDI flows, service providers have consolidated their presence in foreign markets. However, despite the proportion of services in FDI, international trade is also complementary to FDI and not necessarily a substitute (Rubalcaba and Toivonen, 2013). Globalization is promoting different complementary ways to internationalize services. Some business services, specifically engineering services, strategic consultancy, fairs, marketing, market studies, and others, have burgeoned as a result of globalization.

Figure 10. International Trade in other Commercial Services
(world export market shares)

Exports market share growth rates (1980-2010)



Source: World Trade Organization.

1.2.8 The State, Regulation, and Institutional and Social Changes

The State exerts influence on service innovation in various ways. Public sector reform processes seek to reduce costs, downsize, and modernize public services. In the past 20 years, governments have liberalized service sectors, which previously operated as monopolies or in non-competitive or restricted markets. The opening up of markets in telecommunications explains the growth in some sub-sectors, particularly due to productivity and efficiency gains. The same is true in the airline industry, but not in other sectors operating in poorly integrated and liberalized markets. Local governments have also promoted the growth of services in the context of regional development. In Latin America, liberalization and integration of services have been more limited than in other areas such as the European Union. The General Agreement on Trade in Services (GATS) negotiations and regional trade agreements are promoting liberalization to facilitate the growth of new and improved services.

Regulation contributes to growth in some service sectors, particularly business services. Some of the services that have seen the most growth are legal services, accountancy, tax counselling, auditing, and product or environmental quality certification. Government regulations promote their growth to bring about improvement in legal services, accounting, the tax system, the preservation of the environment, and consumer protection. Coercive and mandatory rules have promoted the rapid development of some business services since the 1980s. In addition to changes in the public and private provision of services, the role of the non-profit sector in service provision is increasing. In Latin America, social services provided by non-governmental organizations are important in the context of international development assistance.

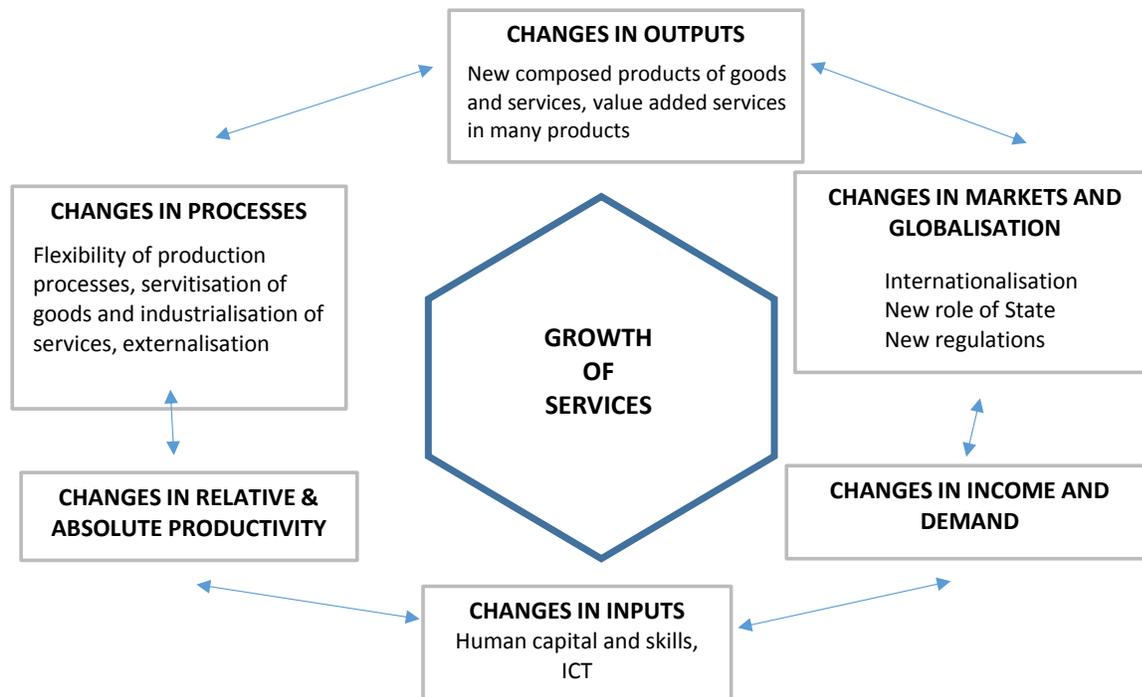
Another institutional change has followed the emergence of public services provided by private actors in Latin America. There is already a long tradition of private agents providing health care services. In other social sectors, such as education, private suppliers have begun providing more and better services. In the transport sector, public-private partnerships are emerging. There is room for further competition and collaboration between public and private actors.

Finally, private institutions, families, and villages have contributed to the growth of the service sector. Urbanization in advanced societies evolved in conjunction with higher concentrations of population. Changes in family roles resulted from the massive influx of women into the labor force and the large rural-urban migratory flows starting in the 1950s. All of these changes have raised the cost of city life and increased congestion and pollution. People have less free time, which has given rise to new services. The increase in the number of women in the work force has prompted the emergence of services such as day care, pre-school, and domestic services for families with two working parents. The rising population in urban areas has created the need for more public safety and traffic control services.

Figure 11 summarizes the different factors analyzed and distinguishes three types of fundamental changes that have fostered the increase in services in modern economies: changes in inputs (labor, human capital, technology), productive systems (flexibility and goods-services integration) and markets (economic growth, role of the State). No single reason explains the expansion of the tertiary sector. Evolving statistical categories also explain, to some extent, the growth of the services sector, as large enterprises that were formerly categorized as

manufacturers became tertiary companies when the services that they produced exceeded a certain threshold.

Figure 11
Summary of Reasons Explaining the Growth in Services

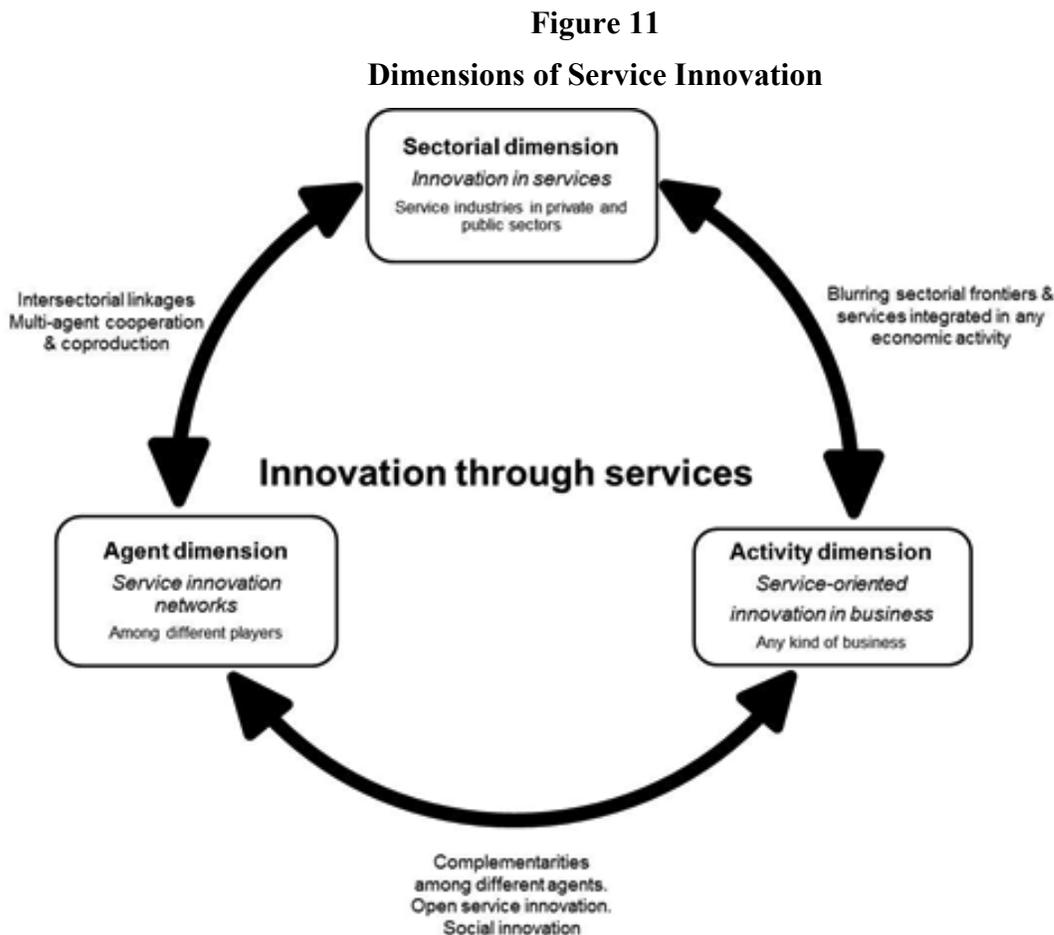


2. The Role of Service Innovation

Based on the Baumol cost disease theory, the traditional reason for the lack of productivity growth in services is the innovation gap. Since Adam Smith (1776) put forward the negative view of services as generating no value added, services have been neglected, and the general view of services as not productive, not innovative, and not tradable is alive and well. This negative perception leads to a myth that rejects services as valuable economic activities and views manufacturing as the key activity where the wealth of nations is located and on which all innovation policies should focus. In the slow process of overcoming this obscurity, it has been necessary to dispel the myths about services (Gallouj, 2002a). Today, service sectors have demonstrated that they can be productive, innovative, and tradable.

2.1. The Three Dimensions of Service Innovation

Service innovation is a relatively new concept in academic research. It is immensely important for understanding and improving productivity and competitiveness, not only in the service sector, but in the rest of the economy as well. It is a complex issue. In order to understand service innovation, it is advisable to divide the notion up into three distinct but partially overlapping dimensions (Rubalcaba et al., 2012).



Source: Rubalcaba et al. (2012).

