

# Telecom Regulatory Environment (TRE) Assessment: A six-country comparison<sup>\*</sup>

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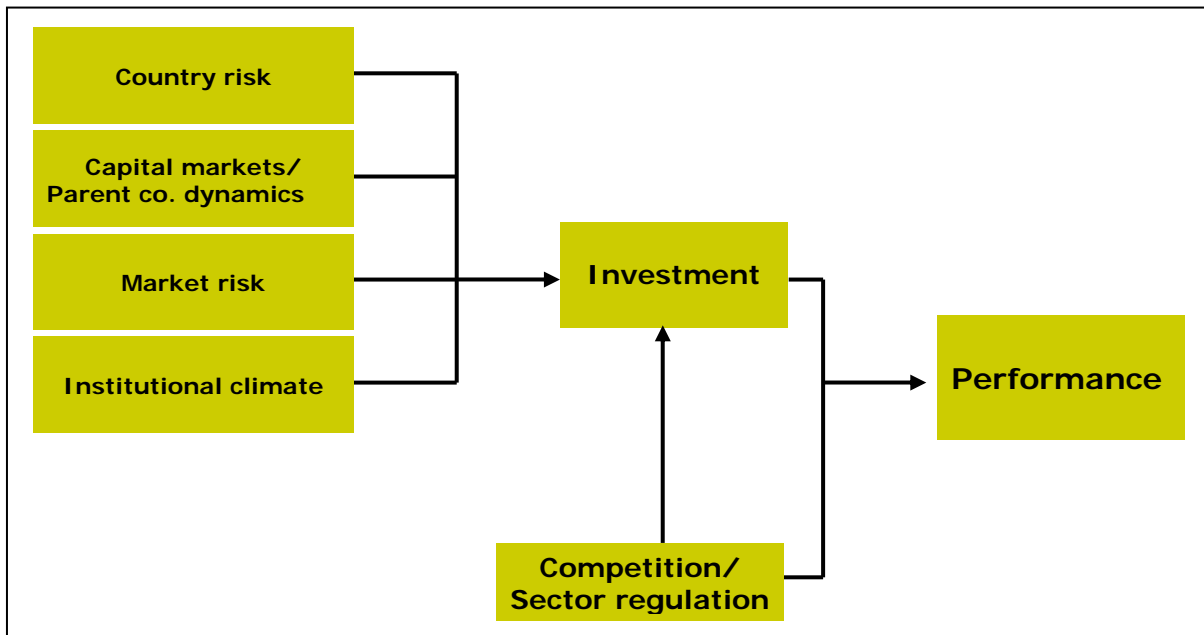
<sup>\*</sup> The paper is based on the comparative research conducted across six countries (India, Indonesia, Pakistan, Philippines, Sri Lanka and Thailand) in 2006 by Payal Malik, Divakar Goswami, Joseph Wilson, Lorraine Salazar, Malathy Knight John and Deunden Nikomborirak, respectively, with input from Harsha de Silva and Helani Galpaya on improving comparability. The research design and implementation benefited greatly from in-depth discussion at the March 2006 Research Planning Meeting in Gurgaon, India, where the contributions of Tim Kelly, Sam Paltridge and Laveesh Bandari were especially noteworthy. In the conduct of the TRE research the researchers were assisted by many, with Juni Soehardjo of MASTEL in Indonesia, Hina Sarfaraz at the Lahore University of Management Sciences, Mary Grace Mirandilla in the Philippines, and Dilani Hirimuthugodage and Jeevani Kapugama of the Institute of Policy Studies Sri Lanka, deserving special mention. The helpful comments made by George Sciadas and M. Arif Sargana on a previous draft prepared for the CPRsouth1 conference, Manila, 19-21 January 2007, are gratefully acknowledged. Any remaining errors are the responsibility of the authors.

<sup>\*\*</sup> For brevity's sake described as the "research team" hereafter. Divakar Goswami, one of the co-authors belongs to the research team as well.

## Introduction

The desired objective of telecom policy reform and regulation is improved sector performance, measured in four dimensions: connectivity, price, quality of service and choice. Investment is the necessary condition for improved sector performance. A number of factors affect investment decisions as shown in Figure 1.

