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# Services Liberalization and the Role of Natural Resources

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## Abstract

We highlight the role of natural resources in the services sectors of countries that possess them by specifically incorporating these resources into a model of service provision where domestic incumbents and a foreign entrant compete. We find that domestic firms control most of the market share when natural resource prices are likely to go up but that industry output drops. However, the output of the services industry rises when natural resource prices are likely to increase but that the foreign firm gains market share in this situation. This suggests that a government focused on the growth and development of its economy should prefer liberalization when natural resource prices are likely to be higher.

*JEL Codes:* F12, F21, F23, O1

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## 1. Introduction

The Uruguay Round of trade talks is credited with bringing services into the fold of world trade rules. Services, which encompass a wide array of activities—from banking and telecommunications to engineering and legal services— and that account for almost two-thirds of all economic activity in some countries are clearly important for both developed and developing countries. The General Agreement on Trade in Services (GATS) applies to access and competition policies in services markets, which account for more than \$4 trillion of total trade (BOP basis) according to the World Trade Organization. Trade in services is expected to grow rapidly in the future. In fact, trade in services is said to be regularly underestimated because conventional methods do not account for the role services play not only in the trade of goods but also in the trade of other services such as finance (Deardorff, 2001).

The GATS in its current form is a work in progress. While it provides the opportunity for comprehensive policy binding, member countries reserve the right to determine the breadth and depth of the commitments they want to make and specify market access and national treatment obligations. Since the domestic regulation of service sectors plays a significant role as a barrier to trade in services, even liberalization achieved through the GATS leaves substantial room for individual member countries to impede free trade through the use of appropriately designed regulatory policies. This can be done under the guise of the need to maintain quality, protect consumers, and practice prudential regulation. This flexibility in the GATS, while playing an important part in launching the agreement, has also been a problem because of a lack of access commitments made by member countries. Many of the commitments that have been made find their root causes elsewhere. For example, the Republic of Korea's commitment to liberalize the financial services sector can be traced down to the country's accession to the OECD (Dobson and Jacquet, 1998).

Given this context, it is no wonder that analytical literature that deals with trade in services has started to emerge. However, it is still in its early stages and, compared to the theory of trade developed to make sense of trade in goods, it is rather scarce. Some notable studies include Hindley and Smith (1984) that argues for the applicability of comparative advantage principles to services trade; Deardorff (1985) that checks the assertion made by Hindley and Smith and concludes that comparative advantage applies to services trade under certain conditions; Markusen (1989) that emphasizes the role of knowledge intensity; and Markusen, Rutherford, and Tarr (1999) and Brown, Deardorff, and Stern (2000) that incorporate returns to scale and product differentiation.

While Ricardian theory holds up well for services trade in many circumstances, the fact that numerous service industries are regulated and the classification in the GATS of commercial presence in the target market as a medium for international trade, makes the universal applicability of this theory questionable. Moreover, there are some important differences between goods and services trade. While Hill (1977) distinguished between goods and services trade by asserting simultaneity in the production and consumption of

services, the implications of this definition are fairly restrictive. One implication is the need for the producer and the consumer to be in the same location. Jones and Ruane (1990) and Francois (1990) model services trade drawing the distinction between goods and services. However, the GATS envisions trade in services to include the above definition as well as cross-border consumption. In view of this, Francois and Wooton (2001), Harms, Mattoo, and Schuknecht (2003), and Konan and Maskus (2004) analyze the liberalization of services in the context of imperfect competition and domestic regulation to address issues like cartel behavior and welfare impacts of this policy.

This paper adds to the literature by focusing on the liberalization of services in natural resource-rich developing countries where resource revenues are used to subsidize employment in publicly owned monopolies. The case of the telecom sector in Saudi Arabia is used as illustration. The paper argues that trends in the global market for the natural resource can have strong implications for market share in domestic services and the decision to liberalize. This suggests that commitments made under the GATS should assess tendencies in global resource markets.

The rest of the paper proceeds as follows. Section 2 provides background on trade and telecom services with emphasis on Saudi Arabia. Section 3 presents our model of services trade. In section 4, we discuss the results obtained and then conclude by offering a summary and some policy recommendations in section 5.

## **2. Services and Telecommunications Trade**

The WTO Working Party pays close attention to the telecommunications sector in particular when negotiations are carried out for accession to the WTO. Consequently, market access and non-discriminatory treatment of multinational companies becomes a significant issue. Service sectors like water, electricity, health care, and telecommunications that are crucial for the development of an economy as well as to increasing the competitiveness of export industries are characterized by less competition than other service sectors. Domestic markets in these sectors tend to be dominated by a public monopoly. One result of this feature often turns out to be an unfair advantage favoring the incumbent. This is clearest, for example, in the case of telecom, for the need of the entrant to connect to the existing network that is mostly owned and controlled by the incumbent<sup>1</sup>.

Many services sectors, particularly telecommunications, are characterized by rapid technical change. This often means that entrenched monopolies in services find it

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<sup>1</sup> It is worth noting, however, that commitments made by WTO members to services liberalization still remain quite low. For example, out of the 149 WTO member countries, only 45 have committed to the liberalization of 80 or more service sectors. This is out of about 160 service sectors and sub-sectors that the GATS identifies. In addition, revenues from privatization tend to vary across countries. For example, while Mongolia's national telecom operator raised \$11 million in 1995, Deutsche Telekom went for about \$13.4 billion in 1996 (Adlung (2000) quoting Besancon and Kelley (1996)).