First, the **sectorial dimension** refers to innovation in the service sector itself (private and public). Because the service sector represents by far the largest part of the world economy, the application of innovative measures and positive framework conditions is essential. Innovation in

the service sector leads to increases in productivity and competitiveness within the dominant sectors of the economy.

Second, the **activity dimension** of any economic sector, including manufacturing and agriculture, always comprises several service activities, to the extent that often the picture gets blurred by looking at products offering a mixture of services and goods. Service innovation is therefore highly relevant to business innovation in general. This is the service innovation around the service functions in agriculture, manufacturing, or service firms.

Third, the **agent co-production dimension** is based on the fact that service innovation often is a result of innovation networks in which the various agents contribute to the creation of a service-based result. Research on the concept of multi-agent frameworks (e.g., Windrum and García-Goñi, 2008), is contributing to the expansion of knowledge on service innovation. For instance, the EU ServPPIN project analyzing private-public service innovation networks resulted in a better understanding of the co-production dimension, also reflecting the concept of open and social innovation in services. A central aspect is that service innovation is often co-produced with end users and other outside knowledge sources.

Finally, elements that help promote innovation in all areas exist at the crossroads of sectoral innovation in service, service-oriented innovation activities in business, and service innovation co-production through specific services or a special use of services. Examples of these elements are the rapid emergence of knowledge-intensive business services and the development of new technology together with the associated services (ICT) of particular importance to organizational innovation.

2.2. Definitions, Modes, and Characteristics

Most management approaches have focused on the activity dimension of service innovation, related to a particular approach to business innovation. Service innovation has been defined by the service-oriented modes that business tries to invent. Den Hertog (2010) defines a service innovation as “a new service experience or service solution in one or several of the following dimensions: new service concept, new customer interaction, new value system/business partners, new revenue model, or new organizational or technological service delivery system.”²

² An earlier definition was provided by Van Ark et al. (2003): “a new or considerably changed service concept, client interaction channel, service delivery system, or technological concepts that individually, but most likely in

2.2.1 Conceptual Approaches to Service Innovation

Services are often seen as innovative to the extent that they can be integrated into new technologies. New and emerging services in the ICT environment are proof that services can be innovative. However, this view still represents a technological view of service innovation: services can be innovative because they behave as goods. This assimilation approach (service innovation understood by using the same criteria as in goods innovations) is only part of the picture, but most theories on innovation in services focus on this particular aspect. This was partly reflected in Pavitt's classifications (1984, 1989) and in Barras' (1986, 1990) reverse product cycle model, one of the few attempts to develop a genuine innovation theory for services (Haukes, 1996), later revisited by Gallouj (1998). However, non-technological elements are also considered very important in services (Gallouj, 2000). This leads to separate approaches to service innovation, in what is called the "demarcation approach" (Coombs and Miles, 2000). Until recently, an important tradition in studies on innovation in services has followed the demarcation approach, but trends always existed toward more of a "synthesis approach" in which assimilation-technology approaches are combined with demarcation-non-technology approaches. This was the case in the revision of the theories relating to service innovation done in the context of new innovation, "horizontal," and system- and networking-based theories (Freeman, 1991; Rothwell, 1994; Rosenberg, 1994).

From this debate about the different approaches to service innovation, we can summarize the three approaches to service innovation have been proposed (Boden and Miles, 2000; Gallouj, 1996), from which different implications of innovation policies are derived: "assimilation," "demarcation," and "systemic."³

The assimilation approach is based on the idea that innovation in services is similar to innovation in manufacturing. Thus, services and innovation in services can be studied by using

combination, lead to one or more (re)new(ed) service functions that are new to the firm and do change the services or goods offered on the market, and do require structurally new technological, human or organizational capabilities of the service organization." Gallouj (2002) has proposed other modes of service innovation, including fragmentation, integration, ad hoc innovation, on topic or product and process innovation, radical or incremental. In this way, service innovation is not just the organizational or marketing innovation that is placed in the Oslo Manual. There are service innovations that represent product innovation, process innovation, organizational innovation, and marketing innovations, while these categories of innovation are not necessary related to service innovation and can clarify innovation in goods.

³ Extensions of these approaches have recently been developed (Drejer (2002), Nahlinder (2002), Rubalcaba (2006), and Den Hertog and Rubalcaba (2010).

or adapting the concepts and tools developed to study innovation in the manufacturing industry (Tether, 2005). However, in this analysis, a slightly modified version of the assimilation approach is used when service innovation is unable to achieve the same performance as in the manufacturing industry. Service innovation and goods innovation are understood in the same way, but they provide substantially different outcomes (assimilation-asymmetric approach: similar in nature, different in performance). The less important role given to services in the assimilation approach has its origins in classical economic tradition, where services are not seen as generating any value, that is, not contributing to productivity and innovation. This has had some influence on the innovation taxonomy carried out by Pavitt (1984): services are mainly *receivers* of the innovations developed in other sectors. Although some services (computer-related services and telecommunications) were later recognized for their innovative role (Pavitt, 1989), these cases are seen as exceptions. This dominant view of innovation in services portrays the process as supplier-dominated, where service firms are dependent on their suppliers for innovation inputs (den Hertog, 2000).

In the demarcation approach, services have real positive value. Services have their own conditions. They have their own way of being innovative and influencing society. Services are by nature different from goods, a fact that requires a new way of thinking about the innovative processes and their implications.

The integration (sometimes called synthesis or systemic) approach recognizes similarities and differences between goods innovation and service innovation. At the same time, the relationship between goods and services is so complicated that these types of innovations cannot substitute one another. Furthermore, the differences between specific industrial sectors and between service sectors are in many cases more pronounced than between the two main categories.⁴ In this approach, the elements common to goods innovation and service innovation are accentuated. However, the integration between goods and services and the growing similarities and complementarity between innovation of goods and of services neither justify the elimination of individual differences of different natures nor confuse them.

⁴ Research carried out by Preissl (2000), Gallouj and Weinstein (1997), and Sirilli and Evangelista (1998), initially included in the demarcation theses, also points in this direction.

2.2.2. The Empirical Approach to Service Innovation Characteristics

It is useful to define service innovation. Miles (1994, 2000, 2005), Tether (2005), Evangelista (2006), and Howells (2010) distinguished service innovation from goods innovation in several areas, such as modes of innovation, inputs, outputs, risk, appropriation issues, and impacts. Some differences between service innovations and innovations in goods can be extracted from the EU Community Innovation Survey data at the sectoral level (a detailed analysis is done in Rubalcaba, Gallego and Gago, 2010).

Table 1. Distinctiveness Coefficient in Some Key Policy-related Indicators: Services versus Goods, Europe-16

	<i>Total goods industries</i>	<i>Manufacturing</i>	<i>Total services</i>	<i>Distributive trades</i>	<i>Transport and communications</i>	<i>Financial services</i>	<i>Business services</i>
% of innovative firms	1.00	1.004	0.773	0.699	0.625	1.204	1.070
Intramural R&D	1.00	1.060	0.791	0.601	0.627	0.815	1.213
Extramural R&D	1.00	1.017	0.964	0.932	0.873	1.142	1.112
Impacts on costs	1.00	1.005	0.677	0.656	0.841	0.888	0.576
Impacts on quality	1.00	1.010	1.033	0.907	1.063	1.118	1.170
Impacts on respond time	1.00	1.007	1.227	1.250	1.330	1.307	1.113
Patents	1.00	1.033	0.517	0.575	0.254	0.125	0.825
Copyright	1.00	1.014	1.598	1.065	0.531	0.764	3.632
Total public funding	1.00	1.005	0.574	0.470	0.463	0.239	0.944

Note: Europe-16 refers to Belgium, Czech Republic, Denmark, Spain, France, Italy, Cyprus, Lithuania, Luxembourg, Hungary, Netherlands, Poland, Portugal, Romania, Slovakia and Norway.

Source: CIS4 database, Eurostat. Den Hertog and Rubalcaba (2010).

The calculations in Table 1 are based on a distinctiveness coefficient comparing innovation in goods and in services at sectoral level. It also compares subsectors within services based on the fact that they are very different. A case in point is that the percentage of innovative companies is roughly the same in both the manufacturing and service sectors, as are the obstacles to innovation. However, in some variables, differences are clearly significant, like the use of R&D, the use of patents (little importance in services) and IPR or the impacts in costs (services innovation is much more driven to increases in quality, sometimes increasing costs as well, than to cost reductions).

An initial result is that service innovation uses less R&D than manufacturing innovation. The processes behind service innovation are much less formal and structured. This is partly due to the greater importance of human interactions in service innovation than in goods innovations,

which are more technology-based (Miles, 1995, 1999). Moreover, the sources of innovation in services are much more diverse. For several reasons, the investment in R&D in services appears to be lower than it actually is, and the measurements need to be refined. This is because of the intangible nature of services. They are less visible and consequently less appealing to prospective investors. Investment in service innovation is also more risky and prone to market failures.

Another characteristic of a service is the interaction between the service provider and the customer, which makes it difficult to distinguish between product and process innovation in services. Greater reliance on human and organizational elements is another characteristic of services. For example, goods are associated with the acquisition of production factors such as machines and raw materials while knowledge, skills and non-technological elements are far more important in services. Service innovation necessitates new overarching concepts and connections, different means of delivery, and new choices and inventions in technology.

2.2.3. Patterns and Examples of Innovation in Services

Den Hertog (2010) defines five patterns for service innovation: supplier-dominated innovation, innovation in service firms (in-house), client-led innovation (or user-driven innovations), innovation through services (knowledge-intensive business services [KIBS]), and paradigmatic innovations (or ICT-led innovations). The in-house innovation is the typical innovation in services. All other innovations stem from outside sources; the providers, the clients and KIBS, or the large innovative evolutions. This classification of innovation is particularly useful when analyzing examples of service innovation in different sectors. Table 2 presents an adapted version of the Den Hertog table, ordering examples for service innovation.