**Figure 1: Factors affecting sector performance**



Source: Author

At the point of investment, investors consider risks associated with three environments:

- Macro-level or country
- Regulatory, and
- Market or commercial

The macro-level or country risk is defined as factors that may affect the entire economy, such as inflation and foreign exchange risk, as well as overall political stability. Regulatory risk is a term of art, defined by Spiller and Levy (1994) to refer to risk emanating from government action, including but not limited to the actions of the actual sector-specific regulatory agency with authority over the industry in question. Commercial risk is comprised of factors such as demand, effect of substitutable products and services, and performance of competitors. The focus of this case study is the regulatory environment within which telecom operators and potential new entrants function, that is, a subset of the overall regulatory risk environment here described as the "Telecom Regulatory Environment" (TRE) that includes only the telecom-specific aspects.

TRE is a measure of perception. Different factors affect perceptions of the TRE. They include the context of the investment (new or incremental), and the nature of sub-sector (e.g., mobile is seen as posing a higher risk in market terms, but posing a

lower risk in TRE terms because price regulation is seen as less intrusive and the investment capable of being recovered faster than in the fixed sector). While the expected returns from mobile investments are higher, it is a fact that mobile investments have been made in some of the most volatile and uncertain environments, such as the Congo and Somalia.

The manner in which an investor looks at the TRE is different at the moment of making the investment and subsequently. Prior to committing the investment, the investor has considerable negotiating power vis-à-vis the government. But this power atrophies radically after the initial investment is made, especially in a capital-intensive industry such as telecom. Investment decisions after entry are driven to a great extent by the desire to protect and enhance the initial investment. Once a firm is in a market, deterioration in the TRE might depress the level of investment, but will not necessarily lead to no investment or to withdrawal, in the short term.

There is no one-to-one relation between TRE and investment. Macro-level factors such as national economic crises (e.g., Argentina) can have major effects on telecom investment. Investment can also be affected by factors endogenous to a company. For example, changes in Telia's global investment strategy, to a focus on Northern Europe, could affect its investments in Asia. Financial travails of a parent company can have significant effects on the investments of subsidiaries. Unlike in the case of macro-level risk, endogenous factors are not uniform across operators.

Sector regulation directly affects investment. In addition, it can, in combination with investment, affect sector performance. Cadman and Dineen (2006) calculated that each percentage increase in regulatory effectiveness as measured by the European Competitive Telecommunications Association (ECTA) Regulatory Scorecard for European Union countries yielded a 0.47 percentage increase in investment.

In an empirical study conducted in the United States and Europe, Chang and Majumdar (2003) found that regulatory policies affecting cash flows of telecom operators impact the latter's investment behavior. For example, the study found that investments were higher in European countries that adopted cost-based interconnection compared to those that did not.

## **Related work**

The ECTA<sup>1</sup> Regulatory Scorecard for European Union countries launched in 2004 is the closest to the present work, though not prior and possibly influenced by the original publication on TRE (Samarajiva and Dokeniya, 2003), though unacknowledged.<sup>2</sup> Like the original TRE study it took the following as its starting point:

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<sup>1</sup> Representing new entrant operators, ISPs and suppliers of ICT products and services for the European Union.

<sup>2</sup> Discussion Paper 0303a, which did not include the pilot study was posted on 11 March 2003, but is no longer on the World Dialogue on Regulation website due to a reorganization (<http://www.regulateonline.org/2003/dp/draftpapers.htm>); Discussion Paper 0303b, with the annex containing the pilot study, was posted in September 2004. The fact that ECTA read Background Paper 0301, which was posted right next to 0303, prior to designing the instrument used in 2004 is clear. It is reasonable to assume that they also read 0303.

Telecom policy and regulatory decisions clearly have an impact on the investment climate and investment opportunities in the industry during both boom and bust cycles. We know from experience that credible (i.e. competent, objective, transparent and accountable) regulation is a great attraction for new investment. Indeed most decisions by regulators affect the investment climate in their countries. (Melody 2003).