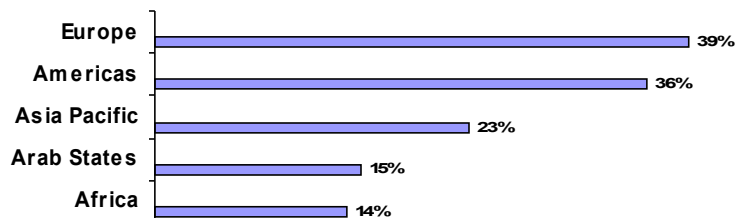
difficult to maintain control over the activities carried out in their sectors. Thus, in many developing countries, this tilts the playing field in favor of liberalization. However, in the case of natural resource-rich countries, the urgency is mitigated if the monopolies happen to be publicly owned enterprises. This is due to the ability of these public entities to better control alternative technologies given their access to subsidies made possible by revenues generated by the natural resource<sup>2</sup>. This gives the government more control over the decision regarding the possibility and timing of any liberalization of the service sector according to their economic and political readiness. In the Middle East and North Africa (MENA) region, for example, where governments were-and to a lesser extent today continue to be-employers of last resort, the privatization and liberalization process of public utility companies has been slow compared to other regions of the world. This has been especially true in the telecom sector. Figure 1 below shows that while privatization in the developed countries has been the highest, ITU reports that Arab countries have been slow to privatize their incumbent telecommunication operators accounting for only 8% of the world's privatized carriers (partial or total) and the number of countries that have privatized represent 38% as of 2001. In addition, the percentages of those countries that allow competition in basic services (such as fixed-line local or long-distance telephony) are even lower as seen in figure 2 below (ITU-Trends in Telecom Reform 2002)

**Fig1: Percentage of Countries That Have Privatized Their National Telecom Operators  
By Region (2000)**



Source: ITU World Telecommunication Regulatory Database, 2001

**Fig 2: Percentage of Countries that Allow Competition in Basic  
Telecom Services By Region (1999)**



Source: ITU World Telecommunication Regulatory Database, 2001

<sup>2</sup> This control can be the result of a variety of reasons including both financial and non-financial; for example, VOIP (Voice Over Internet Protocol) technology is illegal in several of these countries because it cuts into the profits of international calls which represent a major chunk of fixed and cellular telephony. Non-financial reasons include security and culture.

While privatization is an instrumental tool in the restructuring of state enterprises, economists warn that privatization needs to be part of a more comprehensive program that “entails creating jobs in tandem with the inevitable job destruction that privatization often entails...[Therefore] [t]iming and sequencing is everything.” (Stiglitz 2003). A good example of this ‘timing and sequencing’ is East Asian countries which took advantage of globalization by expanding their imports and using the income from the increased economic growth to gradually and systematically drop protective barriers, phasing them out only when new jobs were created. These countries ensured that there was available capital for the creation of new enterprises and jobs and took an active role in promoting such new enterprises (Ibid).

This East Asian policy seems to be the way that natural resource-rich developing countries are heading. In expectation of higher oil prices, the rate of privatization in the MENA region especially in GCC countries has been trending upwards. This not only reflects the increased income from the export of natural resources-mainly oil-which increases the demand for private shares, but also reflects the future income expectation of governments in their efforts to withstand the political costs that are expected to emanate from the inevitable restructuring of the Telecommunications sector-mainly the cost of restructuring of the labor market.

Table 1 below shows the *actual* privatization levels of 2003 and 2004 for the telecommunication industry measured by the proportional share of total revenues<sup>3</sup>. The table shows that the actual level of privatization has been on the rise in the short period between 2003 and 2004, a period representing the expected rise in world oil prices.<sup>4</sup> Notice that while the privatization levels among MENA countries have been relatively lower among the GCC countries, their percentage change-with the exception of Oman and Kuwait-over the one year period of 2003-2004 has been among the highest especially that for Saudi Arabia which represents a 50% change over the previous year.

Table 1

Country	WTO	Telecom	Telecom	Percent
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<sup>3</sup> This is obtained by the multiplication of each operator’s share of total revenues by the percentage shares owned by the government, public sector institutions, local private sector and foreigners in the country.

<sup>4</sup> The level of privatization and state ownership in each of the above countries is based on the full 2003 and 2004 revenues.

	<b>Accession Date</b>	<b>Privatization Level (2003)</b>	<b>Privatization Level (2004)</b>	<b>Increase</b>
Jordan	Apr-00	68%	77%	13%
Sudan		72%	73%	1%
Bahrain	Jan-95	53%	66%	25%
Yemen		53%	61%	15%
Syria		46%	60%	30%
Algeria		48%	59%	23%
Kuwait	Jan-95	55%	55%	0%
Egypt	Jun-95	37%	53%	43%
Qatar	Jan-96	35%	45%	29%
Morocco	Jan-95	41%	45%	10%
UAE	Apr-96	40%	40%	0%
Saudi Arabia	Dec-05	20%	30%	50%
Tunisia	Mar-95	12%	20%	67%
Oman	Oct-00	0%	0%	0%
<b>Source: Arab Advisors Group: <a href="http://arabadvisors.com/Pressers/presser-250905.htm">http://arabadvisors.com/Pressers/presser-250905.htm</a></b>				

Table 2 shows the monopoly, duopoly and competitor distribution in selected MENA countries in 2004. It shows that with the exception of fixed telephony, other services are slowly moving towards liberalization with more impending liberalization in the coming years. Under the WTO agreement many of these countries are not only obligated to liberalize but also to privatize and allow foreign investments; Saudi Arabia for example has three years after accession to the WTO to allow up to 70 percent foreign equity ownership in the telecommunication sector. This applies to both basic telecom services and value added ones.

