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Introduction

Isabelle Rabaud is Associate Professor in International Economics at Laboratoire d'Economie d'Orléans (LEO) at Université d'Orléans, France. She specializes in international trade in services and migration issues linked to climate change. She is an expert for bi-regional partnerships such as the Euro-Mediterranean one and a WAI-ZEI Fellow.

While creation of wealth arises mainly from services (70 % of world GDP in 2010) and these activities employ more than half of workers in most countries of the world, trade in services represents only a fifth of world trade in goods and services, a stable share for the past 45 years. This paradox can be explained by service specificities, relative to current consumption goods.

Initially seen as non-extractive and non-manufacturing industries, services gather a heterogeneous group of products and activities. They are frequently defined as a change in a person or a good made with the consent of the person or the owner of the good. Despite progress in terms of information and communication technology in many service industries, production must still be realized in the presence of the user, like in transportation or health. This co-location constraint of the supplier and the user, frequently implies the need for a commercial presence in the country before selling abroad. Thus, services cannot be traded separately from their production. This specificity has been recognized by trade negotiators of the GATS (General Agreement on Trade in Services), through the adoption of an extensive definition of trade in services including four modes:

- Cross-border supply (Mode 1), where both the supplier and the consumer remain in their respective countries, which corresponds to the traditional notion of trade and covers juridical services supplied by telephone or the Internet, or a health diagnosis sent by e-mail;

- Consumption abroad (Mode 2), where the consumer buys the service outside his or her home country: international tourism or studies abroad;

- Commercial presence (Mode 3), where service suppliers establish (or acquire) an affiliate, branch or representative office in another territory through which they provide their services; commercial presence is therefore closely linked to foreign suppliers' objective of obtaining a lasting interest in another country or to render services to consumers of other countries[1]; an example is health services provided by an hospital held by Foreign owners:

- Presence of natural persons (Mode 4), where an individual is present abroad in order to supply a service; it corresponds to temporary movement abroad; computer services or construction rely on temporary employment of workers under this framework.

Since the end of World War II, impressive progress has been made in liberalizing trade in goods, so that further improvements seem unlikely. After a huge decrease in the 1960s and 1970s, tariffs dropped from 16% to 4% and appear to have reached their limits. Only in a few industries do high barriers remain, which are linked to powerful interests or concern national security or sovereignty. Few improvements can be expected from further negotiations related to goods. Thus, the agreement signed in Bali on December 6, 2014, seemed unlikely to convince skeptical observers that multilateral negotiation processes can lead to ambitious reforms, despite advances in terms of trade facilitation. In this context, the perspective of a greater openness for trade in services seems promising. Indeed, important barriers limit internationalization of the highly regulated service industries. At first sight, given that services

represent the main economic activity, the potential expected gains from the removal of high barriers in those industries seems tremendous.

However, those potential gains might not be as high as expected. On the one hand, there are no tariffs in services, so that any restriction on trade concerns regulations or barriers behind the border. This kind of impediment to trade is difficult to measure. The size and the impact of their removal are then also difficult to assess. On the other hand, the constraint of co-location of supplier and user makes some degree of presence abroad necessary before any selling. Theoretical tools and assessment methods of gains from trade in commodities are ill-fitted to analyze trade in services due to this latter particularity, coupled with the nature of experiment goods. Thus, it is only in the second half of the 1980s that economists began to investigate these subjects.

Gains from liberalization of trade in services can be measured by two different methods:

- *ex ante*, comparisons of actual operations of a country to its potential transactions with a minimal level of impediments to trade in services by the most deregulated country, with an estimation of trade potential by gravity equations. This analysis is linked to short term and partial equilibrium, which does not allow taking into account interactions between sectors, in particular forward/backward linkages. It needs lots of detailed data.

- *ex post*, simulation of growth of trade or FDI flows created by reducing their impediments with Computable General Equilibrium (CGE) models, as is usual to assess gains from negotiation for trade in commodities. This method aims to assess potential of gains linked to multilateral or regional trade agreements. It relies on long term logic and can take into account structural changes.

We focus our work on liberalization of trade in services in developing countries, in particular in African countries. Indeed, progress has already been made in advanced countries towards mutual recognition of diplomas and harmonization of standards, as is the case within the European Union (EU) with the single market. Besides, international institutions, advanced countries seek to convince developing countries of the important potentialities of gains brought by openness to trade in services. From this perspective, CGE modelling seems to offer a suitable framework insofar as they correspond to long run logic and demand less data. Moreover, taking into account sectoral interactions allows for the analysis of the impact of openness on downstream industries using services.

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1 With commercial presence, the service suppliers produce and participate in GDP of its host countries, not of its origin country. Thus the impact is sensibly different from cross-border trade where the supplier stays in its origin country and contributes to domestic GDP. Nonetheless, the GATS (General Agreement on trade in services) has included commercial presence among the four modes of trade in services and we adopt this extensive definition.

Could liberalizing trade in services reduce costs of intermediary services and improve competitiveness of downstream firms, in particular in developing countries? What are the lessons for ECOWAS (Economic Community Of West African States) countries from the analysis of the impact of liberalization of trade in services on welfare, growth and trade, in Eastern Africa?

We begin with an assessment of the importance of services in domestic economies and in international trade, followed by a presentation of comparative advantage in services. The second part is devoted to demonstrating how gains arising from liberalization of trade in services have been analyzed by literature on CGE modeling, presenting the evolution of modeling towards greater realism and a better handling of particularities of tradable services (pluri- sectoral analysis). We focus our analysis on African countries, in particular on Tunisia. This will allow us to have information on the potential gains for ECOWAS countries from such improvement in the openness of service markets.

The role of services in knowledge economies

Share of services in GDP and trade of ECOWAS countries

In ECOWAS countries, the share of services in GDP is in line with that of low income countries. However, in Côte d'Ivoire, services represent a share of GDP similar to that of middle income countries, while share of GDP lags behind that of the rest of the world in Guinea and Guinea-Bissau, Mali, Liberia, Nigeria, Senegal, Sierra Leone. The opposite is true in Cape Verde and Senegal which have a higher share of services in employment, comparable to that of Europe and Central Asia region for the former and to Latin America and the Caribbean for the latter (see table 1).

Table 1: Share of services in GDP for ECOWAS countries and different regions of the world

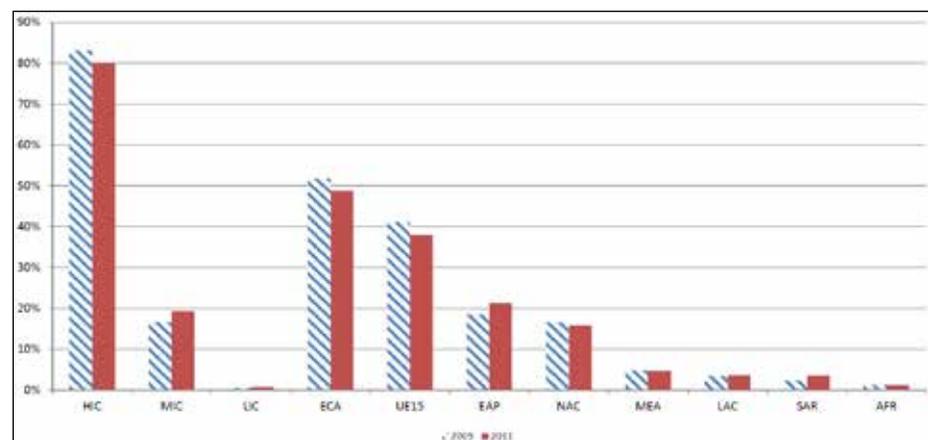|	1990	1995	2000	2005	2006	2007	2008	2009	2010
High income	64.7	68.3	70.6	72.5	72.5	72.6	73.1	75.1	74.2
Middle income	44.4	47.6	49.8	50.6	50.7	51.3	51.3	53.1	52.5
Low income	43.3	43.6	45.0	48.0	47.9	48.3	48.3	48.5	48.8