The ECTA instrument, first implemented in 2004 and repeated in 2005 and 2006, is based on three key components: 1) the overall institutional environment, 2) the general market access conditions and 3) the regulatory effectiveness and competitiveness in four key access markets and services. The criteria were selected from a number of different inputs including the Reference Paper from the Fourth Protocol of the GATS (as in the TRE) and the EU regulatory framework. The latest version of the regulatory scorecard implemented in 2006 has 97 questions that are divided across the three components.<sup>3</sup>

ECTA's regulatory scorecard, although quite comprehensive in its coverage, is difficult to implement outside the EU. It is designed to be implemented in a region where countries have homogeneous legal and institutional frameworks. This is a requirement that is impossible to meet outside of the EU region. The questions are specifically tailored to the legal and institutional arrangement existing in the EU countries. For example, countries are scored on the basis of how quickly they transpose the EU regulatory framework into their national legislation or how quickly the National Regulatory Agencies have conducted the Significant Market Power analysis. Furthermore, the large number of questions will probably yield poor response rates in most countries.

Most of the questions in the scorecard deal with objective measures that assess whether certain regulatory measures or market conditions exist in the country being surveyed. However, ECTA's scorecard has been critiqued by some for being subjective in the manner in which weights are assigned<sup>4</sup> and in the assessment of regulation in the key markets (Weeks and Williamson, 2006; Edwards and Waverman, 2006). Weeks and Williamson (2006) also critique the ECTA scorecard for equating *more* regulation with *effective* regulation without considering the level of competition in the particular market.

The literature includes another initiative to benchmark regulatory performance: a one-time assessment of recently established NRAs in the Middle East (Mustafa, 2002). Mustafa (2002) does not use scores but instead assesses NRAs in the Middle East against a checklist that he proposes. For example, the checklist asks whether a country has adopted new telecom legislation, whether it has licensed new operators, whether the regulatory body is sector specific, etc. The checklist will be accepted by those who agree with Mustafa's view of regulation but does not have the

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<sup>3</sup> Available at: <http://www.ectaportal.com/en/upload/File/Regulatory%20Scorecards/ECTA%20Regulatory%20Scorecard%202006%20V2%5B1%5D.0.zip>

<sup>4</sup> For example, while scoring disputes settlement, the scorecard assigns a lower weight to "due process" (10%) than "speed of process" (40%), when the former rather than the latter may be more important to the end result (Weeks and Williamson 2006).

international legitimacy enjoyed by the GATS Protocol 4 Reference Paper, a document that was painstakingly negotiated and now enjoys the voluntary adherence of a substantial number of the world's nations, constituting the broadest international consensus on telecom regulation.<sup>5</sup> Further, because the checklist does not use scores, it is not very useful for tracking relative performance of NRAs over time or across regions.

The TRE assessment has been developed in a manner that can be universally deployed in any country, irrespective of the specific regulatory or institutional framework that may exist. It is parsimoniously designed in order to elicit good response rates from senior executives and equivalent persons for robust assessment. And finally, the TRE scores allow countries to be benchmarked over time to track the relative improvement (or worsening) of the regulatory environment in the selected countries.

## Method

The original TRE instrument was designed to assess regulatory effects on investment (Samarajiva & Dokeniya, 2005). It asked stakeholders to assess the telecom regulatory environment on a five-point scale across five dimensions for the fixed and mobile sectors. The dimensions were adapted from the Reference Paper of the Fourth Protocol of the General Agreement on Trade in Services,<sup>6</sup> substituting the universal service dimension with price or tariff regulation, and leaving out independence of the regulator, because the latter was seen as a process variable different from the other outcome variables. Following the conduct of a pilot and a research planning meeting, a decision was made to restore the universal services dimension, increasing the number of dimensions to six, and the total number of items that required a response to 12. Considerable effort was made to be parsimonious because the ideal respondents were persons at senior level, including CEOs of operators, and it was feared that long questionnaires would tend to be passed down to others to complete.

Based on the lessons of the pilot, it was decided that the instrument would be administered at the same time in six countries by a team of researchers. Each instrument would be accompanied by a short narrative statement describing each of the dimensions, using language from the Reference Paper as much as possible, and a bland summary of significant telecom policy and regulatory actions taken within the previous 12 months. Questionnaires were to be sent to over 50 respondents from previously agreed upon categories, and efforts were to be made to ensure a high response rate. Table 1 summarizes the composition of the responses across the six countries.