Table 2. Examples of Service Innovation and Service Innovation Patterns in Service Sectors

	<i>Supplier dominated innovation</i>	<i>In-house innovation</i>	<i>Client led innovation</i>	<i>Innovation by knowledge-intensive services</i>	<i>ICT paradigmatic innovations</i>
<i>Retailing</i>	Scanning, Storage systems New deals with suppliers	New shops formula. New franchises models	Place of green or organic products. Home deliveries	New marketing strategies	E-commerce, shopping with cell models
<i>Transport & logistics</i>	On boards computers	New logistics concepts	Outsourcing of transport	Systems for tracking and tracing.	Containerization
<i>Financial services</i>	New distribution channels (SMS alerts, etc) Back offices.	Multichannel management development	Green banking, starting mortgage or estate planning	Financial constructions, new risk assessment models.	Multifunctional smart cards
<i>IT services</i>	New packages software	Innovative software	Recovery or trouble shooting firms, user friendly interfaces	Groupwares, client profiling, efficiency oriented software	New standardized protocols and infrastructure
<i>Engineering services</i>	Installation and operation of new (to the client firms) equipment	New business methods for management	Green services for new client needs	Specific innovation such as new drilling techniques	New specific software

Source: Partially extended and adapted from Den Hertog (2012). Categories of patterns have been renamed.

2.2.4. Measurement Issues and Impact

Service innovation is difficult to measure. Many forms of service innovation are not directly observable since they are not technological, meaning that their outputs are not generally reflected in patents or other registry indicators. Djelall and Gallouj 2010 point out the innovation gap between the visible and the invisible. In terms of performance, there is also a gap between what can be registered (GDP growth, productivity) and what cannot be registered (impacts on quality and welfare). Service innovation affects both visible and invisible performance. A policy gap may be defined in all areas beyond the narrower relationship between visible service innovation and visible performance.

3. Failures Justifying Service Innovation Policies

The importance of services in modern economies calls for the formulation of service innovation policies. Service innovation policies should address gaps in productivity and competitiveness in the most important economic activities. Moreover, services are creating new competitive advantages for some developing countries, including those hosting offshoring services and service delocalization from developed economies. New and improved services can provide competitive advantages in countries that have traditionally concentrated on commodities or tourism. Service innovation can reinforce existing competitive advantages (e.g., better service logistics associated with commodities trading) and create new types of services (e.g., new ICT offshoring services).

However, these arguments may not suffice to justify public policies aimed at improving service innovation. There are four common arguments against the formulation of public policies for the service sector:

1. Industry is the key sector to promote.
2. Innovation policies are already horizontal and therefore also support the service sector.
3. Promotion of services innovation hampers competition.
4. The rationale for market and systemic failures is demonstrated for goods but not for services.

These arguments are largely false, for the following reasons.

1. *“Industry is the key sector to promote.”* This argument advocates keeping the focus on manufacturing, with no resources devoted to non-priority sectors, such as services. This argument is partly valid for countries that have already decided on a competitive strategy, particularly in manufacturing. But even then, policy makers should consider promoting service intervention related to the particular products to be promoted. All manufacturing products need innovative services to be competitive (in the areas of design, distribution and commercialization, logistics, after-sales services, and marketing). Innovation in the accompanying service is likely to lead to better-quality products. Therefore, even if a country chooses to focus on industry, value-added services for manufacturing are necessary.

2. *“Innovation policies are already horizontal and therefore also support the service sector.”* Some policy makers argue that most existing R&D and innovation policies do not exclude services. The reasons for focusing on service innovation would thus not be self-evident. This is a classic argument for any policy maker dealing with horizontal actions addressed to any economic activity, with no selectivity between some activities and others. Service innovation is often excluded because other possible actions are more technologically robust. There is a preference for funding technological actions that give services a very low priority. This explains how, even if services are not legally excluded from the plans, in practice their needs are not very well addressed. In the European Union, non-ICT service companies receive less than half the amount of innovation funding allocated to manufacturing (Gallego and Rubalcaba, 2008).
3. *“Promotion of services innovation hampers competition.”* Service innovation seems to be too close to the market, meaning that the promotion of service innovation could contravene competition laws. This argument is based on the perception that service innovation is basically understood as organizational and marketing innovation, directly influencing prices and marketing issues, thus directly interfering in the market, while actions that address product or process innovation are not as connected to the market. Today, it is not possible to establish a clear boundary between what is close to and far from the market in any R&D and innovation process. However, policy makers may decide to promote service innovation, addressing new or improved services, products, process or organizational innovation and not all marketing innovations.
4. *“The rationale for market and systemic failures is demonstrated for goods but not for services.”* Theories on market and systemic failures have been created mostly for understanding manufacturing-based scenarios. As in most economic theories, manufacturing and utilities sectors have also been the key reference for modelling. However, the rationale to support any innovation policy is fully applicable in the case of services, as previous contributions have demonstrated (Rubalcaba, 2006, et al., 2010; Den Hertog et al., 2010; Den Hertog and Rubalcaba, 2010; van Cruysen and Holanders, 2008). The economic rationale of market and systemic failures also extends to service innovation.

3.1 Market Failures

Most of the literature focuses on market power, externalities, and asymmetric information as key market failures in services, although some studies cover economies of economies of scale, resource immobility, and property rights.

3.1.1 Market Power

Market power is related to the lack of competition in markets, where a few agents have the capacity to determine prices. Lack of competition may act as a disincentive for generating innovation. This is particularly important in service activities where many agents operate in segmented markets with strong monopolistic power. The difference in market power between large manufacturing companies and manufacturing SME is smaller than the difference in most services sector. In a European study using 2005 data (Rubalcaba et al., 2008), the average market share of a large manufacturing firm was 200 times larger than the same average for a manufacturing SME, while large firms in most service branches (business services, hotels and transport, ICT services) ranged between 200 and 400 times more market power. Even for some services subsectors, such as transport and telecommunications, the difference can range between 600 and 1200. Therefore, market power is even more of an issue in services than in manufacturing.

In LAC countries, the differences between market segments are sometimes even greater than in developed economies because of the relative power of large multinationals. Market opening may be an instrument to promote competition and innovation, although sector heterogeneity matters regarding the relationship between competition and innovation (Crespi and Patel, 2008). The U-inverted relationship (Aghion et al., 2005), where competition may also be bad for innovation at a certain competition level, could occur in some service activities, although it would not be a generalized situation given the high monopolistic power of most service activities.

3.1.2 Economies of Scale and Resource Immobility

Fragmented markets are often related to limited margins for developing economies of scale. Economies of scale occur when innovation activities require large amounts of effort and resources. Economies of scale are also related to the indivisibility of technological activities

requiring a minimum critical mass. Indivisibility is less important in services than in goods, where R&D processes are better structured and require the concentration of different inputs on different scales. In service innovation, the main resources are related to human capital. This is the area that needs to be promoted in order to reach a critical mass. This is particularly problematic for SMEs, where human capital is rarely devoted to innovation activities. Since the service sectors are largely dominated by SMEs, the lack of an appropriate scale may hamper innovation.

Scale issues are also linked to the problem of obtaining an efficient allocation of resources driven by the free movement of production factors. According to Cruysen and Hollanders (2008), when resources cannot move freely across borders, innovation activities tend to be restricted to national borders and the average unit cost of knowledge production could remain too high, leading to under-investment in innovation. This is particularly true in service markets open to competition. A more comprehensive integration of LAC countries may help to increase both scale and resource mobility.

3.1.3 Externalities

Externalities derive from the public nature of and access to knowledge when social returns exceed private returns. Firms must have the right incentives to invest, especially since few innovation outputs are privatized and other competitors may leak or use the results. Spillover is important in services as well as in manufacturing, but the appropriability problem may be even more serious in services, where intellectual property rights (IPR) are not sufficiently protective (Sirilli and Evangelista, 1998). Free-riding, or the use of innovation without the need to pay their market value, hampers innovation in many services sectors. Particular attention should be paid to the role of knowledge-intensive business services that have demonstrated their ability to create important positive externalities in the economy through technological and non-technological innovations of their clients (Rubalcaba and Kox, 2007; van Crysen and Hollanders, 2008).

3.1.4 Asymmetric Information

Information asymmetry occurs in markets where there is insufficient information and where information is not equally distributed among participants. This is particularly important in services, where production is a co-production and good information is needed for all

participating agents. Since innovation requires different means and levels of interaction, information asymmetry hampers innovation when one party might be distrustful about the unknown features, skills, and attitudes of the other. Many of the well-known examples of moral hazard and adverse selection originate in the world of services.

The information asymmetry problem is related to uncertainty. The less-informed parties tend to avoid risk by reducing exposure. Investment in innovation therefore may be undermined by uncertain results, uncertain markets, and low expectations (Dosi, 1988; Stiglitz, 1991) which is not favoured by the invisible and intangible character of many service innovations (Gallego and Rubalcaba, 2008), and which reduces the market scope for potential clients (Green et al., 2001). The State has a role to play in promoting guarantees to deal with risk aversion and to increase transparency and information.

A particular asymmetric information failure in service innovation is funding. Due to the relatively greater weight of intangible assets in service firms (often considered expenditures and not assets) and the relatively low share of tangible assets in most of these firms, private funding schemes are more difficult to access for service companies than for manufacturing companies, which have capital and patents to present as collateral or guarantees (Zambon et al., 2003). Policy initiatives could promote the valorization of intangible assets, which in turn could reduce underinvestment in service innovation.

3.2 Systemic Failures

In addition to traditional market failures, based on neoclassical thinking, systemic failures justify actions in the area of innovation. This is particularly rooted in evolutionary theory, suggesting some innovation models or systems without simple one-way relationships between knowledge generation and absorption (O'Doherty and Arnold, 2003; Arnold and Kuhlman, 2001). A systemic and evolutionary approach is proposed to understand the relationships between science, technology, and innovation and the cumulative processes generating changes in the systems. It is argued that an evolving system in a dynamically changing environment will never actually achieve a state of optimal equilibrium (e.g., Edquist, 1994, 1997, 2001; Metcalfe, 1998, 2002; and Miles, 2002 Nelson, 1993, Lundvall, 1992, Woolthuisa et al, 2005). This applies to a large extent to services when exploring the categories mentioned below.