Table 2

Country	Incumbent Operator	Fixed	Mobile	Data	Internet
Bahrain	Batelco	M	D	M	C
Kuwait	MOC	M	D	C	C
Oman	Omantel	M	D	M	M
Qatar	Q-tel	M	M	M	M
Saudi Arabia	STC	M	D	C	C
UAE	Etisalat	M	M	M	M
Egypt	Egypt Telecom	M	D	C	C
Jordan	Jordan Telecom	M	D	C	C
Lebanon	MOT/OGERO	M	D*	C*	C*
Morocco	Maroc Telecom	M	D	M	C
Syria	STE	M	D	M	D
M = Monopoly, D = Duopoly, C = Competitive *Mostly under the management or BOT contract for the MoPT Plainly shaded cells indicate monopoly, Diagonally shaded cells indicate further liberalization is expected (2004) Source: Booz-Allen-Hamilton: <a href="http://www.bah.com">http://www.bah.com</a>					

Table 3 shows the cellular competition intensity index (CCII) which assesses the level of competition in the MENA region's cellular markets over the past two years<sup>5</sup>. Notice that Saudi Arabia represents the highest percentage change over the year between 2004 and 2005. Thus, while the kingdom was relatively slower than some other MENA countries prior to 2003, it has been moving faster than other countries- especially GCC member nations like Qatar and the UAE that have low unemployment and are resource rich-in the liberalization process. Part of the reason for the delay is that the government had no immediate financial needs for privatization; unlike Morocco, Egypt and Jordan that started the liberalization process several years earlier, Saudi Arabia and other oil-rich nations of the GCC countries did not need the privatization proceeds. It was not in desperate need for money from liberalization. However, the Saudi government in particular realizes that while it did not need the short-term capital inflow, employment opportunities for Saudi youth and the economy at large needed liberalization (Arab News 2005).

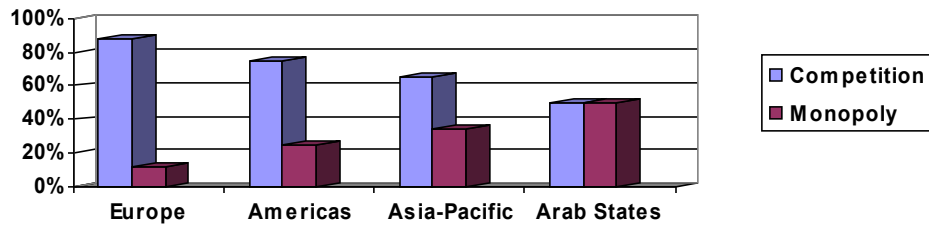
<sup>5</sup> The index calculation incorporates the number of operators, packages and services available in each of the listed countries and assigns a weight to each category based on its importance as a competition indicator.

Table 3: Cellular Competitive Intensity Index for Arab Countries

Country	CCII for 2004	CCII for 2005	Percent Increase
Jordan	67%	84%	25%
Algeria	52%	66%	27%
Morocco	59%	60%	2%
Saudi Arabia	31%	55%	77%
Yemen	55%	54%	-2%
Egypt	50%	51%	2%
Tunisia	53%	49%	-8%
Kuwait	44%	43%	-2%
Lebanon	43%	42%	-2%
Syria	42%	41%	-2%
Bahrain	40%	36%	-10%
Sudan	19%	32%	68%
Libya	--	29%	--
Oman	23%	26%	13%
Qatar	20%	18%	-10%
UAE	14%	13%	-7%
Source: Arab Advisors Group: <a href="http://arabadvisors.com/Pressers/presser-250905.htm">http://arabadvisors.com/Pressers/presser-250905.htm</a>			

Mobile services-analyzed as separate business units-are not only relatively new in the Arab world but have also been less subsidized by the governments in comparison to other basic telecom services such as fixed telephony. Because of their recent advent to the telecom market, they do not suffer from the underemployment that basic services had to endure. In addition, the demand for mobile services has been on the rise for the past several years causing a significant jump in market share and a large percentage of the incumbent monopoly's profits. As such, they are relatively easier to restructure and regulate. This is why liberalization of the mobile cellular services has been relatively more forthcoming. Thus it helps to serve as a testing ground for the overall liberalization process. Figure 3 below shows that in the period where many fixed line services remained closed, some form of competition was allowed by 78% of ITU Member States in providing mobile services by 2002. Of these almost 47% allowed full competition and 31% allowed a duopoly market structure. Thirty five countries (only 22%) continued to ban competition at that time. And while the Arab countries were the most restrictive in admitting competition to their respective mobile markets, they were strengthening their commitments; by 2001 44% of the Arab countries allowed competition, up from 30% from the previous year (ITU—Trends in Telecom Reform 2002).

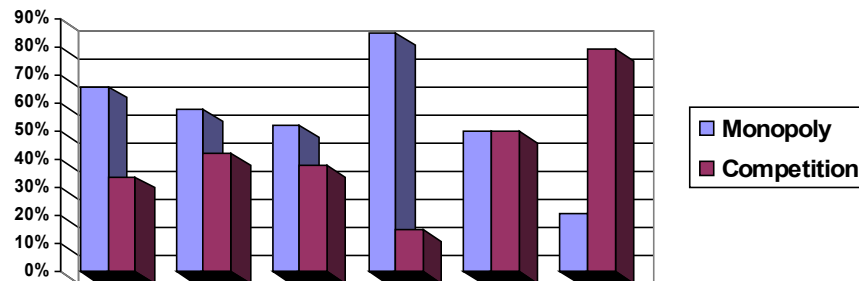
**Fig 3: Competition in Mobile Service in Arab Countries (2002)**



Source: ITU World Telecommunication Database (2002)

On the other hand, competition in basic services has been slowest in the Arab world compared to other regions by 2004—as can be seen from table 2 above—and as early as 2001. While the Europeans had taken the lead with 50% of its countries allowing it, countries in the Americas and the Asia-Pacific represented 42% and 38% respectively, while only 15% of the Arab countries allowed some form of competition in such services. African countries represented the highest leap from the previous year with 34% of its countries allowing some form of competition; almost a fifty percent increase over the previous year. However, it is important to note that only a handful of these countries especially in Arab and African countries had a second fixed line carrier to compete with the incumbent operator (ITU—ibid). See figure 4 below.