**Table 1: Respondents by class, and composition of the respondent group by country**

	Pakistan (40)	India (50)	Indonesia (58)	Sri Lanka (101)	Philippines (52)	Thailand (31)
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<sup>5</sup> Results of the basic telecommunications negotiations.  
[http://www.wto.int/english/tratop\\_e/serv\\_e/telecom\\_e/telecom\\_results\\_e.htm#fntext3](http://www.wto.int/english/tratop_e/serv_e/telecom_e/telecom_results_e.htm#fntext3)

<sup>6</sup> [http://www.wto.int/english/tratop\\_e/serv\\_e/telecom\\_e/tel23\\_e.htm](http://www.wto.int/english/tratop_e/serv_e/telecom_e/tel23_e.htm)

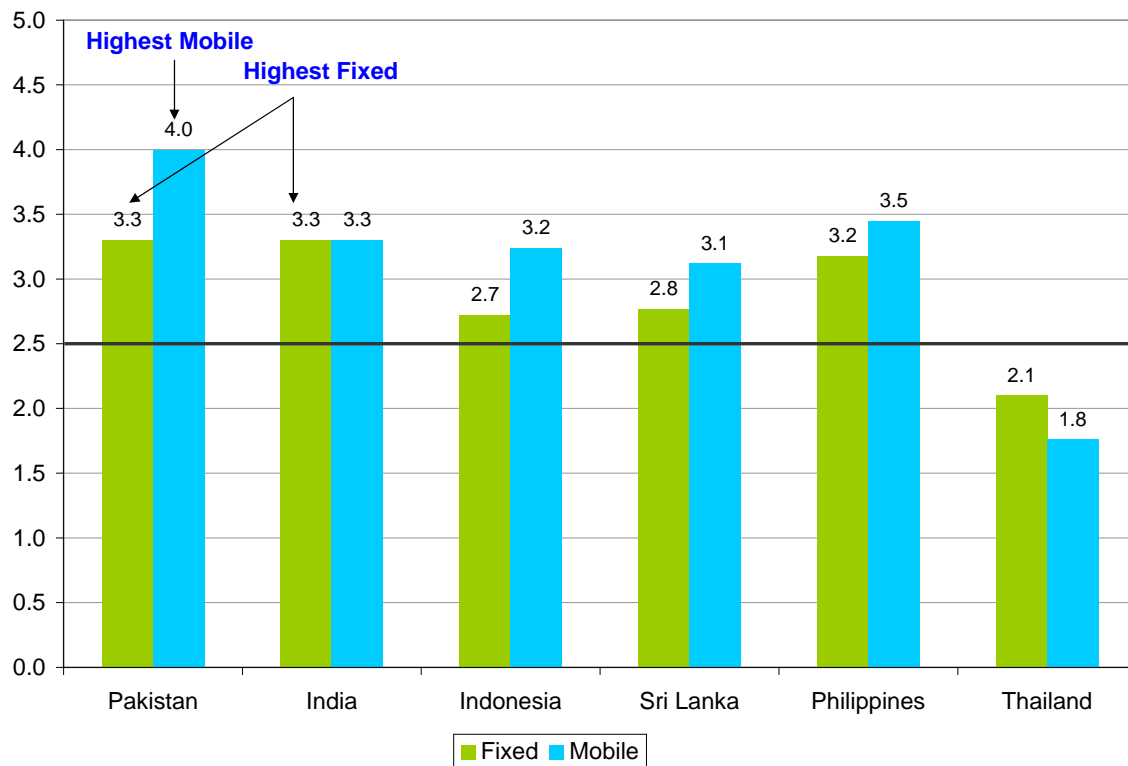
<b>Operators/equipment suppliers/industry associations</b>	18 (45%)	16 (32%)	37 (63.8%)	30 (29.7%)	19 (36.5%)	18 (58%)
<b>Education/research organisations/telecom consultants/law firms</b>	16 (40%)	18 (36%)	13 (22.4%)	21 (20.8%)	16 (30.8%)	1 (3.2%)
<b>Journalists/ telecom user groups / civil society</b>	2 (5%)	14 (28%)	2 (3.5%)	16 (15.8%)	12 (23.1%)	8 (25.8%)
<b>Financial institutions &amp; private investment houses/banks &amp; credit rating agencies</b>	1 (2.5%)	2 (4%)	4 (6.8%)	17 (16.8%)	2 (3.8%)	0 (0%)
<b>Former members/ senior staff of regulatory agencies/ other government agencies</b>	3 (7.5%)	0 (0%)	2 (3.5%)	17 (16.8%)	3 (5.8%)	4 (12.9%)

Source: Research team

## Findings

The findings are presented by dimension and then by sector. Then, the top three countries are compared, with further in-depth analysis of TRE and investment conducted for the major South Asian countries of India and Pakistan. In all figures, the average score (5 being best and 1 being worst) is rounded to one decimal point only. The countries are ordered by per capita GNI (purchasing power parity), with Pakistan lowest and Thailand highest. The midpoint of 2.5 is considered the threshold of satisfactory performance.