Table 1: Share of services in GDP for ECOWAS countries and different regions of the world

	1990	1995	2000	2005	2006	2007	2008	2009	2010
East Asia and Pacific	52.0	55.5	59.0	61.4	61.5	61.7	62.1	63.2	62.2
Europe and Central Asia	61.1	65.8	68.0	70.4	70.3	70.4	70.8	72.9	71.3
of which European Union 27	*63.0*	*67.2*	*69.5*	*71.9*	*71.8*	*71.7*	*72.2*	*74.2*	*72.8*
Latin America and the Caribbean	56.3	62.1	62.1	60.3	60.0	60.7	60.5	62.4	61.3
Middle East and North Africa	46.4	48.4	42.2	39.0	38.5	39.5			
North America	70.9	72.8	75.5	76.7	76.9	77.0	77.5	80.1	79.8
South Asia	45.2	46.9	50.8	52.9	53.2	53.1	53.9	54.5	54.4
Sub-Saharan Africa	45.1	47.6	48.5	50.0	50.7	51.0	50.2	52.3	51.9
World	61.0	64.4	66.7	68.4	68.4	68.6	69.1	70.9	69.9
Benin	52.9	53.5	52.2	54.4	54.6	55.7	55.2	54.6	54.3
Burkina Faso	49.6	42.7	46.1	43.0	45.7	48.5	44.2	46.3	41.7
Cape Verde	62.0	64.3	69.1	74.9	75.4	74.6	73.5	72.4	73.9
Cote d'Ivoire	44.3	54.5	50.9	51.3	51.2	50.9	48.9		
Gambia	64.6	63.8	60.6	58.9	63.7	65.8	61.3	61.2	58.7
Ghana	38.1	30.6	32.2	31.6	48.8	50.2	48.6	49.2	51.1
Guinea	42.9	51.6	44.2	41.1	36.3	35.1	32.7	33.8	33.2
Guinea-Bissau	20.6	32.8							
Liberia	28.8	12.9	19.7	25.7	28.5	26.5	25.6	37.0	50.2
Mali	38.6	31.8	37.9	39.3	39.1	39.3	39.8	39.8	
Niger	48.6	42.5	44.4	59.9	45.9	45.9	42.6	45.7	43.5
Nigeria	23.2	21.9	21.8	23.7	26.1	26.6	25.7	28.7	23.6
Togo	43.7	40.0	46.5	43.4	45.7	45.5	41.0	51.1	52.3

Source: World Development Indicator data

Despite their preeminence in domestic economy GDP's and employment, services represent less than a third of trade in goods and services, in all the regions of the world (see graph 1). In contrast, in some ECOWAS countries, services represent nearly 80% of exports of goods and services as in Cape Verde due to the importance of tourism exports. To a lesser extent, this is also the case for Liberia (more than 60%), in line with the importance of flag of convenience, Gambia (slightly less than 60%) and Benin (nearly 40%). In other countries, the share of services in total trade is similar to that of other regions of the world (see graph 2).

Graph 1: Share of geographic zone in world exports of services
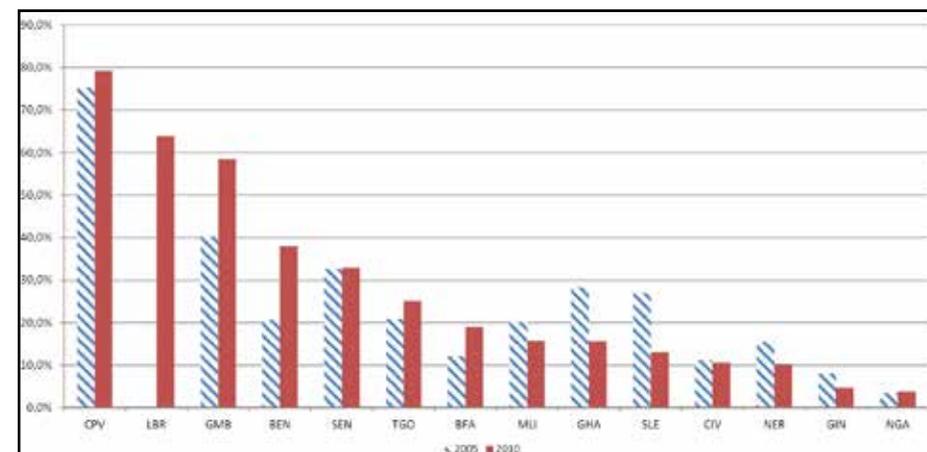

Lecture: EAS: East Asia & Pacific, ECS: Europe & Central Asia, EU15: European Union, LCN: Latin America & Caribbean, MEA: Middle East & North Africa, NAC: North America, SAS: South Asia, SSF: Sub-Saharan Africa, WLD: World, HIC: High Income Countries, MIC: Middle Income Countries, LIC: Low Income Countries

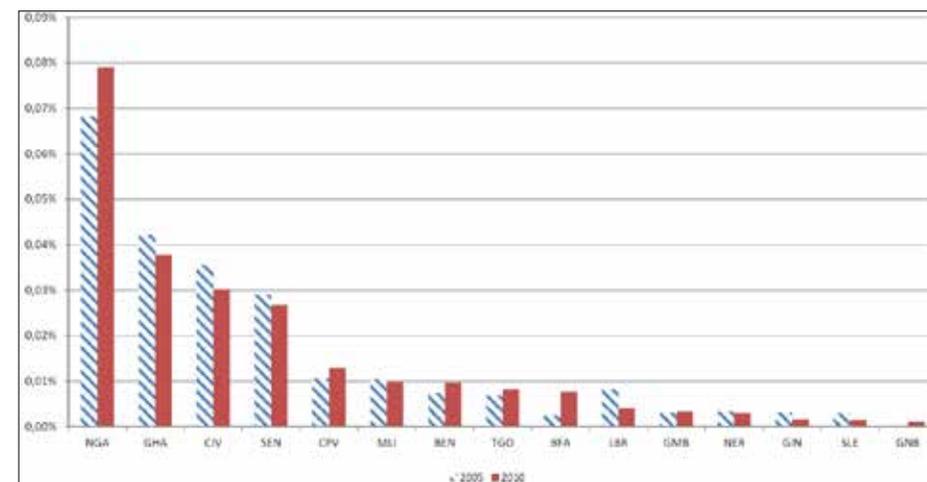Source: Calculations of the author, from WDI data

Notwithstanding the importance of services in the total exports of some ECOWAS countries, the economies of the region account for a small share of world exports, with the largest exporter, Nigeria hardly reaching 0.08%, and the second, Ghana, 0.04%. Most countries of the region register a share below 0.01% (see graph 3).