**Fig 4: Percentage of Monopoly & Competition for Basic Services, By Region**



Unlike sectors like agriculture and textiles, where suppliers are better organized than consumers and are therefore able to effectively mobilize resistance to liberalization, service sectors like telecom do not face this type of problem of asymmetry. This is because the consumers of these services are likely to themselves be suppliers in other sectors with substantial stakes in efficiently functioning sectors upstream in the production chain. This setup would then be able to counter and perhaps overcome the resistance to liberalization. Nowhere, perhaps, is this truer than in the case of the telecom sector, which is widely regarded as the backbone of any economy and critical for development and growth.

An increasing number of studies now demonstrate the benefits of liberalization and competition in services. However, protection remains the mainstay in these sectors.

Although Laffont and Tirole (2001) suggest that carefully designed barriers to entry can enhance welfare, the reasons primarily have to do more with political economy and infant industry considerations. Since public monopolies in developing countries are routinely used to employ the population, any possibility of restructuring due to liberalization or any other reason is seen with suspicion as it inevitably leads to a loss of jobs<sup>6</sup>.

Non-tariff barriers in the form of administrative hurdles and red tape characterize the trade regimes in the Middle East in general, and Saudi Arabia is no exception. To facilitate gains from trade it is necessary that trade-related transactions costs be minimized to the biggest possible extent. Of particular relevance to the telecom sector is the prevalence of licensing requirements, which often indicate a country's regulatory regime. However, there has been a gradual move toward liberalization in countries like Saudi Arabia and a commitment to the removal of all non-tariff barriers in an effort to meet the requirements of WTO membership. Living up to its liberalization commitments in the context of its recent accession to the WTO should prove less challenging given its current account surplus estimated at \$51.5 billion for 2004 according to the CIA World Fact book and \$57 billion for 2005 according to recent estimations. A trade rule relevant to the services sector is the Foreign Capital Investment Act according to which foreign capital has the same concessions as national capital. New investment laws to liberalize the process further are already in the course of being formulated. The main Saudi body with the responsibility of approval of import licenses in the telecom sector is the Commission of Information and Telecommunication Technology (CITC). These licenses, which are for importing wireless sets and radio communications apparatus, serve to control frequencies. The equipment is required to meet technical specifications set forth by both the International Telecommunications Union (ITU) and Saudi authorities.

To pave the way for accession to the WTO, Saudi Arabia approved a bill in May of 2001 liberalizing the telecommunication sector—a prerequisite for becoming a WTO member—ushering in the start of foreign investments and competition. A regulatory agency, the Saudi Communication Commission, later renamed the Communication and Information Technology Commission (CITC) was established in 2001 to oversee the telecom market. The new agency has initiated a process of competition to the Saudi Telecom market that is seen by some as ambitious given the social conditions and the maturity level of Saudi economy. In particular, the GSM market which represents about 70% of the Saudi Telecommunication Company's (STC) revenue was opened for competition in August 2004 with the entrance of a consortium led by Etisalat of the United Arab Emirates. Etisalat had submitted a bid of \$3.24 billion for the license, the highest bid among the six short-listed competing consortia. An additional \$201 million license fee was approved for third generation service provision. Etisalat will own 35% of the Etisalat Consortium Company with 20% of the company's stock available to the public and the remaining 45% shared between the Saudi General Organization for Social Insurance (GOSI), which

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<sup>6</sup> An illustrative comparison is that between Egypt and the UK; at around 6.2 million on the payroll, the Egyptian government employs two thirds of the total work force while the British government, with a similar sized population, employs only 650,000 (Egypt Investment Report 2002).

will hold 15%, and multiple of major Saudi companies which will hold the remaining shares<sup>7</sup>.

In addition, the CITC has announced that it is opening the door for competition in fixed telephony by the end of 2006 according to the latest news reports. Other competition in the telecom sector include two competitors in the data services, twenty two internet service providers and five VSAT operators<sup>8</sup>.

The path to liberalization of the Saudi telecom sector has been reflective of the policies of engagement with WTO negotiations and the current economic and political conditions of the country. On the one hand, the accession to the WTO will undoubtedly bring in economic benefits to the kingdom, the last member of the GCC countries to join the WTO. On the other hand, the competition will require the burdensome task of restructuring of the old governmental institutions which for over the past thirty years has been the employer of last resort for its citizens<sup>9</sup>. The CITC, therefore, was keen on making sure that not only both the incumbent and the new entrant are profitable while, at the same time, consumers benefit from the increased competition, but also that additional competitors are allowed to enter the market. One example that shows such keenness is the control on downward price pressures administered by CITC in the early stages of competition; various attempts by the incumbent operator to reduce prices in GSM services were met with refusal by the Saudi regulator even though such prices were clearly not anti-competitive when benchmarked by other comparable operators<sup>10</sup>. The rationale from a CITC standpoint is clear; too much reduction in prices at this early stage—although beneficial to consumers—are not so for the industry as a whole especially for the new entrant that needs to recoup its \$3.21 billion investment. Another example of the government and regulatory policy is the various announcements by high officials with regards to the entry of additional competitors in both the GSM and fixed services and their rights to build their own network infrastructure especially the international gateways—something which has been fought over in the Saudi courts (Diwan Al-Mazalim) between CITC and STC. These latest legal events indicate, on the one hand, the political direction that the country would like to take given its commitments to the WTO membership and, on the other hand, the incumbent's resistance to such measures given its sense of lack of readiness for increased competition at the publicized time lines. It is noteworthy at this juncture to point out the inconsistencies that occurred in the Saudi telecom sector in the past two years; the council of ministers' (COM) resolution number 171 of 9/9/2003 states in its fifth paragraph that the mobile market shall begin *partial* liberalization in the last quarter of 2004, while fixed telephony shall begin (partial)

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<sup>7</sup> Aljomaih Holding Company, Rana Investment Company, Abdullah & Said Binzagr Company and Riyadh Cables Group of Companies will hold 6% each of the remaining shares.