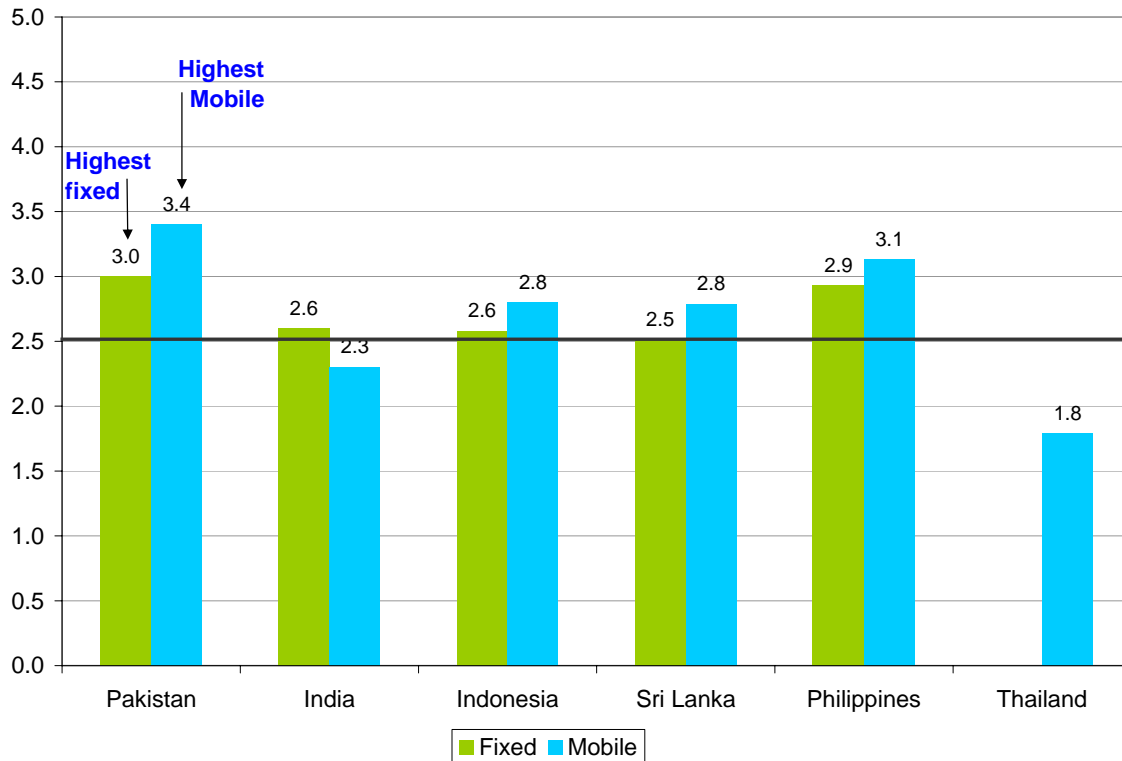
Figure 2: TRE - market entry (fixed and mobile)



Source: Research team

Mobile TRE on the market-entry dimension (primarily dealing with licensing) is higher than Fixed TRE in all cases except Thailand and India (equal). This dimension that is most strongly connected to the overall policy setting is the highest among the six dimensions with the average for fixed being 2.9 and the average for mobile being 3.1. Pakistan's mobile score is significantly higher than others.