3.2.1 Capacity Failures and Human Capital

This failure refers to the inability of firms to shift from an old paradigm to changes in markets, technological capacities, and new organizational concepts (Smith, 2000, O'Doherty and Arnold, 2003). Potential innovators are reluctant to act due to lack of capacity. In services, where innovation is closely related to people and ideas, capacity is essential. The management of service innovation is basically the management of dynamic capacity (Den Hertog, 2010). For example, Bruno et al. (2008) show the correlation between the level of human capital and the share of innovative firms in European countries for the ICT services sector.

3.2.2 Network Failures

Formal and informal networks are extraordinary routes for knowledge transfer in innovation systems. Moreover, these systems are largely based on networks. In services, intangible and tacit knowledge development is of extraordinary importance since innovation takes place primarily via interpersonal relationships (Carlsson and Jacobsson, 1997). Innovation in services, as in other sectors, rests on strongly positive and reciprocal external economies that tie together users, suppliers, competition, and local systems (Porter, 1990), where knowledge-intensive services can be essential in dynamic innovation systems (Antonelli, 1999). Cooperation is particularly important in services. The lack of R&D in service firms forces services to rely more on external sources and cooperation. An example of this is provided by public-private service innovation networks (Rubalcaba et al., 2011), where evolutionary inefficiencies apply with strong policy implications.

Infrastructure should also be considered part of these networks. For many services, a good ICT infrastructure is necessary for innovation. ICT infrastructure is a prerequisite for service-technological innovation, since services are using more and more new technologies to produce innovations. Many service innovations lead to new ICT applications.

These network failures have a geographic dimension since there is a high concentration of knowledge-intensive services and other service in developed regions and large cities. The strong regional and urban concentration of knowledge-intensive services (KIS) reinforces territorial imbalances and may justify an innovation policy to reduce differences in knowledge-oriented support networks. Regional innovation systems have traditionally been oriented toward

agriculture and manufacturing, neglecting the role of services and service innovation in regional and urban development.

3.2.3 Institutional Failures

Institutional failures are related to regulatory frameworks and institutional organization. Innovation can be stifled by the lack of adequate regulations and policies. They can be of a different nature (e.g., trade, contractual systems, environment, and health care), imposed not only by the State other institutions, including cultural and social values, play a role. The socio-cultural environment is important for innovation, as stated by 90 percent of firms in the European IT sector. There is a clear correlation between patents and socioeconomic indices in Europe (Bruno et al., 2008).

Another institutional failure can be found in the innovation orientation of universities, many of which are restricted to teaching and, in the best cases, producing scientific publications, but very often neglecting pro-innovation activities and interrelationships with industry and other public and private organizations. This is even more damaging in services than in manufacturing, since some manufacturing industries collaborate with universities to produce patents, while the role of patent is not important in services. This is why the incentives of universities to work in non-patentable services R&D are generally low.

The arguments presented in this section explain the rationale for service innovation policies and conclude that there is full justification for action on service innovation policies. Many of the arguments could be equally useful to justify service-related policies in other policy areas beyond innovation (Rubalcaba, 2007). The following table summarizes the arguments for services-innovation policies.

Table 3. Market and Systemic Failures: Goods versus Services

Type	Failure	Specific to Goods	Specific to Services
Market failure	Market power	Large companies in industrial sectors	Dual markets and high monopolistic power
	Economies of scale	Indivisibility and critical mass to do R&D	Critical human capital mass to knowledge and high sunk investments
	Externalities	IPR and patents	Copyright and secrecy Not robust IPR system
	Asymmetric information	Contractual instrument for transparency	Moral hazard and adverse selection
Systemic failure	Capabilities and human capital	Workers oriented to R&D	Crucial role of human capital in services ideas and innovation skills
	Network	Needs of clustering	Needs of interactions and collaboration schemes
	Institutional	Role of innovation system and R&D policies	Valorization of intangible assets and role of universities, regulations and innovation systems

4. Policy Frameworks for Service Innovation Policies

After setting forth the rationale for service innovation policies, the key issue is which policies are most appropriate. In designing policy frameworks for service innovation, some questions arise: to what extent can existing policies for manufacturing industries be used? What should be different in service innovation policies? Should innovation policies be specific and address the specific needs of individual sectors, such as tourism, financial services, distributive trades, transport, and business services (the sectoral approach)? Alternatively, should service-related policies be developed within an all-encompassing framework across all sectors, including services (the horizontal approach)?

This debate follows the different approaches to service innovation explained in Section 3. The assimilation approach extends existing R&D and innovation programs to services, with the idea that horizontal policies should equally cover service sectors; policies should not be biased toward service sectors or firms. However, such an approach does not take into consideration the specificities of service innovation and non-technological innovation.

The demarcation approach emphasizes the peculiarities of service innovation. It ranges from specific manufacturing subsector-related policies to specific services subsector-related policies, from policies that are needed to tackle service sectors in a vertical way to more specific actions with regard to financial, tourism, transport services, and others. This could largely be justified by the heterogeneity of different sectors and the specific needs of some of them for specific programs. Even if services shared similar problems, different solutions could be needed.

The integration approach that follows from the application of the systemic view does not mean “in between” the two previous options, but rather a different and more ambitious option. Specifically, the integration approach requires a more integrationist view of the role of services in the economy. Services are not merely different sectors with specific needs (demarcation) or the recipients of technological innovation (assimilation). Services have *a systemic dimension* that should be taken into account in any innovation policy design, such as when considering promoting the complementarities between service innovation and ICT (Howells, 2006; Licht and Moch, 1999; Gago and Rubalcaba, 2006).

The integration approach includes two specific objectives. First, it includes intangible elements as objects of innovation policies, which acknowledges that there are organizational aspects in the production of all businesses and that intangibles have a decisive role in innovation and growth. Second, its objective is not only to promote organizational improvement in goods companies or innovations in service companies, but also to improve the relationships between them, making them better suited to the knowledge economy. In this context, KIS become an essential component of the innovation system and not just one sector to take into consideration. Service innovation is understood in a systemic and evolutionary context in which dynamic efficiencies are obtained through the diffusion of a service innovation environment within and between organizations, institutions, and firms.

The place of services as a dimension of innovation systems is particularly justified by the role of advanced knowledge services as the necessary intermediate input to improve the competitive and innovative capacity of any manufacturing or service company (Rubalcaba, 1999; Antonelli, 2000; Wood, 2001), their connections with new technologies (Sundbo et al., 2005), and especially their consolidation as part of the innovation system (Antonelli, 1999; Miles, 1999; Boden and Miles, 2000; Metcalfe and Miles, 2000; Muller, 2001; Zenker, 2001; and Hipp and Grupp, 2005), particularly located at the top of urban and regional hierarchies (Rubalcaba et al.,

2012; Merino and Rubalcaba, 2012). In the knowledge-intensive services context, it is obvious that service innovation is a systemic dimension of any innovative system.

Table 4 provides examples of service-related policies that may exemplify each of the abovementioned approaches. As a result of this framework, a policy menu is offered (Den Hertog and Rubalcaba, 2010) to policy makers from which they can choose the policy best suited to the interests of a given country. In this table, we simplify the assimilation approach to a horizontal approach and the demarcation approach to a vertical approach, even if the concepts are not fully equivalent.

Policy makers are often critical of service innovation as such. There is a lack of a service innovation culture in policy making, which leads many countries to prefer traditional manufacturing and horizontal bias programs. At the European Commission level, for example, service innovation policies did not emerge until 10 years ago. In 2007, several explicit actions toward service innovation started to take place. The characteristics and transformative role of service innovation have attracted attention only in the last few years. The EU (Europe-Innova – Web page) and United Nations (2011) have proposed frameworks for policy actions. Some are based on policies in countries such as Finland (Kuusisto et al., 2006; Tanninen-Ahonen and Berghäll, 2011), which is leading the way in developing service innovation policies. Table 4 provides some examples of some of the main countries promoting innovation policies and some key distinctive characteristics.

Table 4. Examples of Horizontal/Assimilation, Vertical/Demarcation and Systemic Policies Aimed at facilitating Services R&D and Innovation

	Horizontal / assimilation policies	Vertical / demarcation policies	Systemic policies
R&D policies	<ul style="list-style-type: none"> • Open the existing R&D programs to services companies • Increase accessibility of existing R&D support schemes • Inclusion of services in technological foresight & road mapping exercises • Include services firms in policies aimed at improving industry sciences relationships 	<ul style="list-style-type: none"> • Support public R&D in services • Introduce vertical R&D programs aimed at services sectors (logistics, tourism, trade, business services, social services, public services, etc.) • Services IPR instruments • Create dedicated centers and clusters for service innovation • Increase role of the humanities in service innovation 	<ul style="list-style-type: none"> • Introduction of service innovation elements in existing topics (e.g., R&D for ICT and related-services) • Understand and support role of R&D services (KIBS) in innovation systems • Support for services R&D in and through hybrid firms • Integrated R&D programmes paying attention to technological and non-technological R&D and innovation
Innovation policies	<ul style="list-style-type: none"> • Increase accessibility of existing Innovation support schemes • Innovation management training & practices more geared toward supporting all types of innovation in all industries • Mobility schemes no longer limited to qualified scientists and engineers 	<ul style="list-style-type: none"> • Introduce courses on services innovation management • Awareness campaign on the importance of services innovation • Identify service innovation role models (including innovation in public sectors) • Vertical innovation policies specific to selected services sectors (logistics, tourism, trade, business services, social services, public services, etc.) • Promotion of innovation in offshoring services 	<ul style="list-style-type: none"> • Innovation & business support systems also supports services innovation • Availability and use of specialized services / KIBS • Increase transparency in KIBS markets • Insight into & international competitiveness of key service functions • Cluster and network type of policies that deliberately include services • Government procurement policies including service innovation • Support role of users in innovation
Non-innovation policies	<ul style="list-style-type: none"> • Increase coverage of services in regular and R&D and innovation statistics 	<ul style="list-style-type: none"> • Use deliberately policies such as trade, competition education & training policies for fostering R&D and innovation in services • Regulations that might trigger services innovations • Analyse offshoring in services and framework conditions 	<ul style="list-style-type: none"> • Use regulation & standardization to support innovation • Financial and credit systems that acknowledges intangible assets • Enhance high level service capabilities e.g. through education & training policies • Policies aimed at increasing entrepreneurship

Source: Adapted and extended from Hertog, P. den, Rubalcaba, L. and Segers, J. (2008).