<sup>8</sup> VSAT stands for Very Small Aperture Terminals.

<sup>9</sup> In particular, utility companies such as STC suffer from a serious case of underemployment which was carried over from the Ministry of Posts, Telephones and Telegraphs resulting in over twenty thousand employees—a large number when benchmarked with other comparable companies around the world.

<sup>10</sup> One of the authors was privy to such meetings when he held the position of Director of Regulatory Affairs at STC. We mention benchmarking of cost here, because STC does not have a cost structure for its business units. Accounting separation is one of the directives that STC is supposed to implement.

liberalization in 2008<sup>11</sup>. This implied-based on international experiences-that any use of the PSTN (Public Switched Telephone Network) and Data networks are to remain a monopoly until that time. This also implied that the reference to partial competition was intended to allow for the timely restructuring of PSTN services.<sup>12</sup>

The unfolding of events, however, proved otherwise. In mid August of 2004, it was announced by the COM that licenses have been approved for a new mobile operator and two new data service operators. In addition, it was stated that the new entrants would have the right to build their own international gateway as well as their own network<sup>13</sup>. It was further announced that a third mobile operator would be licensed for operation in the Saudi market by 2006<sup>14</sup>. Such events can be interpreted as a re-evaluation on the part of the policy makers of the prospective economic growth lead by an expected continuation of rising oil prices and the ability to absorb any political cost that may ensue from the restructuring of the telecom market.

In addition to underemployment of many ex-ministerial/government institutions, there remains the issue of worker skill especially in the telecom sector which is in dire need for skilled nationals to replace the expatriate workers that currently occupy these positions.

The dilemma, as mentioned earlier, for countries like Saudi Arabia is two folds; one is the need to promote competition in the services sectors concomitant with the WTO agreement and commitments; second is the need to balance the liberalization of these ex-governmental sectors with the political fallout of unemployment that will undoubtedly result from full privatization of these institutions<sup>15</sup>.

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<sup>11</sup> The flow of the sentence implies that fixed telephony liberalization will also be partial, but it could also be interpreted as complete liberalization. There is no English translation for the COM decision.

<sup>12</sup> PSTN services have been marginalized through out the world under similar experiences and are certain to face the same fate in the Saudi fixed telephony market.

<sup>13</sup><sup>11</sup> It is important to note here that the COM, which in decision number 171 mentioned above, stated a 'partial' liberalization has now approved a total form of liberalization for the new competitor. Also, it is important to mention that this announcement has occurred while the license debate as still pending in local courts. In its public announcement (**PN No. 10/1424 on 15/11/2003**) **the commission stated that** "In relation to the progressive liberalization of the communications sector in the Kingdom of Saudi Arabia ("the Kingdom"), the Council of Ministers Resolution No. (171), dated 02/07/1423H, (09/09/2003G), provides for the opening of the Saudi cellular mobile services market to competition in the fourth quarter of 2004". There is no mention, however, that resolution no. 171 stated a 'partial' liberalization.

<sup>14</sup> This announcement was mentioned in several local newspapers in August 2004 (see Al-Riyadh 18/8/2004 issue # 13204 for example) and was referenced in the price cap decision number 43/1425.

<sup>15</sup> Despite the favorable analysis of the liberalization of telecom markets in Asian and Latin American countries which shows considerable job growth in competitive markets (20.8%) vis-à-vis monopolies (3.2%) and, subsequently, the increase in demand for telecom workers (Wellenius, October 1997), and despite the argument that governments can launch a retaining program to capture the excess workforce, Saudi Arabia and other GCC countries differ in two main aspects. One is that much of the technically oriented telecom jobs are held by expatriate labor at lower demanded wages than nationals. Second, is that the main source of income for these countries comes from one main natural resource, i.e., oil, the prices of which are relatively unstable, and not from major good or service industries as is the case of Latin and Asian countries.

The question then is the following: Given the need to enter and commit to the WTO membership, what is the path of liberalization that a government should adopt in order to mitigate any political fallout that can result from the labor market restructuring. The short-run strategy for countries in which governments have traditionally been the employer of last resort is to ensure that any such restructuring can be accomplished during the time of high income from its natural resources. In other words, for the telecom service industry that suffers from underemployment, the regulatory strategy would be to allow competition not only in accordance with what the market can contain, but to regulate prices in such a way so that all the market players—especially the incumbents—can retain reasonable profits. This strategy is likely to take place at the early stages of liberalization where governments still hold the majority of the incumbents' share and revenues from natural resources are not sufficient to compensate for rapid restructuring efforts. On the other hand, the path to liberalization should take a faster approach when income from natural resources are high and the government can, therefore, absorb the costs of restructuring. Such restructuring will not only mean the repatriation of labor, but also the need to put in serious plans for raising the level of education and improving the technical skills of nationals for taking up positions in the telecom sector in replacement of the current expatriate labor force<sup>16</sup>. In addition, this requires restructuring the overall economic base; this means diversification of the economy so as to reduce the risk of oil dependency and move towards a developed economic structure; this is the long-term strategy outlook that must be adopted.

The model in the next section describes the outcome of entry of a foreign firm given the economic and political setting described above.