Graph 2: Share of services in exports of goods and services of ECOWAS countries

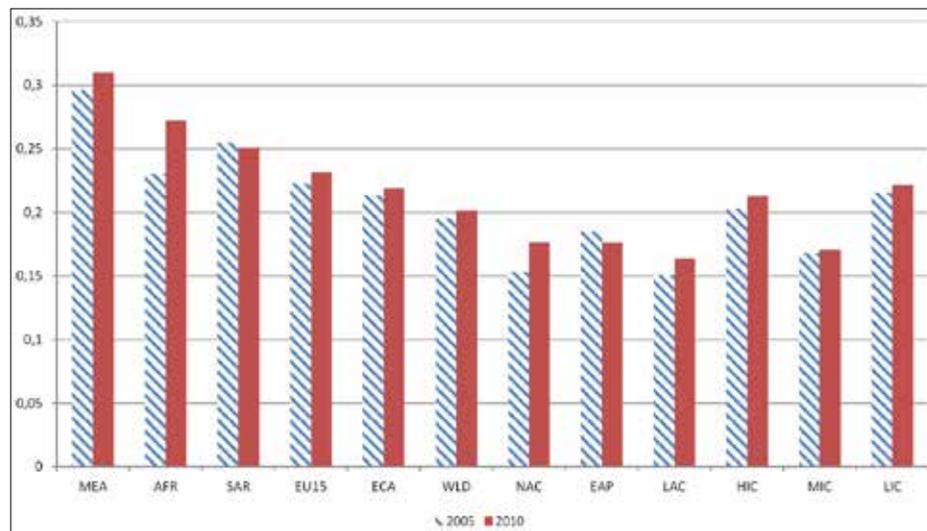Source: Calculations of the author, from WDI data

Graph 3: Share in world exports of services for ECOWAS countries

Lecture: BEN: Benin, BFA: Burkina Faso, CPV: Cape Verde, CIV: Cote d'Ivoire, GMB: Gambia, GHA: Ghana, GIN: Guinea, LBR: Liberia, MLI: Mali, NER: Niger, NGA: Nigeria, SEN: Senegal, SLE: Sierra Leone, TGO: Togo Source: Author's calculations, from WDI data

When it comes to imports, the outlook is different with the share of services in total imports of goods and services of less than 40%, compared to a third for most regions of the world (see graphs 4 and 5).

Graph 4: Share of services in imports of goods and services in various regions
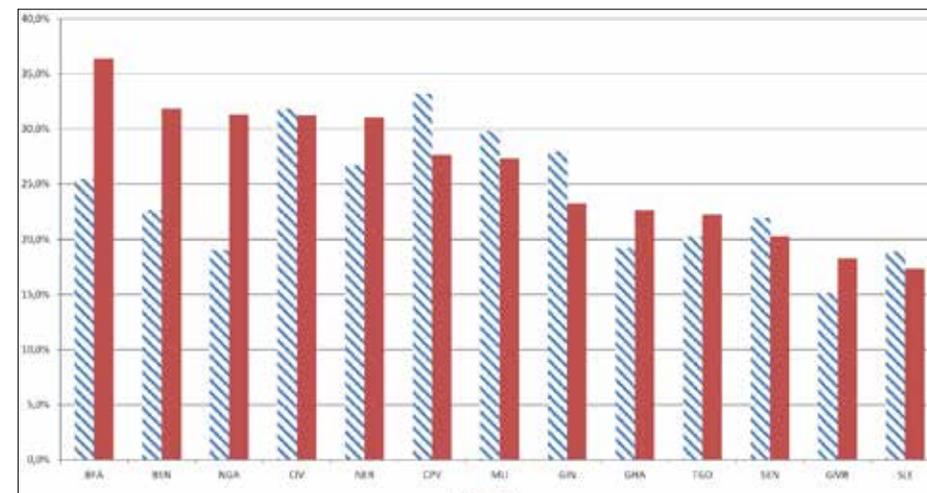

Lecture: EAS: East Asia & Pacific, ECS: Europe & Central Asia, EU15: European Union, LCN: Latin America & Caribbean, MEA: Middle East & North Africa, NAC: North America, SAS: South Asia, SSF: Sub-Saharan Africa, WLD: World, HIC: High Income Countries, MIC: Middle Income Countries, LIC: Low Income Countries

Source: Calculations of the author, from WDI data.

However, the share of big ECOWAS countries, Nigeria and Ghana, in world imports of services is higher than their share of world exports, reflecting the net importing position of the region. As for other countries, with the exception of Cape Verde, their share in world imports is similar to their share in world exports and remains tiny (see graph 6).
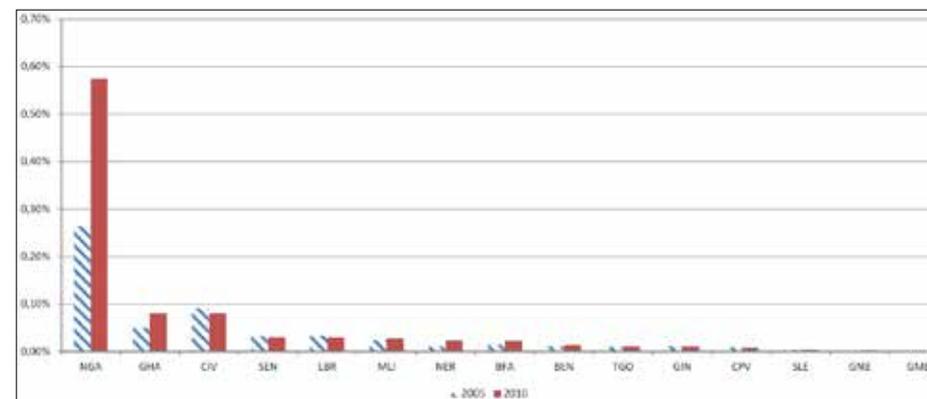
Graph 5: Share of services in imports of goods and service for ECOWAS countries

Lecture: BEN: Benin, BFA: Burkina Faso, CPV: Cape Verde, CIV: Cote d'Ivoire, GMB: Gambia, GHA: Ghana, GIN: Guinea, MLI: Mali, NER: Niger, NGA: Nigeria, SEN: Senegal, SLE: Sierra Leone, TGO: Togo; 2008 instead of 2010 for Cote d'Ivoire; Abnormal values for Liberia,

Source: Author's calculations from WDI data

Graph 6: Share of ECOWAS countries in world imports of services

Lecture: BEN: Benin, BFA: Burkina Faso, CPV: Cape Verde, CIV: Cote d'Ivoire, GMB: Gambia, GHA: Ghana, GIN: Guinea, LBR: Liberia, MLI: Mali, NER: Niger, NGA: Nigeria, SEN: Senegal, SLE: Sierra Leone, TGO: Togo . Source: Author's calculations from WDI data.

Comparative advantages in services

The analysis of the revealed comparative indicator of CEPII[2] shows a contrasting situation among ECOWAS countries. On the one hand Gambia, Cape Verde, Senegal, Togo and to a lesser extent Benin have a comparative advantage in services. Gambia enjoys a comparative advantage in all service industries except for financial services. For Cape Verde, it comes mainly from tourism activities (transportation and travel items) and also from communications, while the country also has a comparative disadvantage in other service industries. Senegal displays comparative advantages in all services industries, with the exception of transportation, information services and royalties. Togo exhibits a similar pattern, having a comparative disadvantage only in financial services and royalties. Benin presents a more balanced position with comparative advantages only in tourism, communication, construction, insurance and other business services. On the other hand, the nine other member countries disclose comparative disadvantages in services, with the exception of Mali, having a balanced, slightly positive position (see table 2).

The position of oil exporting countries contrasts with that of oil non-exporting economies. In general, the former present strong comparative disadvantages in services and in tourism, with Nigeria and Ghana exhibiting no comparative advantage in any service industries; Niger only in tourism and Cote d'Ivoire only in communications. In the meantime, oil non-exporting countries enjoy comparative advantages in tourism. Senegal and Benin are the exceptions. Except for Gambia and Togo, all economies have a comparative disadvantage in transportation. When it comes to "other business services"; that is professions and advisors, only Benin, Senegal and Togo display a comparative advantage (see table 2).

The situation in ECOWAS countries regarding the size of the service sectors in the domestic economy and in trade is highly diverse; depending on the importance of their tourism sector (Cape Verde) and on their implication in flag of convenience, as is the case for Liberia. In this context, it seems legitimate to question potential gains from liberalization of services for developing countries.