Table 5. Five Examples of Service Innovation Policies

Type of economy	Country	Characteristics
Developed economies	Finland	Leading country in service innovation policies. Very innovative and dynamic policy. Specific programs since 2001. SERVE programme focuses on promising service companies and pioneers on the markets; “Pioneers of Service Business 2006-2013, 224mil. Euros). Key areas from 2011: natural resources and sustainable economy; vitality of people; intelligent environments; business in global value networks, added value by solution-based services and intangible concepts, renewing services and production by digital means.
	Germany	Policy addressed to services, mainly linked to manufacturing industries. Export orientation. Specific programs for service innovation. Huge support from industries. 2008 Programme “Innovation in Services,” 15 m per year. Current focus on ICT related services, knowledge-intensive services, biotechnology, nanotechnology, hybrid services, utilizing technology and innovative service elements.
Developing countries	China	Decision to go for services and service innovation. 12th Five-Year Plan on S&T Innovation for Supporting Service Sector Development. Focusing on technological support, S&T innovation support, and industrialization of achievement of S&T for modern services. Priorities on producer services, emerging services, S&T services. Wide set of policies for supply and demand. Policy experimentation. First experimental actions related to tax deductions.
	Korea	<p>“Service R&D promotion plan” in 2010. Service innovation mainly promoted through services R&D specific programs.</p> <ul style="list-style-type: none"> • Education Service R&D Program (5 billion KRW(2012), 1 Euro = 1500 KRW) • Healthcare & Welfare Service R&D Program (9 billion KRW(2012)) • Tourism & Contents Service R&D Program (6 billion KRW(2012)) • Business Service R&D Program (55 billion KRW(2012)) • Small & Medium Enterprise Service R&D Program (20 billion KRW(2012)) • Public Service R&D Program (5 billion KRW(2012)) <p>In this plan, the new growth high-value service industries were selected as target investment service areas.</p>
	Jordan	<p>Modernization of services sector program: three years (2009-2011) with a budget of €16 million. Comprehensive policy development plan for services. Beneficiaries of the program are private service sector enterprises—SMEs—relevant business associations, and public sector bodies. To assist Jordan to fully benefit from the opportunities of trade liberalization of services in the context of the GATS and the economic integration objectives of the Istanbul Protocol.</p> <p>Private Services Sector Development: Support to SMEs and Business Associations in the Services Sector (grant schemes for start-ups, loan guarantee, export credit guarantees and venture capitals, risk capital fund, clusters) Institutional capacity building. Service policy building. All services are included but particular attention to knowledge-intensive services, creative and cultural services, tourism, engineering services and health travel.</p>

5. Lessons from Latin American Case Studies

This section is based on a preliminary summary of a set of reports⁵ from the ongoing Innovation and Productivity in LAC study (IFD/CTI-IDRC). The study has identified a set of cases dealing with service innovation in different areas of activities, most of them related to public support to service innovation, even if most of the time that support is indirect. Service activities have been supported under traditional vertical or horizontal programs, but have not been service innovation-oriented. Table 6 summaries the cases selected for the project.

Table 6. Summary of Case Studies IFD/CTI project

Country	Argentina	Argentina	Chile	Costa Rica	Jamaica	Regional study (Argentina, Brazil, Chile Uruguay)
Research Team	– CENIT	CIPPEC	Intelis	CLACDS-INCAE	University of West Indies	(Niosi and Bas, Canada and Chile)
Sector	Rural tourism	Software & IC (SSI)	Logistics, mining, retail and outsourcing	Tourism and sustainability	Creative services	Biotech
Cases	5 activities - clusters and survey to associations (n=31) and providers (n=59)	6 Individual firms and analyses of official data on ICT services (N=73)	Sectors outlook and 9 enterprises in detail (2+2+4+1)	Sector (survey based on n=120 hotels) and 6 individual firms	5 Activities or firms representing different subsectors	Sector case based on 4 countries and 22 individual firms

5.1 The Cases and the Innovations

The case studies cover a wide set of innovation measures. In Chile, four different sectors are covered: mining, transport, off shoring and distributive trades. In mining, the supplier Enaex represents a characteristic example of a goods-oriented firm converted into a service firm. A new service product was offered, and service innovation became the central activity. Enaex is

⁵ Centro INTELIS, Service Innovation in Chile: Empirical Analysis, Case Studies and Impact Assessment. Case studies: López A., Ramos, D., Fernández-Guerrico, S. Innovation y productividad en el sector turismo: el caso del turismo rural en Argentina; Castro, L, Jorrat, D. and Szenkman, P. Estudios de caso del programa Buenos Aires Emprende (BAEP) y las PYMES de servicios de software e informática (SSI) de Argentina; Valenzuela, A., Majano, A. M., Jager, U., Kilian, B., La certificación de turismo sostenible en Costa Rica, ¿una fuente de innovación?; Selected Cultural Services in Jamaica: the Struggle for Appropriation; Niosi, J and Bas, T. G. Biotechnology services in Latin America by SME. A study of Argentina, Brazil, Chile, and Uruguay

currently an integrated service delivery company with high standards of efficiency and safety. It shifted from selling explosives to services such as transport, studies, screening of drilling, security, and others. Many types of product innovations make this firm very competitive and dynamic in its sector.

A second case from Chile is in the logistics area, representing innovation for services enhancement to optimize freight flows. Arica Port Terminal is the name of a new innovation management model offering new clients interface and new delivery systems, in both technological and organizational fields. Extra-port store Hansen is a supplier-dominated innovation and innovation through services, delivery systems, and client interface. JB logistics offers solutions for the movement of special cargo by collaborative practices and partnerships in a supplier-dominated pattern.

In the offshoring sector, Chile offers a third case study. Innovations mostly relate to service engineering (Metaproject and Nectia), tools (Virtual 21), and design development and project management (Osci). In the retail sector in Chile (fourth case study), Cencosud offers a case with many innovations such as those related to improved purchasing strategies with local providers. This is based on a Cencosud service experience strategy, importing shopping experiences (Paris stores) and service commitment (Techno Paris Jumbo).

In the Argentine ICT sector, most innovations are incremental in the areas of security (Onapsis), market research (Socialmatrix), marketing (Vfound), e-learning (Wormhole IT), and linguistic services (Keepcom). There is also a more radical innovation in an online system for health (Turnosnet). In Argentina, the rural tourism sector offers a broad range of innovations, oriented toward a new service experience. Specificities are present around four types of destinations: *ruta del vino* (new services on well-established market and providing differentiation), *red del turismo rural campesino* (new linkages between local supply and original village), *turismo rural en San Juan* (new gastronomy to add value added services), *meseta infinita* (new business concepts based on regional assets and environment), and De Pampa y Gauchos (new ethnic and cultural tourism with participation in traditional activities). Most innovations are incremental, with the wine case being the most radical one.

Costa Rica offers cases on tourism as well, but related to a sustainability standard. Most innovations are process and organizational, related to sustainability or modernization. Some

marketing and technological innovations are also promoted, among them many oriented to personalization.

In Jamaica, the types of innovation are related to very different sectors, presented as case studies: live music (process and marketing innovation and artist packages), recorded music (process), non-national theatre (new ways to interact with local communities to combat violence), athletics, (management services in special centers), and culinary services (creation of new products).

Finally, the biotech services case studies analyze the role of KIBS in biotech services around different specializations in different countries: Argentina is more specialized in human health and agriculture bio; Brazil centers more in bio-fuel and is the strongest country; Chile's cases are in the fishing and mining and health sectors (the case of Dr Valenzuela and his patents); and Uruguay, a small economy, similar to Argentina.

5.2 Origin of Innovation and Public Support

Two main patterns emerge in the innovations reported in the case studies. Some are market-driven, with partial participation by the public sector (mining, offshoring and retail in Chile, ICT services in Argentina, and some cultural services in Jamaica), while others are driven by a strategic decision on the part of the government, or public support is considered highly important (rural tourism in Argentina, certification in Costa Rica, R&D biotech). In both cases, service innovation addresses particular problems of firms, clients, or economies.

An example of the first group focusing on Chile is mining services, where the move to innovate was caused by massive investment in the pipeline, concomitant with the outsourcing of services by major mining companies and the existence of few suppliers (3 percent) able to innovate and meet challenges. The public support to Enaex was significant, but not essential (it was particularly useful for funding a pilot plant project, a program to disseminate innovation culture, and tax deduction for R&D.). It also had a significant role in ICT business innovation, seeking new business opportunities in Argentina: several public ICT-related programs have supported the actions, and BAPE (Buenos Aires Emprende) has a particular role in five of the six selected case studies. In some other business cases, the reaction to foreign competition has been a particular source of innovation, such as the case of Cencosud-retail in Chile or some cultural services in Jamaica, which faced imitation and pirating, with no IPR protection of the Jamaican products and services.

An example of innovations depending of public funding is rural tourism in Argentina. The authorities considered both the importance of the sector for the country and the need for new competitive opportunities in rural areas that lacked resources for innovation. A need to increase income from value-added services was identified in programs such as PRONATUR, INTA, and others. Support from the Inter-American Development Bank (IDB) was important, and public funding helped catalyze private funding.