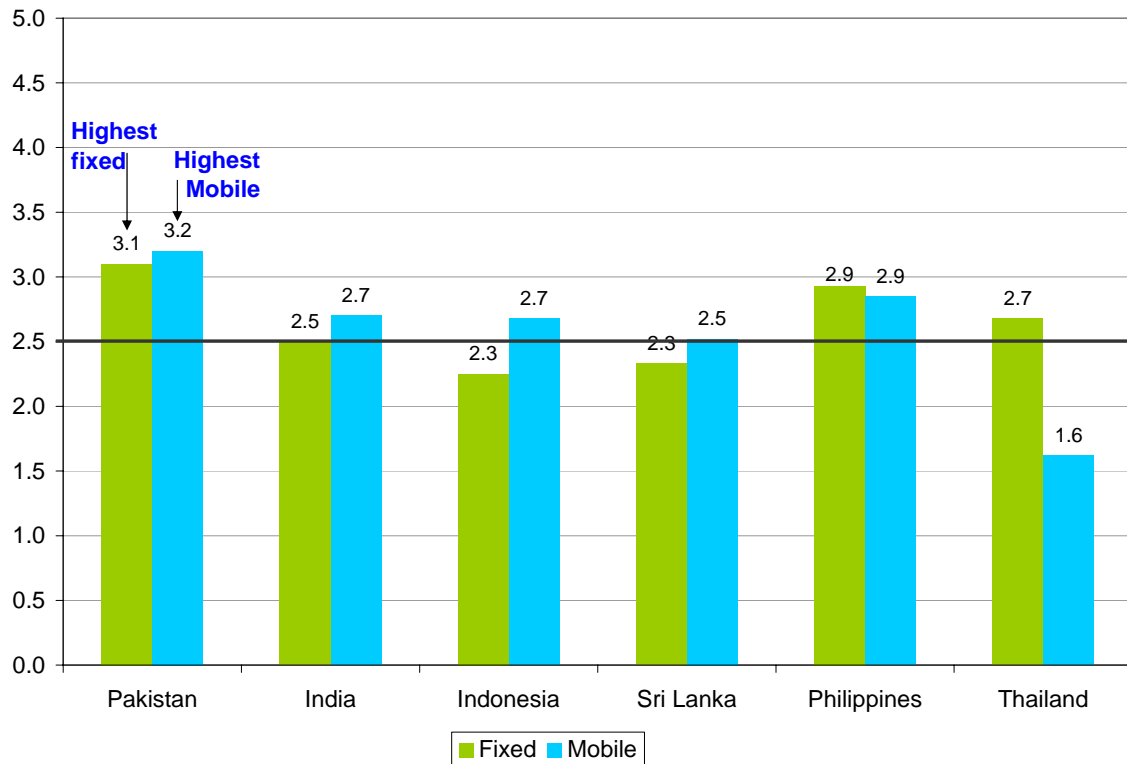
Figure 3: TRE - scarce resources (fixed and mobile)



Source: Research team

Here too, the mobile TRE is higher than fixed in all countries except India. The question for the fixed sector was not administered in Thailand because the Thai fixed sector does not use spectrum and the question was understood primarily in terms of regulation of spectrum. Again, Pakistan has significantly higher scores, this time in both mobile and fixed. Overall performance is quite weak, with only Pakistan and the Philippines significantly above the threshold.