2   See the definition of revealed comparative indicator in the appendix or in Fouquin (2011).

Analysis of gains from trade in services with CGE modelling: what insights for ECOWAS countries

Before looking at CGE modelling applied to the liberalization of international service operations in African countries, we examine the particular nature and the measurement of barriers to trade in services.

Assessment of barriers to trade in services

In contrast with mass consumption goods, for which tariffs can protect domestic producers from imports, in services, every protection implies a regulation - a barrier "behind the border". If some rules are driven by efficiency and equity concerns, it remains difficult to distinguish between legitimate measures and hidden protectionism. The very characteristics of services give birth to market failures. Thus, in infrastructure services (transportation, telecommunication, energy,…), entry is often restricted because of the presence of a natural monopoly. Asymmetry of information is common, insofar as services are experiment goods, whose quality can only be seen after use. Entry and on-going operation regulations can improve welfare when information is costly, and consumers have the same preferences about the attributes of service suppliers, as for complex goods. Moreover, information on measures undertaken is not always available; definition of restrictions proves tricky and foreign operations are difficult to redraw by mode of trade. Besides, governments have a degree of liberty to restrict foreign transactions in services and opt for less transparency than for goods.

Barriers to trade in services have two features. Restrictions on entry/settlement increase fixed costs and have the impact of:

• competition reduction, creating rents, for which a tariff equivalent can then be calculated ("triangle losses"); a high wedge between price and cost indicates rents;

• increasing inefficiency due to a lack of access to world technology, which increases costs ("rectangle losses"); margin between price and cost is forced by those dead- weight costs.

Table 2: Revealed Comparative Advantage Index for ECOWAS countries, 2010

	Benin	Burkina Faso	Cape Verde	Cote d'Ivoire	Gambia	Ghana	Guinea
Services	21.890	-28.529	105.644	-75.545	182.965	-304.311	-49.361
Com. Serv.	17.358	-31.632	100.597	-71.815	182.965	-251.373	-47.356
Transportation	-12.130	-24.007	37.335	-59.187	45.436	-109.925	-36.680
Travel	23.952	3.949	82.565	-6.296	116.877	-67.052	-0.719
Communications	3.386	3.747	10.728	1.169	19.938	~	6.278
Construction	0.053	3.228	-1.299	-0.573	8.900	~	0.767
Insurance	0.897	~	-0.900	-2.808	~	~	~
Financial Serv.	-1.868	-8.326	-6.654	-2.122	-1.854	-10.805	~
Information S.	-1.311	-0.616	-3.002	-0.398	~	~	~
Royalties	-0.300	0;051	~	~	~	~	~
O. Business S.	4.677	-11.519	-16.894	-0.807	~	-63.593	-15.932
Personnal and recreational S	0,003179996	0,093263233	-1,0700703	~	~	~	~

Note: Revealed Comparative Indicator of CEPII measures the gap between trade balance for a given service k and trade in goods and services weighted by the share of trade for service k in trade of goods and services of the country in thousandth of GDP. A positive sign indicates a comparative advantage and a negative sign comparative disadvantage, greatest the higher the absolute value of the indicator. It aims to compare the balance of trade for a given product to the balance of goods and services.

Source: Author's calculations from statistics of Trade Map of the ITC (International Trade Center), according to the definition given by Fouquin (2011).

Table 2: Revealed Comparative Advantage Index for ECOWAS countries, 2010 (continued)

	Guinea-Bissau	Mali	Niger	Nigeria	Senegal	Sierra Leone	Togo
Services	-115.108	0.017	-137.681	-95.127	70.811	-25.092	54.841
Com. Serv.	-113.359	-0.028	-137.701	-89.532	60.057	-21.981	43.381
Transportation	-41.766	-0.481	-100.032	-35.086	-17.466	-24.921	5.130
Travel	-32.480	0.355	0.120	-25.701	44.121	7.363	18,4847
Communications	9.887	0.207	-1.961	-1.245	16.988	-2.511	18.907
Construction	84.733	-0.030	-14.492	~	5.581	~	0,331
Insurance	3.756	0.008	-2.802	-0.117	0.087	0.147	3.966
Financial Serv.	~	-0.028	-4.277	-2.504	-3.698	-2.009	-7.301
Information S.	~	-0.006	~	~	-0.078	~	~
Royalties	~	-0.001	~	-1.113	-9.343	0.442	-0.332
O. Business S.	-26.957	-0.052	-10.529	-22.236	14.632	-0.174	6.235
Personnal and recreational S	~	0.001	~	-0.262	~	~	0.003

Note: Revealed Comparative Indicator of CEPII measures the gap between trade balance for a given service k and trade in goods and services weighted by the share of trade for service k in trade of goods and services of the country in thousandth of GDP. A positive sign indicates a comparative advantage and a negative sign comparative disadvantage, greatest the higher the absolute value of the indicator. It aims to compare the balance of trade for a given product to the balance of goods and services.

Source: Author's calculations from statistics of Trade Map of the ITC (International Trade Center), according to the definition given by Fouquin (2011).

Depending on their size, impediments to on-going operations increase variable costs. These two kinds of barriers can be either discriminatory or non-discriminatory (see table 2, Dee, 2005, and Francois and Hoekman, 2010).

Table 3: A typology of policies affecting foreign services transactions

	Impact on entry (fixed cost)	Impact on operations (variable cost)
Non discriminatory	A limit of two mobile phone providers permitted to operate in the country	Introduction of an independent regulator in telecommunications, at the initiative of the government
Discriminatory	Maximum equity ownership limit for foreign investors	Local language knowledge required for members of the board

Source: Synthesis of the author from Dee, 2005

Restrictions on trade in services concern domestic regulations. Are they following legitimate objectives of quality and performance and respecting public health and security? Or are they in fact protectionist measures? Good knowledge of the market and sectoral analysis proves necessary.

The various assessments of barriers to trade in services follow the three step methodology developed by the teams of the APC (Australian Productivity Commission) and the ANU (Australian National University) at the beginning of the 2000's. A quantitative index of "restrictiveness" is measured by;

- Attribution of a grade to actual barriers depending on their degree of restrictiveness,

- Calculus of the average of these grades weighted by their economic importance,

- Conversion of the weighted average into a quantitative "restrictiveness index".

Then, the restrictiveness index is introduced in a model of economic performance, with other determinants. Finally, the impact of actual impediments to trade is measured by the gap between their actual level of economic performance and their potential, if regulations were as liberal as those of a benchmark country (generally Hong-Kong or Singapore, the United Kingdom

for European countries). This gap is then converted into tariff equivalents. This method allows us to link estimations of the impact of trade explicitly to the characteristics of restrictions (Dee, 2005). An "average" relation between barriers and performance is thus measured, among the countries of the sample.

In its recent analysis, the World Bank proceeds the same way with surveys on 103 countries for five key sectors: financial services, telecommunications, retail distribution, transportation and professional services for cross-border trade (Mode 1), commercial presence (Mode3) and temporary movement of natural persons (Mode 4). However, the World Bank ranks barriers and only takes into account restrictions related to operations when entry is authorized.

After the assessment of barriers to trade in services, gains from the liberalization of trade in services can be measured. We focus on the impact of openness of trade in services when developing African countries enter the WTO or conclude regional or preferential trade agreements with those countries. For that purpose, simulations by CGE models appear a better tool of analysis than gravity equations. Indeed, the latter are for the short term and only analyze services in partial equilibrium logic and require lots of data[3]. In comparison, CGE modeling has long term logic, analyzes structural changes, allowing for studies of interactions between services and forward/backward user activities and requires fewer statistics.