In other cases, the role of public intervention is restricted to a particular segment of the innovation process. This is true of innovation in biotech, with public support to R&D and clustering policies essential to some of the developments but insufficient to explain all sector development, which is rooted more in human capital, market size, and other considerations. The case of Costa Rica also shows the importance of public intervention in creating and promoting the standard for sustainable hotels. However, the hotels themselves were acting in response to the crisis of 2008, attempting to reinvent themselves and acquire new strategies beyond public sector intervention.

5.3 Determinants and Facilitators

Firms in the cases studied studies have described the existence of determinants and facilitators for service innovation. The role of R&D is considered more important in technological innovations (mining suppliers in Chile, one ICT company in Argentina, biotech services), while in-house sources have proved more important in services following informal generation of knowledge (tourism) and in services using knowledge-intensive business services to innovate (biotech, some cultural services, transport). KIBS are particularly useful in promoting innovation already working in other more developed markets and adapting it to local markets and conditions. External knowledge from KIBS is always an important source of innovation, as demonstrated in the Cencosud case in Chile or the Argentine ICT case. However, collaboration with universities has been considered marginal or inexistent (in most cases in Chile) and important only in a few cases (e.g., biotech in all countries, athletics in Jamaica). In most cases, skills and human capital have been considered an essential source of innovation, for which training is a powerful tool (e.g., rural tourism). In many cases, customers and clients are also considered to be important sources of innovation (e.g., mining, tourism, and cultural services).

Some cases indicate other particular facilitators, as shown in Table 7. For mining service innovation, suppliers have been particularly important, as has the creation of a pro-innovative culture in the firm beyond R&D programs. The case also shows the usefulness of innovation management programs, such as Innova. In Argentine ITC, previous expertise and interactions with clients are essential, as are international benchmarking and adaptation to local market conditions (Wormhole on e-learning) and R&D (Keepcom, on linguistic services).

Table 7. Innovation Sources and Facilitators

<i>Country</i>	<i>Case</i>	<i>Particular determinants and facilitators</i>
Chile	Mining – Enaex	Customers, professional association, R&D, pro-innovation culture
Chile	LogisICTs-Arico Poart	Mainly suppliers and partnerships
Chile	Offshoring firms	Specialization in offshoring related to engineering services
Chile	Retail-Cencosud	Role of external consultancy/KIBS. International benchmarking. Exploration of margins created by regulations.
Argentina	ICT	Previous expertise and interactions with clients. Specific sources/facilitators case by case. External knowledge has been particularly important in most companies
Argentina	Rural tourism	Training of human capital, skills, public-private cooperation and the role of associations. Visitors.
Costa Rica	Sustainable tourism	Experience from managers is the main source and well as the certification for the sustainability.
Jamaica	Cultural services	Civil dynamism, institutionalization, collaboration between university and key sectors (spin-off in Athletics), IPR policy.
Regional	Biotech	Funding and venture capital, collaboration with universities, dedicated bio-tech firms, human capital, KIBS and market size in Brazil and Argentina.

In tourism, associations are of particular importance. Rural tourism in Argentina is a case in point. These can be the result of public-private cooperation, as in the innovation in transport in Chile. Collaboration between civil society and private firms is important in promoting sustainable tourism in Costa Rica.

In biotech services, other facilitators include funding and venture capital, collaboration with universities, dedicated biotech Firms, and human capital. KIBS, size and regulations can also be drivers (Brazil and Argentina).

5.4 Impacts

All cases have reported difficulties in measuring impacts derived from service innovation. This is mainly due to the short life of innovations, the lack of time series and time perspectives to make ex-post evaluations, and the difficulty of measuring invisible outcomes. However, all cases have reported important impacts of service innovation.

A clear case is Enaex in Chile. It impacts suppliers' access to new knowledge, reduces transaction cost in networks, and improves internal capacity to carry out R&D activities, productivity and safety. However, there is a lack of accountability, and the assessment is considered "intuitive."

Important qualitative impacts are reported by the tourism case studies. Thus, rural tourism in Argentina reports high impacts in the areas of diversification, product differentiation, quality, cost reduction, number of visitors, and employment, among others. Impacts are higher in more radical innovations, strong leadership with strong knowledge and management skills, than when there are incremental innovations or when leadership and skills are weak. In Costa Rica, the main impacts are in differentiation and degree of hospitality, but tradeoffs are identified (i.e., to increase some services, others may need to be reduced). Innovations for sustainability have reduced costs and increased productivity: cost reductions reach 30 percent in utilities, chiefly water and electricity. The CST public program for standards in sustainability has produced a major effect on improving operations in hotels, although other factors may play an even more important role. Evidence shows that the CST program affects product, process, and organizational innovation, but not marketing innovation.

The ICT case studies in Argentina, based on official data for 73 companies, provide an example of a quantitative modelling that attempts to measure impact on innovations. The increase is in the range of 1 percent for more innovative results and a 2.5 percent increase in productivity. Furthermore, the public program BAEP increases the likelihood of creating new services due to important networking effects associated with participation in public programs. In the analysis at the individual level, the impacts reported are access to new markets and clients and integration of new services. Increases in employment and turnover are also apparent in

successful cases. Four of the firms (Onapsis, Socialmetriz, Wormhole IT, and Keepcom) had 21 employees before the introduction of innovative measures and around 120 employees after, over a four-year period.

In the biotech sector, employment increased in most companies, together with patenting and productivity, despite reduced public support for advanced academic and public sector R&D. Public regulations can also be barriers to innovation. Public support generates positive impacts, to KIBS in particular. KIBS are major components of innovation systems. They are concentrated in large metropolitan areas where there is access to highly skilled labor.

Finally, significant social effects are reported in the case of rural tourism in Argentina (employment opportunities for local aborigine communities, youth, and women) and cultural services in Jamaica (e.g., theatre performances to combat violence).

5.5 Obstacles and Policy Implications

Policy implications are related to the obstacles found in the case studies. There are some common complaints in most of the selected case studies: lack of funding, missing skills, and no guarantees for investment in innovation. These three concerns require policy action in the areas of R&D and innovation programs, training and education, and IPR and guarantee systems.

In Chile, mining services find major obstacles in risk aversion, the need for insurance for innovation (through a competitive fund), and access to financing. Bureaucracy is also mentioned, as is the bias for funding mining companies rather than supporting mining suppliers and related services. Problems associated with networking with universities are further reported. Patents in services are not only difficult, but they can be risky too. Industrial design models are not patented, since industrial secrets and confidentiality are preferred.

In Argentine ICT, the lack of suitable skills is the most quoted complaint as well as lack of funding, bureaucracy and, particularly for international trade, contributions to social security and high salaries. Other complaints include weak IP (Social Metrix), tax system (Vfound), lack of management skills (Wormhole), exchange rates (Keepcom), and uncertainty of investments (Turnosnet). This last problem is only mentioned by a firm not involved in the program, which shows that public policies do have a role in reducing uncertainty.

In Argentina, the rural tourism case study lists major obstacles such as lack of resources for innovation, lack of availability of skills, insufficient knowledge about the market, uncertainty and risk, over-dependence on the State, and resistance to working with associations. There are

also specific needs in specific cases: coordination in the wine case, training and incentives in Salta rural tourism, continuity of public support in Meseta Infinita, and the importance of associations in De Pampa and Gauchos. The key role of public intervention is threefold: to supply funding and support to skills enhancement, to reassure private investors, and to reduce problems in relation to different groups.

In Costa Rica, incentives are lacking, and hotels want a better special tax regime to participate. The CST can be improved for suppliers because they have a role to play. Suppliers need to have a comprehensive understanding of the program (not just hotels). Rural tourism needs to be more involved, skills need to be strengthened, and best practices need to be promoted. In Jamaican cultural services, the main concern refers to IPR and to high interest rates for loans and entrepreneurship.

In biotech, policy implications center on the importance of promoting venture capital and guaranteeing continuity of the funds, and on patenting, regulations, competition, clusters, skills, research and training, public procurement, data, and information. Policies should promote private investment. Developing human capital is essential, since investments tend to follow talented people.

6. Conclusions and Policy Recommendations

This paper has described the role and importance of services in the global economy and in Latin American economies specifically. The role played by services in Latin American economies is similar to that of most developed economies. The relative importance of services in LAC is not correlated with high rates of productivity. Most service sectors, with the notable exception of telecommunications, are characterized by low productivity and growth. Productivity gaps have been reported in previous studies, making the case for service innovation policies (e.g., Tacsir, 2011).

The key to increasing the potential for growth and productivity in LAC services lies in the introduction of a number of actions and measures to promote service innovation. This is essential because of the transformative power of service innovation in any economic activity. It contributes to overall economic performance, namely in other services, manufacturing, and agriculture. The promotion of innovation in LAC is particularly important in contexts in which impacts on innovative efforts are hampered by the weak linkages that characterize their national innovation systems (Crespi and Zuñiga, 2011).

In this context, the following actions are recommended for promoting service innovation in LAC:

- 1) Raise awareness of the advantages of service innovation and of the need for service innovation policies when developing innovation policies in certain areas.
- 2) Promote further analysis of the topic, including improved statistics. It is difficult to design service innovation plans without a thorough analysis of the situation in specific countries, the needs of the service sectors, and possible solutions.
- 3) Before designing a detailed plan for service innovation, existing programs and policies should be screened in order to evaluate the current promotion of services and service innovation. There is no need to duplicate existing initiatives. Benchmarking experiences of other countries that are developing service innovation policies could be useful in assessing needs.
- 4) Existing initiatives reveal that no one policy fits all situations and all countries. Each country may adopt a particular strategy, building on past experience in innovation policies. Some countries would prefer to opt for horizontal policies while other may prefer concentrating on vertical sectors. Others may take a systemic approach to building or rebuilding policies to promote service innovation.
- 5) In order to maximize the impact of a given policy, it is necessary to develop service innovation policies in cooperation with stakeholders. Since service innovation policies are not a priority in many R&D programs, the design must be interactive in order to address as many needs as possible. Furthermore, service innovation policies must be experimental and periodically refined to maximize impact and correct the mistakes. Many service companies are badly represented and under associated in the political and administrative systems. In the service field, public policies can play an active role in promoting service associations with representation of service companies and service innovation stakeholders. The role of public/private innovation networks is particularly useful in this sense.
- 6) Most researchers and policy makers dealing with service innovation are prioritizing horizontal actions adapted to promote service innovation broadly. Existing programs should be redesigned to include service innovation and all other intangible aspects associated with it, such as organizational aspects, marketing components, ICT- related

services, knowledge-intensive services when developing innovative measures, and others. Some specific vertical programs may also be needed to favor strategic sectors, such as tourism or knowledge-intensive or cultural services in others, which have growth potential.