### 3. The Model

Service sectors in many developing countries consist of publicly owned enterprises. For example, the finance sector is often comprised of several national banks that operate as a cooperative oligopoly. In contrast, sectors where the service is the provision of utilities—electricity, water, telecom—mostly contain one publicly owned monopoly. Keeping this imperfectly competitive market structure in mind, we develop a simple model of foreign entry into a domestic services market. The focus of the model is on deriving the effects of competition on the incumbents and implications for policy for a government whose goal is to maintain the viability of the publicly owned firms. The model, therefore, does not set out to study the impact of liberalization on welfare. Instead, the analysis attempts to identify conditions under which it would be most desirable for a country to meet its WTO obligations to liberalize while, at the same time, safeguarding its interests in the incumbent firms. In particular, the model investigates the role of natural resource prices in these service markets of countries that are endowed with natural resources.

We consider a regulated home market where a homogeneous service is provided by  $n$  identical domestic firms and a single foreign firm. The foreign firm faces costs of establishing itself in the home country and barriers to providing the service to domestic

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<sup>16</sup> A December 13, 2005 issue of the Saudi Newspaper 'Arab News' indicates that 26% of the \$148 billion revenues for 2005 will be spent on education and training according to the Saudi monarch underscoring the importance of an educated and skilled workforce. It is also reported that the 2005 budget surplus is estimated at \$57 billion.

consumers. These barriers can be taxes that foreign firms are required to pay on each unit sold by them in the home market. However, domestic regulation and bureaucratic red tape as barriers to services trade are better interpretations given the much more significant role these play in services trade and the GATS. While it is possible in many cases to provide the service across borders (referred to as mode 1 in the GATS) without establishing commercial presence (referred to as mode 3 in the GATS), establishment costs do not affect the decisions of the foreign firm for maximizing profits in our model.

We employ a simple linear market demand function given by:

$$P = x - y(nq_h + q_f) \quad (1)$$

The quantities produced by the two types of firms are appropriately subscripted with  $h$  for the home firms and  $f$  for the foreign firms. We use these as our subscripts to differentiate between the domestic and foreign firms throughout the paper.

Marginal costs of both domestic and foreign firms have two components. Both types of firms have constant economic marginal costs denoted by  $c$ . In addition, the foreign firm pays a per unit cost  $t$  due to the barriers it faces in providing the service in the home country as discussed above. Domestic firms, on the other hand, face an ‘underemployment’ cost  $u$  in addition to the economic marginal costs. These underemployment costs reflect employment subsidization in the domestic firms by the government. Thus the government uses revenues it earns from the sale of its natural resources to absorb some of the unemployed in the economy into the publicly owned service providers. Labor is employed in this manner to score political points for the regime in power. This underemployment cost depends on the price the natural resource fetches. So, when the natural resource price is high, revenues from their sale are high and therefore the cost to add people to the payroll of the domestic firm is low (i.e., it is easy to finance this underemployment or, in other words, to subsidize the domestic firm). A lower natural resource price corresponds to a higher underemployment cost. The price of the natural resource is stochastic from the point of view of the foreign firm. Its stochastic behavior from the standpoint of the foreign firms is based on the observation that countries that supply natural resources on the world market are one of handful suppliers and consequently have at best substantial control over prices or at least superior knowledge regarding their future movements. Since a country like Saudi Arabia wields considerable (though not total) control over oil prices, domestic firms are in a position to have a fairly good idea of which direction—up or down—oil prices are likely to go into. Hence,  $u$  is stochastic from the point of view of the foreign firm that has access to market analysis that assists in attaching probabilities to the high and low price events. The costs for the foreign firm are given by:

$$c_f = (c + t)q_f + T \quad (2)$$

The firm has entry and establishment costs given by  $T$  and marginal costs given by  $(c+t)$ . The costs for the domestic firms are:

$$\begin{aligned}
c_h &= (c + u^H)q_h \text{ with probability } \theta \\
c_h &= (c + u^L)q_h \text{ with probability } (1 - \theta)
\end{aligned} \tag{3}$$

Domestic firms incur high underemployment costs  $u^H$  when natural resource prices drop with probability  $\theta$  and low underemployment costs  $u^L$  with probability  $(1 - \theta)$ . Note that  $u^H > u^L$ .

Let  $q_h^*(u^H)$  denote the optimal quantity choice of the domestic firm when underemployment costs are high,  $q_h^*(u^L)$  when they are low. For the foreign firm, it is simply  $q_f^*$ . Under Cournot assumptions, the  $n$  domestic publicly owned firms cooperate with each other and solve the following profit maximization problem:

$$\max_{q_h} [(x - y(nq_h + q_f^*) - (c + u^i))]q_h, \quad i=L, H$$

The foreign firm solves:

$$\max_{q_f} \pi_f = \theta [(x - y(nq_h^*(u^H) + q_f) - (c + t))]q_f + (1 - \theta) [(x - y(nq_h^*(u^L) + q_f) - (c + t))]q_f - T$$

The first order conditions obtained from solving the preceding maximization problems are:

$$q_h^*(u^H) = \frac{1}{2yn} [x - yq_f^* - (c + u^H)] \tag{4}$$

$$q_h^*(u^L) = \frac{1}{2yn} [x - yq_f^* - (c + u^L)] \tag{5}$$

$$q_f^* = \frac{1}{2y} [x + \theta yn(q_h^*(u^L) - q_h^*(u^H)) - (c + t) - ynq_h^*(u^L)] \tag{6}$$

Using (4), (5), and (6) we arrive at the following equilibrium conditions for quantities, price, and profits in our Cournot model.