Lessons from CGE models applied to liberalization of trade in services

After the first analysis following the conclusion of the GATS, studies of gains linked to liberalization of trade in services focused on multi-country approaches in a monopolistic framework. Then, modeling shifted toward single country and multi-sector analyses to measure the impact of either or both regional or preferential trade agreements of WTO accession. We present the analysis of Tunisia in this framework. Finally, the last analysis takes into account firm heterogeneity and gains for downstream industries arising from and benefiting from cheaper and greater variety of service inputs after openness to trade. A special focus is made on analysis of the Tunisian case and of the adequate

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3   For an analysis of gravity equations applied to trade in services, see Rabaud and Montalieu (2012).

framework of negotiation for African countries depending on the service industry (bilateral, regional or multilateral).

Pioneering work

One of the first attempts to consider trade in services, intended to measure the impact of the Marrakech agreements, which concluded the Uruguay round of trade negotiations in December 1994. Building on early barrier estimates by Hoekman (1996), Brown et al. (1996) modeled reductions in the tariff equivalents of policies restricting trade in services and concluded that future services liberalization had the potential to yield gains comparable to past accomplishments under GATT (General Agreement on Tariffs and Trade) in goods, measured in terms of GDP and trade volumes. More recent estimates suggest that the tariff equivalents grounded on earlier counts of the number of nontariff barriers (NTBs), like those of Hoekman, overstate actual price impacts of barriers to trade in services. An important weakness of the early approaches to trade in services was that FDI (Foreign Direct Investment) was not incorporated into the analysis. Whereas in practice, commercial presence is often a prerequisite to selling services abroad.

Multi-country CGE models assessing the impact of multilateral liberalization

This literature considers direct linkages between productivity and liberalization. The authors allow for imperfect competition and consider the role of FDI in increasing competition and productivity (Dee and Hanslow, 2001).

The Australian Productivity Commission (APC) pioneered the extension of a standard, static modeling framework to include bilateral FDI in services. Thus, Dee and Hanslow (2001) introduced bilateral stocks of FDI for 19 regions in GTAP (Global Trade Analysis Project)[4]. The authors chose a framework of monopolistic competition of research of ideal variety type with product differentiation at firm

level. The authors assumed that customers choose between physical locations first (where services are produced) and then select between suppliers in a given geographic location on the basis of ownership (nationality). As noted by Dee (2003), from an Australian perspective, a US multinational located in Australia is assumed to be a closer substitute for an Australian-owned firm than it is for a US firm located in the United States.

Based on sectoral estimates of the ANU and the APC to measure barriers to trade in services, the authors analyze the impact of withdrawal of impediments to trade in services remaining after the Uruguay round, for an adjustment period of ten years. Multilateral liberalization of trade in services induces a fall in real income in Canada, United States and in the European Union (EU). For the latter, the estimated loss of six billion dollars is nearly compensated by gains arising from multilateral liberalization in agriculture and manufacturing, while the United States obtains a net gain. However, they report estimates that full liberalization of services would yield greater gains than liberalization of remaining barriers to goods trade, driven largely by greater flows of FDI from high-income countries to developing economies. Those impacts of similar size for liberalization of goods and services trade come from higher impediments applied to a smaller share of service industries (Whalley, 2004). More generally, economic improvement comes from the ability of multinational firms to capture initial quota rents (see table 4).

Table 4 describes the impact of various scenarios of trade liberalization. When it comes to Brown and Stern (2001), they look at multinational enterprises (MNEs) supplying a differentiated product and organizing production in different host countries (mode 3). MNEs use capital, labor and intermediary goods. Labor is mobile across sectors, but not between countries. Barriers towards FDI are assumed to increase settlement costs in the host country. Their estimate is based on the work of Hoekman (1996) with Hong Kong as the benchmark: that is the country with the weakest restrictions to market access for services. The withdrawal of impediments to trade in services induces sensitive impacts on welfare, in particular for Canada, the EU, the US, and capital importing countries; while welfare deteriorates in some capital exporting developing countries, in particular Chile, Korea, Mexico and Thailand.

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4   The Global Trade Analysis Project aims to gather social account and trade policy data for a benchmark year (1997 or 2004) for a worldwide collaboration for CGE modeling. With few exceptions, version 5 gathers OECD countries in 2010, APEC and Mercosur, plus Botswana, Malawi, Morocco, Mozambique, Tanzania, Zambia and Zimbabwe. The database registers 66 regions, countries not individualized are gathered in zones such as "Rest of North Africa".

Modeling gains from accession to the WTO arising from liberalization of trade in services

Introducing intermediary services into the framework of a small open economy, Jensen, Rutherford and Tarr (2010) analyze the impact of liberalization of FDI in services on productivity growth in forward industries. Their model is based on the Melitz (2003) heterogeneous-firms approach. Large-group monopolistic competition among firms producing differentiated products is maintained, but firms face different technologies. Specifically, firms differ in their productivity. A firm with a higher productivity has a lower marginal cost of production. Given a distribution of productivity levels, overall productivity can be affected by trade opportunities that reallocate resources between the different firms. The impacts obtained are very important.

Jensen et al. (2010) estimate the impact of FDI in business services' liberalization in Tanzania, from the perspective of the accession of the country to the WTO. They assume that a presence in the country is necessary before selling services, so that trade requires commercial presence. They introduce increasing return to scale industries, which use differentiated service inputs, so that greater openness to trade leads to a gain in variety of inputs; that is endogenous productivity effects. They rely on a CGE model with 52 sectors, of which ten are service industries, in particular; transportation, telecommunications and business services, where activity is concentrated. Half of the capital is sector specific in the imperfectly competitive industries. Construction, hotels and restaurants, post communication, public administration, health and education are competitive service industries, in which products are differentiated by country of origin. All tourism sales are considered as exports; purchases of goods and services are taken into account and manufacturing is considered as service intensive. Telecommunications, banking services, transportation and professional business services are produced under scale economies in imperfect competition. Foreign origin firms sell in Tanzania both cross-border exports and settle locally. These MNEs have commodities which are differentiated at firm level and combine local and imported inputs. The reduction of impediments to settlement of MNEs favors foreign entry, which increases the number of varieties of services available and allows for increased productivity.

The authors analyze two situations: at constant capital stock (medium term scenario) and with adjustment of capital stock towards its stable equilibrium level (long term scenario). In the medium run, Tanzania will gain 4.8% of GDP

Table 4: Comparison of gains arising from liberalization of trade in services in the first works

AUTHORS	Structure of the market	Mode	Type of barriers removed	Gains of welfare and incomes	Comments
Brown and Stern (2001)	Multinational Enterprises producing differentiated goods and services	Commercial presence of Foreign multinational enterprises (Mode 3)	Barriers to market access such as those estimated by Hoekman (1996)	Increase of 90 Bn$ of world GNI; some developing countries loose; advanced countries gain	Based on too simple trade restrictiveness and market access indexes
Dee and Hanslow (2001)	Scale economies and monopolistic competition of large group type in all industries	Cross-border trade (Mode 1) and commercial presence (Mode 3, bilateral flow of FDI)	Tariff equivalents of trade and investment barriers post Uruguay Round cycle	Increase of real income of 130 Bn$, of which 100 Bn$ for China only	In China, barriers in all service industries identical to tariff equivalent for banking services and telecommunications

(5.3% of consumption), and in the long run, with capital stock adjustment, the gain from full reform will be 14.4% of GDP (15.9% of consumption). The largest gains (about 5%) derive from a reduction in regulatory barriers against service providers. Within services, the largest gains come from regulatory reform in the water transport, road transport, banking and insurance sectors (see tables 5 and 6). Jensen, Rutherford and Tarr (2008) follow the structure of the paper discussed previously and develop a 56, small, open economy CGE model of Kazakhstan to assess the effect of Kazakhstan's accession to the WTO, with full reform. They devote particular attention to the liberalization of barriers to FDI in business services in Kazakhstan, with variety-productivity effects. Business services are produced in imperfect competition in the usual framework used by the authors (see the presentation for Tanzania above). The structure of the market of oil and gas sector, of particular importance in Kazakhstan, is similar to that of business services, except for the inclusion of sector-specific capital and national product differentiation (in addition to firm-level product differentiation), and with special treatment for local content and specialized VAT treatment for MNEs. In the medium run, Kazakh GDP is expected to increase to 3.7% (6.7% for consumption), while, in the long run, the gain could be 9.7% of GDP (17.5% of consumption). The gains from FDI liberalization in services are 4.9% of the value of Kazakh consumption, over 70% of total gains and ten times the gain from a constant- returns-to scale model (see tables 5 and 6).