- 7) Service innovation policies should include actions such as grants, tax incentives, venture capital and guarantee funds, business support networks and incubators, and vouchers.
- 8) Service innovation policies should be complementary to other regulatory and non-regulatory policies regarding services, in order to promote synergies.

Service innovation is an entire area for policy action, requiring attention and priority to policy agendas. Different strategies and models can be followed. LAC countries could design the service innovation strategy best suited to their companies and institutions, their potentials and their needs.

References

- Aghion, P., N. Bloom, R. Blundell, R. Griffith, and P. Howitt. 2005. "Competition and Innovation: An inverted-U Relationship." *The Quarterly Journal of Economics* 120(2): 701-28.
- Arnold, E. and S. Kuhlman. 2001. *RCN in the Norwegian Research and Innovation System*. Background Report No 12 in the Evaluation of the Research Council of Norway. Oslo, Norway: Royal Norwegian Ministry for Education, Research and Church Affairs.
- Arundel, A., M. Kanerva, A. Van Cruysen, A., and H. Hollanders. 2007. *Innovation Statistics for the European Service Sector*, Maastricht, The Netherlands: UNU MERIT.
- Barras, R. 1986. "A Comparison of Embodied Technical Change in Services and Manufacturing Industry." *Applied Economics* 18(9): 941-58.
- Barras, R. 1990. "Interactive Innovation in Financial and Business Services: The Vanguard of the Service Revolution." *Research Policy* 19(3): 215-37.
- Baumol, W. 1967. "Macroeconomics of Unbalanced Growth: the Anatomy of Urban Crisis." *American Economic Review* 57(3): 415-26.
- Boden, M. and I. Miles. (Eds.) 2000. *Services and the Knowledge-Based Economy*. London, England: Continuum.
- Bruno, N., M. Miedzinsky, A. Reid, and M. Ruiz-Yaniz. 2008. "Socio-cultural Determinants of Innovation in the Sector of Information and Communication Technologies (ICT)." Europe-Innova, Innovation Watch, WP10.
- Bryson, J. R., P. W. Daniels, and B. Warf. 2004. *Service Worlds: People, Organizations, Technologies*. Abingdon, United Kingdom: Routledge.
- Carlsson, B. and S. Jacobsson. 1997. "In Search of Useful Public Policies: Key Lessons and Issues for Policy Makers. In Carlsson, B. (ed.) *Technological Systems and Industrial Dynamics*. Dordrecht, The Netherlands: Kluwer Academic Publishers.
- Cooke, P. 2001. "Biotechnology Clusters in the U.K.: Lessons from Localization in the Commercialization of Science." *Small Business Economics* 17: 43-59.
- Coombs, R. and I. Miles. 2000. "Innovation, Measurement and Services: the New Problematique." In *Innovation Systems in the Service Economy*. J. S. Metcalfe and I Miles, eds. Dordrecht, The Netherlands: Kluwer Academic Publishers.
- Crespi, G. and P. Patel. 2008. "Relationship Between Innovation and Competition: Differences across Sectors." Prepared for innovation Watch/Systematic Project, Europe-Innova, Funded by the European Commission, SPRU, University of Sussex, England.
- Crespi, G. and P. Zuñiga. 2011. "Innovation and Productivity: Evidence from Six Latin American Countries." *World Development*.
<http://dx.doi.org/10.1016/j.worlddev.2011.07.010>

- Den Hertog, P. (2010) *Managing Service Innovation: Firm-level Dynamic Capabilities and Policy Options*. Doctoral thesis. Amsterdam, The Netherlands: University of Amsterdam.
- Den Hertog, P. 2000. "Knowledge-intensive Business Services as Co-producers of Innovation." *International Journal of Innovation Management* 4(4): 491-528.
- Den Hertog, P. and L. Rubalcaba. 2010. Service R&D and Innovation Policies in Europe. In *Handbook of Service Innovation*. Faiz Gallou, Ed., pp. 621-653. Cheltenham, United States: Edward Elgar Publishers.
- Den Hertog, P. and R. Bilderbee. 1999. *Conceptualising Service Innovation and Service Innovation Patterns*. Utrecht, The Netherlands: DIALOGIC.
- Den Hertog, P., L. Broersma, and B. Ark. 2003. On the Soft Side of Innovation: Service Innovation and its Policy Implications. *The Economist* 151(4): 433-452.
- Den Hertog, P., L. Rubalcaba, and J. Sergers. 2008. Is there a Rationale for Services Innovation Policies? *International Journal of Service Technology and Management*, 9(3-4): 334-54.
- Djellal F. and F. Gallouj. 2010. *Handbook of Service Innovation*. Cheltenham, United Kingdom: Edward Elgar.
- Dosi, G. 1988. "Sources, Procedures, and Microeconomic Effects of Innovation." *Journal of Economic Literature* 26: 1120-71.
- Drejer, A. 2002. *Strategic Management and Competencies: Theory and Application*. New York, United States: Quorum Books.
- Drejer, I. 2002. "Business Services as a Production Factor." Paper presented at the DRUID Summer Conference on Industrial Dynamics of the Old and New Economy, Copenhagen, Denmark. 6-8 June 2002.
- Edquist, C. 1994. "Technology Policy: The Interaction between Governments and Markets." In Aichholzer, G. and Schienstock, G. (eds.). *Technology Policy: Towards an Integration of Social and Ecological Concerns*. Berlin, Germany and New York, United States: Walter de Gruyter.
- . 1997. (ed.) *Systems of Innovation: Technologies, Institutions and Organizations*. London, England: Frances Pinter.
- . 2001. "Innovation System and Innovation Policy: The State of the Art." DRUID, Aalborg, 12-15 June.
- Evangelista, R. 2006. *Innovation in the European Service Industries. Science and Public Policy*. Cheltenham, United Kingdom: Edward Elgar.
- Evangelista, R. and G. Sirilli. 1998. "Innovation in the Service Sector – Results from the Italian Statistical Survey." *Technological Forecasting and Social Change* 58(3): 251-69.
- Fayol, H. 1916. *La administración industrial y general en 1916*, reprinted in 1961, Buenos Aires, Argentina: El Ateneo.
- Fourastié, J. 1949. *Le Grand Espoir du XXe Siècle*. Paris: Presses Universitaires de France.
- François, J. F. 1990. "Producer Services, Scale and the Division of Labour." *Oxford Economic Papers* 42(4): 715-29.

- Freeman, C. 1991. "Networks of Innovators: A Synthesis of Research Issues." *Research Policy* 20: 499-514.
- Gago, D. and L. Rubalcaba. 2007. "Innovation and ICT in Service Firms: Towards a Multidimensional Approach for Impact Assessment." *Journal of Evolutionary Economics* 17(1): 25-44.
- Gallego, J. and L. Rubalcaba. 2008. "Shaping R&D and Services Innovation in Europe." *International Journal of Service Technology and Management* 9(3-4): 199-217.
- Gallouj F. and O. Weinstein. 1997. Innovation in Services. *Research Policy* 26: 537-56.
- Gallouj, C. 2007. *Innover dans la grande distribution*. Brussels, Belgium: De Boeck.
- Gallouj, C. and F. Gallouj. 1996. *L'innovation dans les services*. Paris, France: Economica.
- Gallouj, F. 2002a. "Innovation in Services and the Attendant Old New Myths." *The Journal of Socioeconomics* 31(2): 137-154.
- Gallouj, F. 2002b. *Innovation in the service economy*. Cheltenham, United Kingdom: Edward Elgar.
- Gershuny, J. I. and I. Miles. 1983. *The New Service Economy. The Transformation of Employment in Industrial Societies*. London, England: Frances Printer.
- Gertler, M.S. 1988. "The Limits of Flexibility: Comments on the Post-fordist Vision of Production and its Geography." *Transactions Institute of British Geographers* 13: 419-32.
- Giarini, O. and W. R. Stahel. 1993. *The Limits to Certainty Facing Risks in the New Service Economy*. 2nd revised edition, Dordrecht, Boston and London: Kluwer Academic Publishers.
- Green, L., J. Howells, and I. Miles. 2001. *Services and Innovation: Dynamics of Service Innovation in the European Union*. Report to the European Commission.
- Hipp, C. and H. Grupp. 2005. Innovation in the Service sector: The Demand for service-specific Innovation Measurement Concepts and Typologies. *Research Policy* 34(4): 517-535.
- Howells, J. 2004. "Innovation, Consumption and Services: Encapsulation and the Combinatorial Role of Services." *The Services Industrial Journal* 24(1): 19-36.
- , 2006. "Information Technology Research in the UK: Perspectives on Services Research and Development, and Systems of Innovation." *Science and Public Policy* 33(1), 17-31.
- Howells, J. and B. Tether. 2004. Innovation in Services: Issues at Stake and Trends. INNO-Studies 2001: Lot 3 (ENTR-C/2001): ESRC Centre for Research on Innovation and Competition (CRIC): Institute of Innovation Research. Manchester, England: University of Manchester.
- Illeris, S. 1989. *Services and Regions in Europe*. Aldershot, England: Avebury Press.
- Korinek, J. 2013. "Mineral Resource Trade in Chile: Contribution to Development and Policy Implications." *OECD Trade Policy Papers* 145. Paris, France: OECD Publishing.
- Kox, H. and L. Rubalcaba. (2007) "The Contribution of Business Services to the European Economy." In Rubalcaba, L. and Kox, H. (eds.) *Business Services in European Economic Growth*, London, MacMillan / Palgrave.