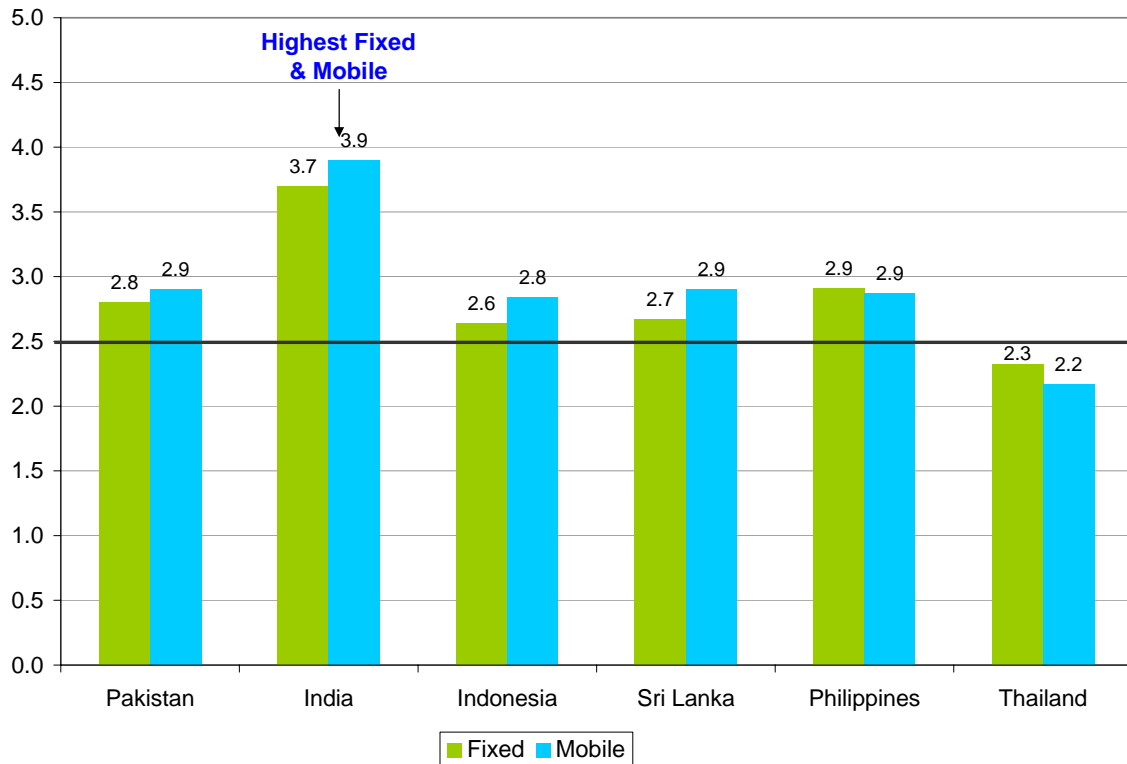
Figure 4: TRE – Interconnection (fixed and mobile)



Source: Research team

The overall performance in interconnection in all countries, except Pakistan and the Philippines, is quite weak. Mobile interconnection TRE is seen to be superior to fixed in all countries except Thailand and the Philippines (equal).

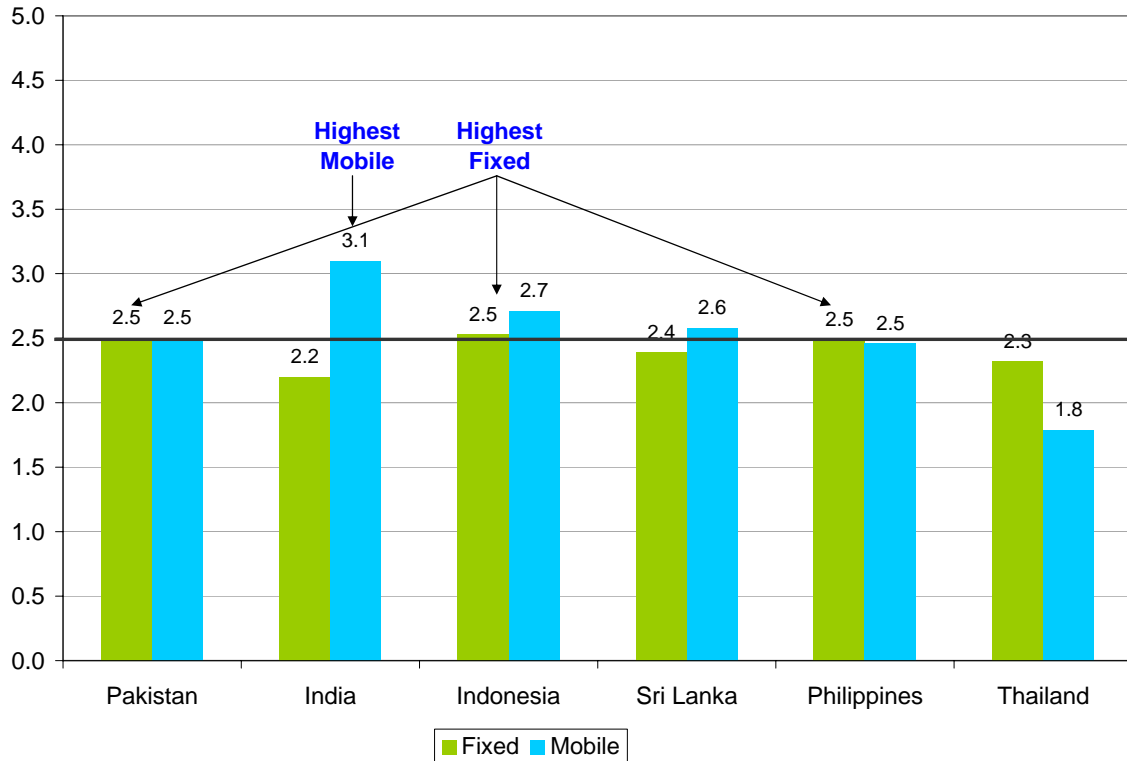
**Figure 5: TRE – Price (fixed and mobile)**