Modeling gains from regional or preferential trade agreements for Kenya

For Kenya, Balisteri and Tarr (2011) analyze rents linked to restrictions to foreign firm entry, the impacts of which are equivalent to tariffs, in the framework of a preferential trade agreement (PTA). A reduction by half of impediments to trade in services leads to:

- gains twice as high for an agreement with the EU, than for an arrangement within Africa,

- gains three times higher if, with Africa, the agreement includes the EU,

- gains nine times higher, if the agreement covers non-discriminatory regulatory barriers.

Table 5: Comparison of the gains arising from liberalization of trade in services in Tanzania and in Kazakhstan (% of growth)

Nature of the reform	Welfare gain in TANZANIA		Welfare gain in KAZAKHSTAN	
	in % of GDP	in % of con-sumption	in % of GDP	in % of con-sumption
Full reform	4.8	5.3	3.7	6.7
Removal of all barriers to trade in services (a + b)	4.5	5.0		
Removal of non-discrimi-natory regulatory barriers against services providers (a)	3.3	3.7		
Removal of barriers against MNE providing services locally (b)	0.7	0.8	2.7	4.9
Moving to a uniform tariff (c) or tariff reform (1)	0.2	0.2	0.2	0.4
Improved market access in metals (+1 %)			0.3	0.5
VTA on local content (2)			0.5	0.9
Capital stock adjustment (long term)	14.4	15.9	9.7	17.5
Constant returns to scale (CRTS) scenario	1.7	1.9	0.3	0.5

Reading note: (a) 50 % reduction of the ad valorem equivalent of the non-discriminatory barriers on domestic and MNE service providers in Tanzania (Kazakhstan); (b) 50 % reduction of the ad valorem equivalent of the discriminatory barriers against MNE service providers in Tanzania (Kazakhstan); (c) a uniform tariff imposed on goods, without any change in the average level of the Tanzanian tariff; (1) lowering of 50 % of tariffs in Kazakhstan; (2) the elimination of local content policies of MNE in oil (equivalent to a 20% price preference by MNEs for domestic inputs, combined with VAT exemption on imported inputs and input purchases from domestic sources face a 15% VAT for oil companies, while MNE of other industries are exempted.)

Spillover effects are greater for trade with more technologically advanced countries (table 5).

Like Jensen et al. (2010), the authors introduce endogenous gains from productivity improvement due to a rise in the number of goods and services varieties produced in imperfect competition. Producers choose first between selling on the domestic market or exporting, then they opt for one of the three exporting regions: the EU, Africa or the rest of the world. Produced under monopolistic competition with product differentiation by origin country, services belong to the following sectors: telecommunications, financial and insurance services, transportations and professional business services. Rents arising from impediments for foreign firms and captured by domestic firms have similar effects to tariff losses for commodities. Trade losses may occur in case of preferential liberalization of trade in services, when increase in the number of varieties available among partners is compensated by the loss of varieties coming from countries excluded from the agreement (traffic diversion effect).

Studies of the potential impacts of regional trade agreements often conclude that these can generate significant gains if the effort extends to liberalization of trade in services. Services modeling efforts devote less attention to issues of trade diversion and the impacts of discriminatory removal of trade barriers for selected (preferred) trading partners, because liberalization, even in the context of a regional agreement, will be applied on a non-discriminatory basis. However, the paper by Balisteri and Tarr (2011) illustrates that preferential (partial) liberalization can be welfare diminishing if market structures are such as to generate significant rents and the partial reforms result in transfers of such rents to foreign firms. The authors find that the potential gains for Kenya from preferential liberalization with the EU proves lower if Kenyans lose rents from barriers against foreign service-providers that are shifted abroad. Then, in a bilateral or regional PTA, specific policy reforms aim at shifting from a purely domestic monopoly or oligopoly to a market that remains highly concentrated but with ownership now shared between domestic and foreign firms.

Liberalization of temporary movement of natural persons

Walmsey and Winters (2003) estimate that if OECD countries were to expand temporary access to foreign service-providers by the equivalent of 3% of their labor force, the global gains would be greater than those associated with full liberalization of merchandise trade. These gains are driven by higher labor productivity and thus wages of the workers that are permitted to move to locations where labor is scarcer. The gains to those who move outweigh

Table 6: Comparison of gains arising from liberalization of trade in services in models with endogenous productivity enhancement

Authors	Structure of the market	Nature of service	Mode	Type of barriers removed	Welfare and income gains	Comments
Konan and Maskus (2006)	Constant return to scale. Cartel with regulated entry in services		Cross-border trade (Mode 1) and commercial presence (Mode 3)	Important gains if barriers increase costs, and weak if they create rents		Gains highly dependent on the nature of barriers (creating rents or increasing costs)
Jensen, Rutherford and Tarr (2008)	Endogenous productivity effects, linked to varieties of inputs and FDI	56 sectors, homogenous and differentiated services intensive in knowledge with scale economies	Cross-border trade and commercial presence, equivalent; focus on gas and oil markets — Kazakhstan	Surveys on regulations and calculus of tariff equivalent of FDI	→ of 3.7% of GDP at MT and of 9.7% at LT Liberalization of FDI = 70% of accession gains to WTO	Losses if rent is captured by Foreign MNEs
Jensen, Rutherford and Tarr (2010)	Endogenous productivity effects, linked to varieties of inputs and FDI	52 sectors, homogenous and differentiated services intensive in knowledge with scale economies	Cross-border trade and commercial presence equivalent for Tanzania	Surveys on regulations and calculus of tariff equivalent of FDI	→ of 4.8% of GDP at MT and of 14.4% at LT	
Balisteri and Tarr (2011)	Endogenous productivity effects, linked to varieties of inputs and FDI	55 sectors, homogenous and differentiated services intensive in knowledge with scale economies	Cross-border trade and commercial presence for Kenya	Surveys on regulations and Liberalization of regulatory domestic barriers	Gains of full reform of 9.3%	Risk of losses if diversion traffic effect reduces the number of varieties available

Source: synthesis of the author from quoted analyses

losses incurred by those who stay behind, although these losses are partially offset by income that is expected to be remitted back to source countries. Both developed and developing countries would share these gains, and they would be largest if both high-skilled mobility and low-skilled mobility were permitted. It is likely that countries will continue to rely on bilateral arrangements to manage such trade, which in turn may be sector-specific.

Modeling gains from regional or preferential trade agreements for Tunisia

Some analyses center on country impacts of services liberalization due to regional or preferential trade agreements (RTA or PTA). In such a framework, Konan and Maskus (2006) analyze the impacts of liberalization of services for Tunisia. They conclude that the main potential source of welfare gain after liberalization lies in the removal of barriers against FDI in service industries. The authors underline that increased international competition in service markets reduces:

- the 'cartel effect': the markup of price over marginal cost that incumbents are able to charge due to restricted entry, and

- attenuate the 'cost inefficiency effect': the fact that in an environment with limited competition marginal costs of incumbents are likely to be higher than if entry was allowed.

The latter is the most important as inefficiency imposes a cost on all sectors and households that consume the services involved.