- Kuusisto, J. 2008. Mapping Service Innovation Policy in the Nordic Countries, SerINNO Project, April, 41.
- Lundvall, B.A., 1992. *National Systems of Innovation, Towards a Theory of Innovation and Interactive Learning*, Pinter Publishers, London.
- Maroto, A. and L. Rubalcaba. 2008. Service Productivity Revisited. *The Service Industries Journal* 28(3): 337-53.
- Merino, F. and L. Rubalcaba. 2013. "Are Knowledge-intensive Services Highly Concentrated? Evidence from European Regions." *Journal of Economic and Social Geography* (Tijdschrift voor economische en sociale geografie) 104: 215-232.
- Messina, J. 2004. "Institutions and Service Employment: a Panel Study for OECD Countries." *European Central Bank Working Paper* 320.
- Metcalfe, J. S. and I. Miles. 2000. *Innovation Systems in the Service Economy*. Boston, United States and London, England: Kluwer Academic Publishers.
- Metcalfe, J. S. 1998. *Evolutionary Economics and Creative Destruction*. London, England and New York, United States: Routledge.
- Metcalfe, J. S. 2002. "Equilibrium and Evolutionary Foundations of Competition and Technology Policy: New Perspectives on the Division of Labor and the Innovation Process." In Pelikan, P. and Wegner, G. (eds.) *Economies in Evolution: What can Governments do and Economists Advise?* ESRC Centre for Research on Innovation and Competition. Manchester, England: University of Manchester.
- Metcalfe, J. S. and I. Miles, I. (eds.) 2000. *Innovation Systems in the Service Economy, Measurement and Case Study Analysis*. Boston, United States: Kluwer Academic Publishers.
- Miles, I. 1995. "Service Innovation, Statistical and Conceptual Issues." *Working Group on Innovation and Technology Policy, OECD (Doc. DSTI/ESA/STP/NESTI (95) 12*, Paris, France.
- . 1999. Foresight and Services: Closing the Gap?. *The Service Industries Journal* 19(2): 1-27.
- . 2005. *Foresight on services and R&D*. Section 1. Main report. Platform Foresight. The Future of R&D in Services: Implications for EU Research and Innovation Policy. Report prepared for DG Research, European Commission.
- . 2006. Innovation in Services--Finally Coming of Age? Presented in the Institute of Innovation Research Conference 2006: *Innovation in Services*. Manchester, England: University of Manchester.
- Nahlinder, J. 2002. Innovation and Employment in KIBS: State of the Art and Conceptualizations. Paper presented at the SIRP Seminar, Jan. 2002.
- Nelson, R.R., 1993. *National Innovation Systems: A Comparative Study*, Oxford University Press, Oxford.
- O'Doherty, D. and E. Arnold. 2003. Understanding Innovation: the Need for a Systemic Approach. In *The IPTS Report No. 71*. Retrieved March 9, 2004.
- Organisation for Economic Co-operation and Development. 2005. *Growth in Services. Fostering Employment, Productivity and Innovation*. Paris, France: OECD.

- Oulton, N. 2001. "Must the Growth Rate Decline? Baumol's Unbalanced Growth Revisited." *Oxford Economic Papers* 53: 605-27.
- Pavitt, K. 1984. Sectoral Patterns of Technical Change: Towards a Taxonomy and a Theory. *Research Policy* 13(6): 343-73.
- Pavitt, K. 1989. "International Patterns of Technological Accumulation." In *Strategies in Global Competition*, eds. N. Hood and J. E. Vahlne. London, England: Croom Helm.
- Pilat, D. 2001. Innovation and Productivity in Services: State of the Art. In OECD (2001): *Innovation and Productivity in Services* Paris, France: OECD.
- Piore, M. J. and C. Sabel. 1984. *La Segunda Ruptura Industrial*, Madrid, Spain: Alianza Universidad.
- Porter, M. E. 1990. *The Comparative Advantage of Nations*. New York, United States: Free Press.
- Preissl, B. 2000. "Service Innovation: What Makes it Different? Empirical Evidence from Germany. In Metcalfe, J.S. and Miles, I. (eds.) *Innovation Systems in the Service Economy: Measurement and Case Study Analysis*. Boston, United States: Kluwer Academic Publishers.
- Preissl, B. 2000. European Service Sector. In *Services and the Knowledge-based Economy*. Boden and Miles, eds. London, England: Continuum.
- Rosenberg, N. 1994. *Exploring the Black Box: Technology, Economics and History. Eight Critical Issues in Science Policy Research*. Cambridge, England. Cambridge University Press.
- Rothwell, R. 1994. "Industrial Innovation: Success, Strategy, Trends." In Dodgson, M. and Rothwell, R., eds. *The Handbook of Industrial Innovation*. Cheltenham, England: Edward Elgar.
- Rubalcaba, L. and M. Toivonen. 2013. "Modes of Internationalization in Services." In Bryson and Daniels, *Handbook of Service Businesses*. Cambridge, England: Edward Elgar (forthcoming).
- Rubalcaba, L. 1999. *Business Services in European Industry: Growth, Employment and Competitiveness*, Brussels / Luxembourg: European Commission DGIII-Industry.
- 2006. Which Policy for Innovation in Services? *Science and Public Policy* 33(10): 745-56.
- 2007. *The new services economy: Challenges and policy implications for Europe*. Cheltenham, United Kingdom and Northampton, United States: Edward Elgar.
- 2011. "The Challenges for Service Innovation and Service Innovation Policies. In *Promoting Innovation in the Services Sector. Review of Experiences and Policies*. New York, United States and Geneva. Switzerland: United Nations, UNECE.
- Rubalcaba, L. and H. Kox. (eds) 2007. *Business Services in European Economic Growth*. London, England: MacMillan/Palgrave.
- Rubalcaba, L. J. Gallego, and P. Den Hertog. 2010. "The Case of Market and System Failures in Services Innovation." *The Service Industries Journal* 30(4): 549-66.
- Rubalcaba, L., J. Gallego, and D. Gago. 2010. "On the Differences between Goods and Services

- Innovation.” *Journal of Innovation Economics* 5: 17-40.
- Rubalcaba, L., S. Michel, J. Sundbo, S. W. Brown, and J. Reynoso. 2012. "Shaping, Organizing, and Rethinking Service Innovation: a Multidimensional Framework." *Journal of Service Management* 23(5): 696-715.
- Sirilli, G. and R. Evangelista. 1998. Technological Innovation in Services and Manufacturing: Results from the Italian Surveys. *Research Policy*. 27(9): 882-99.
- Stiglitz, J. E. 1991. “The Invisible Hand and Modern Welfare Economics.” *NBER Working Paper 3641*. Cambridge, United States: National Bureau of Economic Research.
- Sundbo, J. 1998. *The Theory of Innovation*. Cheltenham, United Kingdom: Edward Elgar.
- Sundbo, J. et al. 2005. *E-services within Knowledge Services – Innovation, Growth, Employment and the Consequences for Business Customers and Citizens*. Proposal for the EU Commission. Mimeographed document.
- Tacsir, E. 2011. Innovation in Services: The Hard Case for Latin America and the Caribbean. In Americas Competitiveness Forum V. Santo Domingo, Dominican Republic. October 5-7, 2011.
- Tamura, S., J. Sheehan, C. Martinez, S. and Kergroach. 2005. *Promoting Innovation in Services*. Paris, France: Organisation for Economic Co-operation and Development (OECD).
- Taylor, F. M. 1911. *The Principles of Scientific Management*. New York, United States: Harper Publishers.
- Tether, B. 2005. Do Services Innovate (Differently)? Insights from the European Innobarometer Survey. *Industry and Innovation* (June).
- Triplett, J. and B. Bosworth. 2002. “Baumol’s Disease” has been Cured: IT and Multifactor Productivity in U.S. Services Industries.” presented in the Brookings Workshop on Services Industry Productivity. Washington, DC: The Brookings Institution.
- United Nations. 2011. *Promoting Innovation in the Services Sector. Review of Experiences and Policies*. New York, United States and Geneva, Switzerland: The United Nations, UNECE.
- van Ark, B., L. Broersma, and P. Den Hertog. 2003. Service Innovation, Performance and Policy: A Review. Research Series 6, *Ministry of Economic Affairs*, The Hague, The Netherlands.
- van Ark, B. Inklaar, R. and McGuckin, R.H. 2003. ICT and Productivity in Europe and the United States. CCSO Working Papers 200311, University of Groningen, CCSO Centre for Economic Research.
- van Cruysen, A. van and H. Hollanders. 2008. “Are Specific Policies Needed to Stimulate Innovation in Services?” *INNO Metrics 2007*. Brussels, Belgium: European Commission, DG Enterprise.
- Vargo, S. and R. Lusch. 2008. “Service-dominant Logic: Continuing the Evolution.” *Journal of the Academy of Marketing Science* 36(1): 1-10.
- Wood, P. 2001. *Consultancy and Innovation: the Business Services Revolution in Europe*. London, England and New York, United States: Routledge.

- Woolthuisa, R. K., Lankhuizenb, M., Gilsingc, V. 2005. A system failure framework for innovation policy design. *Technovation* 25, 609–619
- Zambon, S. 2003. *Study of the Measurement of Intangible Assets and Associated Reporting Practices*. Universities of Melbourne, Ferrara and New York: European Commission.
- Zenker, A. 2001. “Innovation, Interaction and Regional Development: Structural Characteristics of Regional Innovation Strategies.” In *Innovation Networks: Concepts and Challenges in the European Perspective*. Koschatzky, K., Kulicke, M. and Zenker, A., eds. pp. 207-222. Heidelberg, Germany: Physica-Verlag.