$$q_h^*(u^H) = \frac{1}{2yn} [x - c - u^H] - \frac{1}{6n} [x + \theta u^H + (1 - \theta)u^L - c - 2t] \tag{7}$$

$$q_h^*(u^L) = \frac{1}{2yn} [x - c - u^L] - \frac{1}{6n} [x + \theta u^H + (1 - \theta)u^L - c - 2t] \tag{8}$$

$$q_f^* = \frac{1}{3} [x + \theta u^H + (1 - \theta)u^L - c - 2t] \quad (9)$$

$$P^* = x - \frac{1}{2} \left[ x(1 + \frac{y}{2}) - (1 + y)c - u^H + y(\theta u^H + (1 - \theta)u^L - t) \right] \quad (10)$$

$$\pi_h^* = (P^* - (c + u^i))q_h^*, \text{ where } i=H, L \quad (11)$$

$$\pi_f^* = (P^* - (c + t))q_f^* - T \quad (12)$$

We now proceed to analyze these results. More specifically, we examine the role of natural resource prices and trade barriers and the implications for the decision to liberalize.

#### 4. Analysis and Implications

The equilibrium conditions derived in the previous section can now be used to analyze the effects of natural resource prices and fulfilling commitments under the GATS (interpreted as changes in trade barriers here) on output and market share, service price, and profits. Since the subsidization of unemployment depends on natural resource prices, which therefore influence the output decision of the foreign firm, we begin with an examination of the impact of changes in the probability of movements in the price of the natural resource. Recall that  $\theta$  is the probability of high underemployment costs and thus low oil prices in the future. Simple comparative statics applied to the equilibrium conditions derived in the previous section yield the following results:

$$\frac{\partial q_h^*(u^i)}{\partial \theta} = \frac{1}{6n} (u^L - u^H) < 0, \text{ where } i=H, L \quad (13)$$

$$\frac{\partial q_f^*}{\partial \theta} = \frac{1}{3} (u^H - u^L) > 0 \quad (14)$$

$$\frac{\partial P^*}{\partial \theta} = -\frac{y}{2} (u^H - u^L) < 0 \quad (15)$$

$$\frac{\partial \pi_h^*}{\partial \theta} = (P^* - (c + u^i)) \frac{\partial q_h^*}{\partial \theta} + q_h^* \frac{\partial P^*}{\partial \theta} \quad (16)$$

$$\frac{\partial \pi_f^*}{\partial \theta} = (P^* - (c + t)) \frac{\partial q_f^*}{\partial \theta} + q_f^* \frac{\partial P^*}{\partial \theta} \quad (17)$$

The results above provide important and relevant information. From (13) and (14) above, we see that as  $\theta$  increases, i.e., as the probability of ending up with high underemployment costs (or a low price of the relevant natural resource) increases, the quantity the domestic firms produce in equilibrium goes down. However, the higher  $\theta$  becomes, the higher the quantity the *foreign* firm produces in equilibrium. This means that if the world market perceives that natural resource prices are going to go up, domestic firms would produce more and the foreign firm would produce less. In addition, (15) shows that an increase in  $\theta$  lowers the equilibrium price. Given the linear demand function in the model, this implies that the equilibrium output of the industry increases. But since an increase in  $\theta$  leads to lower domestic output, this means that the foreign firm gains market share by increasing production by more than the decrease in the output of domestic firms. The opposite holds if  $\theta$  decreases—industry output drops but domestic firms gain market share. Hence, if the government wants to meet its WTO obligations to liberalize while minimizing the loss in the market share of the publicly owned incumbents, the best time to do it would be when world natural resource markets anticipate prices to go up. If we additionally believe that the foreign service provider builds infrastructure when it increases output and gains market share, the host country gains without the government taking an active role in infrastructure provision. We now complete our analysis by discussing the effects of changes in  $\theta$  on profits.

Note that (16) and (17) above have not been signed as positive or negative. Several factors determine the ultimate sign. We therefore take a closer look at these expressions.

*Case 1.* We proceed first by assuming that the difference between the price and marginal costs for both domestic and foreign firms, i.e.,  $(P^* - (c + u^i))$  in (16) and  $(P^* - (c + t))$  in (17), is positive. Using (13) and (15), it is clear that under this assumption, (16) is negative. Hence, an increase in  $\theta$  here reduces the profits of domestic firms. This supports the suggestion above that the government would find it more acceptable to liberalize when natural resource prices are increasingly likely to go up.

For the foreign firm, the effect of a change in  $\theta$  is still ambiguous. Therefore, the right hand side of (17) can be greater than, less than, or equal to zero. We start with the last case by writing the following:

$$(P^* - (c + t)) \frac{\partial q_f^*}{\partial \theta} + q_f^* \frac{\partial P^*}{\partial \theta} = 0$$

Multiplying both sides by  $\frac{1}{P^*}$  and some simple algebra allows us to write:

$$\frac{(P^* - (c + t))}{P^*} = \frac{1}{\varepsilon^*}$$

Here,  $\varepsilon^*$  is the price elasticity of demand for the service and the term on the left hand side is the price-cost margin for the foreign firm. The expression above is well known in

the industrial organization literature as the pricing rule for a monopoly. This makes sense in our model since if the left hand side is equal to the right hand side above, the foreign

firm is a monopoly and  $\frac{\partial \pi_f^*}{\partial \theta} = 0$ , implying that perceptions of the world market

regarding the price of natural resources do not affect the profits of the foreign firm. This would be true if the foreign firm is operating alone in the services market with no domestic firms competing against it.