Konan and Maskus (2006) assume perfect competition and constant returns to scale in production of goods and services, even if the market of services is assimilated into a cartel, where entry is regulated, in particular for foreign firms. They conclude that removing policies that increase costs can have much greater positive effects on national welfare than the removal of merchandise trade barriers.

Table 7 describes the impact of various scenarios of cross-border trade (mode 1) and openness to commercial presence (mode 3) in services. Regarding commercial presence (mode 3), greater openness genders the highest gains (7.7%, if market is competitive), when initially the country uses technology less

efficient than the international standard. The opposite occurs, when worldwide technology is used and price gaps only come from an economic rent, removing restrictions to investment in services induces only weak welfare gains: 0.33%. In the central scenario, a price wedge is partly explained by distortions due to rent in construction, distribution, hotels and restaurants, real estate and repair, whereas it is equally distributed among the two sources of distortions in other service industries. The welfare increase is then slightly higher: 4.3%. In the central scenario for impediments to investment, simultaneous liberalization for cross-border trade (mode 1) and commercial presence (mode 3) induce gains slightly higher than the addition of the two measures (5.3%), 75% of which come from FDI authorization. Combining openness of trade in goods and services, the gains are highest (6.7%). Important potential gains arising from liberalization of trade in services reflect both the important role of services in domestic economies and the size of protections that they benefit from; due to policies creating entry barriers (see tables 5 and 6).

Using tariff equivalents based on expert opinions or Warren's (2000) equation for telecommunications, Ben Romdhane (2008) uses the model of Konan and Maskus (2006) based on the social account matrix of 2001, instead of data for 1995. Moreover, he distinguishes rent effects arising from monopoly of power and estimated by tariff equivalent from the impact of technical progress allowed by access to international technology after FDI liberalization, assimilated to a rise of 20% in total factor productivity. This method seems more relevant than the half-half choice of Konan and Maskus, even though choice of numerical value is not explained. Ben Romdhane obtains results close to those of Konan and Maskus for cross-border trade and the central scenario, though his estimate of technical inefficiency is sensibly smaller (see table 7)

The best practice lies in modeling a combination of dead weight costs and rents. A problem with the early literature is the absence of any empirical estimates of the extent to which policies generate rents and which groups benefited from such rents. For instance, Konan and Maskus (2006) assumed that barriers are half rent-creating and half resource wasting. Subsequent work by Dee and Diop (2011) based on better empirical estimates of the welfare effects of barriers concludes that the impacts of services trade reforms will be smaller than those estimated by Konan and Maskus.

Table 7: Impacts of trade in services liberalization in Tunisia in a RTA framework

	Welfare, household income	
	Konan and Maskus (2006)	Ben Romdhane (2008)
Liberalization of commodity trade (1) tariff removal)	1.52	n.a.
Liberalization of cross-border trade in services (2)	1.22	0.83
Liberalization of investment :		
Rent scenario (3)	0.33	0.26
Central scenario (4)	4.00	3.46
Mixed scenario (5)	4.31	n.a.
Inefficiency scenario (6)	7.68	4.64
Full service trade liberalization (modes 1 & 3) (7)	5.30	4.34
Liberalization of goods and services (8)	6.67	n.a.

n.a. : not available, case not estimated by the authors
Source: synthesis of the author, from quoted papers

Dee and Diop (2011) analyze seven service sectors (accounting, air passenger transport, banking services, engineering services, legal professions, postal services and telecommunications) in a CGE model to quantify the impact of regulatory restrictions on economic performance. As opposed to Konan and Maskuz (2006), who rely on assumptions for the distribution between rent-creating and cost-increasing impediments to trade, they use empirical sectoral surveys to assess barriers. Compared with Konan and Maskuz (2006), Dee and Diop (2011) use the FTAP model, which incorporates services delivered via commercial presence (Mode 3), taking into account profit repatriated back to the home countries by MNEs, and makes provision for savings and capital accumulation. This CGE model also allows for firm-level product differentiation, economies of scale and large-group monopolistic competition. They find that

partial regulatory reform would yield gains roughly equivalent to full unilateral reform of manufacturing tariffs, but roughly one tenth of the gains from full bilateral reform of border protection in agriculture with the EU. The adjustment costs associated with these services trade reforms are minimal, compared with liberalization of trade in agriculture or manufacturing, where domestic output shrank.

Their findings show smaller gains from trade than Konan and Maskus (2006) because most of the reforms are targeted at restrictions that have inflated price-cost margins, creating rents, rather than increasing costs. That is the case in banking services and telecommunications, while in air passenger transport and professions, regulations tend to have both impacts. In distribution services, they increase costs only. Thus removing barriers results in a transfer from incumbent producers to consumers and other industries and a relatively small gain to the economy as a whole. Finally, the removal of most discriminatory impediments against foreign suppliers, that is quantity controls, create rents rather than increase costs (see third column, table 6). A different baseline and changes in the Tunisian economy during the 2000s also explain diverging results (see table 8).

If Tunisia implemented wider reforms, in wholesale and retail trade, electricity generation and ports, the gains could be several orders of magnitude greater than those projected here. To the extent that the wider reforms targeted non-discriminatory restrictions, and affect cost increasing measures, they could further benefit locally-owned new entrants.

Dee and Diop (2011) underline that losses of partner countries are low; but also that Tunisia has little to gain from behind-the-border reforms in other countries. This is a reason for Tunisia to implement reforms sooner and not to wait for others.

Table 8: Welfare implications of Tunisian unilateral and bilateral services trade reform initiatives

Sector	$US million, in					
	Direct price impact via mark-up on output		Tuni-sia	EU	GAFTA	Rest of World
Unilateral reform Telecommunications	Domestic providers	6.8	21	-13	0	-1
	Foreign providers	15.5				
Unilateral reform Banking	Domestic providers	2.6	3	-2	0	0
	Foreign providers	10.7				
Unilateral reform Professional services	Foreign providers	7.2	17	2	-2	-37
TOTAL			77	4	-1	-42
Full reform in service sectors			175	-18	-2	-42
Reform in agriculture*			733	183	23	-61
Reform in manufacturing#			-104	388	-1	-93
Full unilateral liberalization in manufacturing			65	203	6	210

Source: Synthesis of the authors, from Dee and Diop, 2011

* Removal of border protection on agriculture from EU and Tunisia, 10 % productivity improvement on Tunisia's agricultural exports; # Elimination of remaining tariffs on manufactures from the EU and 25 % reduction in tariffs on manufactures from other sources.

Political economy lessons from CGE model analyses

Modeling efforts are less focused on questions of trade diversion and impacts of a discriminatory removal of barriers to trade for selected trade partners, than analyses of trade in goods. Indeed, even on a preferential basis, liberalization will be applied on a non- discriminatory basis. However, the papers by Balisteri and Tarr (2011), and Jensen, Rutherford and Tarr (2010) illustrate that preferential liberalization can reduce welfare if market structures gender significant rents and if partial reforms result in transfers of such rents to foreign firms (Christen et al., 2012).

In modeling liberalization in Kenya, Jensen and Tarr (2011) and Balisteri and Tarr (2011) find that the potential gains from preferential liberalization with the EU proves lower if Kenyans lose rents from barriers against foreign service-providers that are shifted abroad. Then, as part of a bilateral or regional PTA, specific policy reforms aim at shifting from a purely domestic monopoly or oligopoly to a situation where the market remains highly concentrated but with ownership now shared between domestic and foreign firms. In such a case, no gain occurs if domestic reforms are not realized before openness (Christen et al., 2012).

Fink et al. (2001) analyze twelve Asian developing countries during the period 1985-1998 for fixed and mobile phones. They obtain an increase in fixed line penetration, measured by the number of lines available for 100 inhabitants, when transformation into companies. But, if private assets and competition for local services are non-significant, taken separately, the interaction variable between privatization and competition is significant, which implies that privatization alone still has no impact if the industry remains in the hands of a monopoly. When the share of digital lines in total lines, or the number of lines by workers in telecommunications are taken into account, transformation into a company and interaction between privatization and competition still increase penetration; the share of private stocks becomes significant in the regression of digital lines. Regarding mobile phone services, the rate of penetration is measured by the number of subscribers to mobile phones for 100 inhabitants. Competition is non-significant when compared to the number of operators of wireless, but has a positive and significant effect when considering the number of digital operators. The presence of an independent regulator does not significantly modify this result.

Drawbacks of principles for building CGE models

CGE models offer a partial equilibrium framework, which takes into account whole sectoral interactions and allows explanation of long term impacts of structural changes. In that sense, and as they rely on limited data, they seem particularly fitted to studying the impact of liberalization of trade in services in African developing countries. Indeed, services are intermediary products and importing cheaper services or embodying better technology allows improved productivity of downstream user sectors. Besides, African data contains holes and pitfalls, so that using a technique, which asks for so few information could be relevant. However, lack of information can be problematic even to build a social accounting matrix just for a year, as it is the case for CGE modeling. Thus, in developing countries and for trade in services, even more so than in other fields, CGE modeling appears as suggestive rather than prediction models, giving an indication of the sense more than a precise quantitative measure of the impacts of liberalization.

Besides, the impacts are highly dependent on the choice of the value of estimated parameters, such as substitution elasticity between varieties of products in monopolistic competition models. These measures are fragile and frequently rely on old values, even guesses (McKitrick, 1998).

More specifically, in Walmsley and Winters (2003), the hypothesis that all wage differences reflect a productivity gap leads to an overvaluation of productivity differential between countries and in consequence of the size of temporary migration and welfare gains.

Regionalism or Multilateralism: what framework to liberalize trade in services in Western Africa?

Considering the high specific costs to relocate for many services, linked to the constraint of proximity between the supplier and the user, even privileged market access of a less efficient provider can give a long term advantage to the first comer. Thus, entry of more efficient service suppliers can be durably dissuaded if their competitive advantage does not compensate for advantages due to capital accumulation conferred to incumbents. Benefits from a potential non preferential liberalization can be sensibly reduced if it is preceded by a preferential liberalization. Coexistence of obligations due to RTAs and multilateral agreements can gender heavy management costs linked to the administration of different obligations and procedures. Sequencing of reforms matters then more for trade in services than for commodity trade. Those considerations are particularly relevant for many countries, which mainly export goods and import many services (Mattoo and Fink, 2002; Mattoo et Sauvé, 2008).

Jansen (2006) examines what interest Southern and Eastern Africa might have in liberalization of trade in each type of service industry on a preferential basis with the EU or in a multilateral framework. She shows that economic partnership agreements (EPA) could benefit Southern and Eastern African countries, when regulatory aspects and perspectives of technical assistance are taken into account, as is the case in financial intermediation and tourism. In financial intermediation, technical assistance could take the form of an improvement of prudential regulation and an organization of the transitory period between privatization and openness. For tourism, technical assistance could be oriented towards a better involvement in coping with environmental constraints, an expansion and an improvement of accommodation quality and aid in marketing proposed tourism. Regarding temporary movement of natural persons (mode 4), preferential liberalization could permit the creation in Africa of the institutional and legal framework, insuring that only service suppliers who are sufficiently qualified move abroad and that their stay in host countries remains temporary. In spite of its benefits, an agreement on the openness of air corridors (open skies agreement) between African and European regions seems unlikely. However, preferential trade agreements should not systematically be agreed to with the EU in order to allow third countries to have a comparative advantage or where they are likely to develop one in industries with high sunk costs such as; telecommunications, maritime transport and business services, industries, for which a multilateral approach seems preferable. Indeed, engineering, professional services, education and health are highly regulated industries where lack of similarities between countries of the Africa Caribbean Pacific (ACP) and the EU creates the risk of limits imposed on standard and national diploma recognition. In telecommunications, external assistance is required to build a regulatory ability. Moreover, stimulation to build a greater number of fixed lines to guarantee access of the greatest number, which was the argument used to justify protection of national monopolies, disappears with the generalization of mobile phone accessible to poor consumers (Jansen, 2006).

Conclusions

Potential gains from liberalization of trade in services for developing countries, in a regional or multilateral framework, tend to highly depend on implementation of domestic reforms beforehand. Otherwise, rents initially held by domestic monopolies risk passing into the hands of foreign oligopolies. New CGE models with endogenous productivity show that if gains linked to trade liberalization are important, than the risk of losses exists.

Therefore, rather than drawing detailed economic policy conclusions and precise quantification of CGE modeling, it seem preferable to retain an indication of the impacts (income gains, creation of trade flows, more favorable impacts for the South, than for the North, …). Associated with other tools such as the assessment of trade flows by gravity equations or to more qualitative approaches, which take into account the particular situation of each country and sector, CGE modeling reveals a tendency of the impact of deregulation in services. It would be audacious to use them alone to recommend full and immediate liberalization, without preliminary analysis of the situation of the country and relying unquestionably on numerical results of the increased trade flows and growth that they propose.

Two specific conclusions for African countries can be drawn from this work.

Regarding the choice between multilateral, bilateral or regional liberalization, the optimal framework depends on service industries. For Eastern and Southern African countries, a RTA or an EPA with the EU seems preferable to a multilateral agreement in services; activities for which co-location matters and where the EU has a clear comparative advantage in financial intermediation, air transportation and tourism. But, in telecommunications, business services, health or education, where sunk costs are high and regulations and institutions differ from European ones, a greater openness to world suppliers avoids being locked into European know-how and increases access to global technology.

Sequencing of reforms matters then more for trade in services than for commodity trade. In telecommunications, it is important to be open to competition at the very time of privatization. Otherwise, countries simply risk transferring national monopoly rents to foreign oligopolies without improving technology or decreasing prices for local consumers. Institutions particularly matter for services and reform should be global and focused. In other words, domestic reforms are necessary prior to trade liberalization. These considerations are particularly relevant for ECOWAS countries, which mainly export goods and import many services.

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Appendix: Revealed comparative indicator of CEPII

For a given country i and each service industry k, the ratio of trade balance to Gross Domestic Product (GDP) Yi is first calculated; that is in thousandth:

$$y_{ik} = 1000 \cdot \frac{X_{ik} - M_{ik}}{Y_i}$$

In terms of GDP, contribution of service k to the balance of goods and services is defined by:

with

$$f_{ik} = y_{ik} - g_{ik} \times y_i$$

then

$$g_{ik} = \frac{X_{ik} + M_{ik}}{X_i + M_i} \quad \text{and} \quad y_i = 1000 \cdot \frac{X_i - M_i}{Y_i}$$

$$f_{ik} = \frac{1000}{Y_i} \left((X_{ik} - M_{ik}) - \left(\frac{X_{ik} - M_{ik}}{X_i + M_i} \right)(X_i - M_i) \right)$$

Revealed comparative indicator of CEPII measures the gap between trade balance for a given service k and trade in goods and services balance weighted by the share of trade for good k in trade of goods and services of the country, in thousandth of GDP.

A positive sign indicates a comparative advantage and a negative sign a comparative disadvantage, greatest the higher the indicator in absolute value.

Source: Fouquin et al. (2011) <www.cepii.fr>

The **West Africa Institute (WAI)** is a research center offering research, capacity-development and social dialogue on regional integration in West Africa. WAI is promoted by the Economic Community of West African States (ECOWAS), the West African Economic and Monetary Union (WAEMU), ECOBANK and the Government of Cape Verde. WAI is based in Praia Cape Verde.

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