If the first term exceeds the second term in equation (17), foreign profits depend positively on  $\theta$  while they have a negative relationship if the magnitude of the second term is bigger than that of the first. In either case, the likelihood of foreign profits increasing with increasing  $\theta$  is higher, the higher the price-cost margin relative the inverse elasticity of demand. This means that whether foreign profits go up with rising  $\theta$  depends very much on (1) how efficient the foreign firm is (as reflected by its economic marginal costs,  $c$ ) and (2) how high barriers to delivering the service to domestic consumers are for the foreign firm (as reflected by  $t$ ). In short, a positive relationship between  $\theta$  and foreign profits is more likely to exist the more efficient the foreign firm, and the lower the barriers to delivering the service. This also means that the possibility of lower future natural resource prices alone is not sufficient for the foreign firm to anticipate higher profits. In fact, if the foreign firm is not very efficient, or if domestic regulation governing the services sector is too restrictive, then even the likelihood of lower future natural resource prices is not enough to ensure higher foreign profits. However, it is important to point out that a higher  $\theta$  does lead to higher output by the foreign firm and, as noted earlier, ultimately a bigger market share.

*Case 2.* Reversing the assumption we started with, i.e., now assuming that the difference between the price and marginal costs for the firms is negative, the relationship between  $\theta$  and foreign profits clearly becomes negative. Higher  $\theta$  therefore means lower profits. This makes sense since if marginal costs exceed the equilibrium price and output is raised with rising  $\theta$ , profits would indeed go down. For domestic firms, the situation is similar to the discussion for the foreign firm under Case 1. That is, we obtain the monopoly pricing rule for  $n=1$  (the pricing rule for a cartel with  $n$  cooperative firms when  $n>1$ ) when domestic profits are independent of  $\theta$  implying that there is no foreign firm in the market. Domestic profits are more likely to drop when  $\theta$  increases if home firms are either very inefficient or if the cost of subsidizing underemployment is very high. Again, we observe that the impact changes in  $\theta$  have on home profits rests also on home firm efficiency and the nature of the need to appease the domestic population by employing them in public enterprises.

Bringing the information in the above analysis together, we see that, generally speaking, an increasing probability of lower future natural resource prices causes home profits to go down and foreign profits to increase. But this depends considerably on the costs of either type of firm. Specifically, the above is valid the more inefficient the domestic firms, and the higher the costs of subsidizing employment in these government run service providers; and the more efficient the foreign firm and the lower the barriers to service delivery in the domestic market.

At a more intuitive level, it is easy to see from (7)-(12) that higher barriers to trade,  $t$ , cause domestic equilibrium output to go up, foreign output and profits to drop, and prices to rise. Also, as economic marginal costs,  $c$ , increase, foreign equilibrium output and profits go down. For domestic firms, the impact of a change in  $c$  on output depends on the elasticity of the demand curve. This is clear from the partial derivative below.

$$\frac{\partial q_h^*}{\partial c} = \frac{1}{2n} \left( \frac{1}{3} - \frac{1}{y} \right) \quad (18)$$

The relationship between domestic output and  $c$  is negative if the right hand side in (18) is less than zero. For that to be true,  $y$  should be less than 3. If it is greater than 3, a higher  $c$  leads to higher domestic output. But note that  $y$  is the slope of the demand curve. Therefore, the model suggests that when demand is relatively elastic, decreasing economic marginal costs lead to higher output while when demand is relatively inelastic, decreasing marginal economic costs result in lower output. In both cases, profits increase demonstrating that (18) agrees with classical economic theory.

## 5. Conclusion and Further Research

The liberalization of services is of increasing interest and concern to both developing and developed countries. Developing countries that are members of the WTO and those that are not but aspire to join are required to move decidedly in the direction of liberalization of services as envisioned by the GATS. In most such countries service providers tend to be publicly owned and are often used by the government to hide grave problems in the labor market by hiring the unemployed and moving them into the realm of the underemployed instead. This approach is used more heavily in natural resource rich economies that use resource revenues to subsidize underemployment. This paper analyzes service markets in such countries to shed light on the impact of natural resource prices on output, profits, and service prices. We find that while all variables of interest move in the expected direction, it only happens if certain conditions are met. More specifically, domestic firms lose market share and earn lower profits with increasing probability of lower resource prices if they are grossly inefficient and if the need to subsidize underemployment is high. Under different circumstances, lower chances of low natural resource prices might not be enough to cause a loss in market share and profits of domestic firms.

Foreign firms gain market share and enjoy higher profits with higher probabilities of lower resource prices if they are highly efficient and barriers to service delivery, such as restrictive domestic regulation and bureaucratic red tape, are low. Given a country that wants to maintain considerable control over its service markets following liberalization, the government would find it best to open up its markets when the probability of lower resource prices in the future is high. However, if domestic firms are sufficiently efficient and if pressures to employ large populations in the public sector are low, the domestic industry can make profits even if lower future natural resource prices are likely.

Even when the future price of the natural resource is likely to fall and, as our analysis suggests, the share of the domestic firms in the markets shrinks while that of the foreign firm grows by more than the decrease experienced by domestic firms, the country acquires infrastructure provided by the foreign firm. This not only boosts growth and development, especially if backbone service sectors like telecom and finance are considered, but also has the potential of positively affecting employment by offering more opportunities to the domestic population. In this sense, liberalization is most beneficial from a development point of view when in fact natural resource prices are likely to dip.

There are a few directions in which this research can be taken in the future. A relatively simple variation of our model that relaxes the assumption of the same marginal economic costs for both domestic and foreign firms can be instructive. It is likely that the foreign service provider is more efficient than the incumbents and this can have interesting implications for output and prices that should be worth exploring. Another direction to consider is solving the model as a Stackelberg game rather than a simultaneous move Cournot game. This would better capture the advantage that incumbents are likely to have in the domestic service industry. Finally, since sequencing is a crucial issue in services liberalization, a dynamic version of this model would be very useful in shedding light on when the required steps in the liberalization process should be taken to maximize gains.

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