Source: Research team

Here India stands out, with significant gap between its scores and those of the others. Interestingly, price or tariff regulation in both fixed and mobile is forborne in India, for the most part. Mobile is again higher than fixed, except in Thailand and the Philippines (equal).

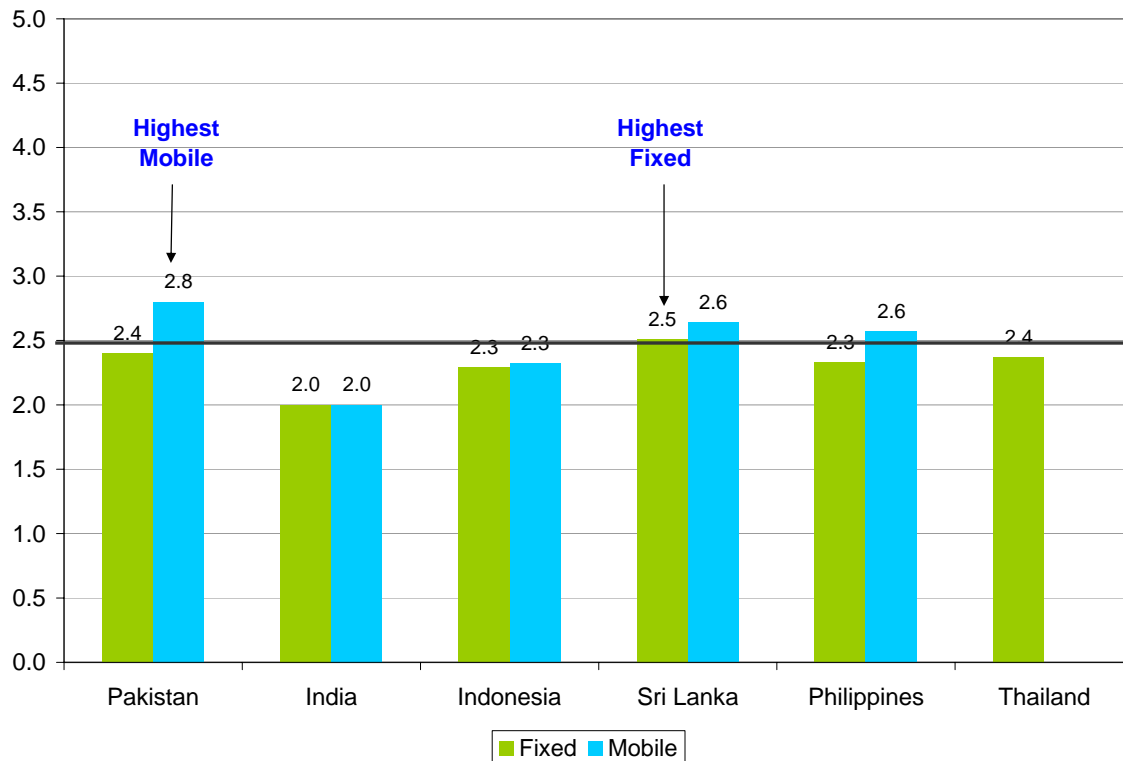
**Figure 6: TRE – Anti-competitive practices (fixed and mobile)**



Source: Research team

Here, pretty much all countries record a poor showing, almost uniformly failing to exceed the threshold. The one exception is India's mobile TRE. The rather large gap between India's mobile and fixed scores is somewhat puzzling. It may be attributed to the fact that there was no incumbent participation in the mobile sector at the outset, while there have been many controversies regarding the overly protective attitude of the government and the regulator with regard to the fixed incumbent, BSNL.

**Figure 7: TRE – Universal service (fixed and mobile)**

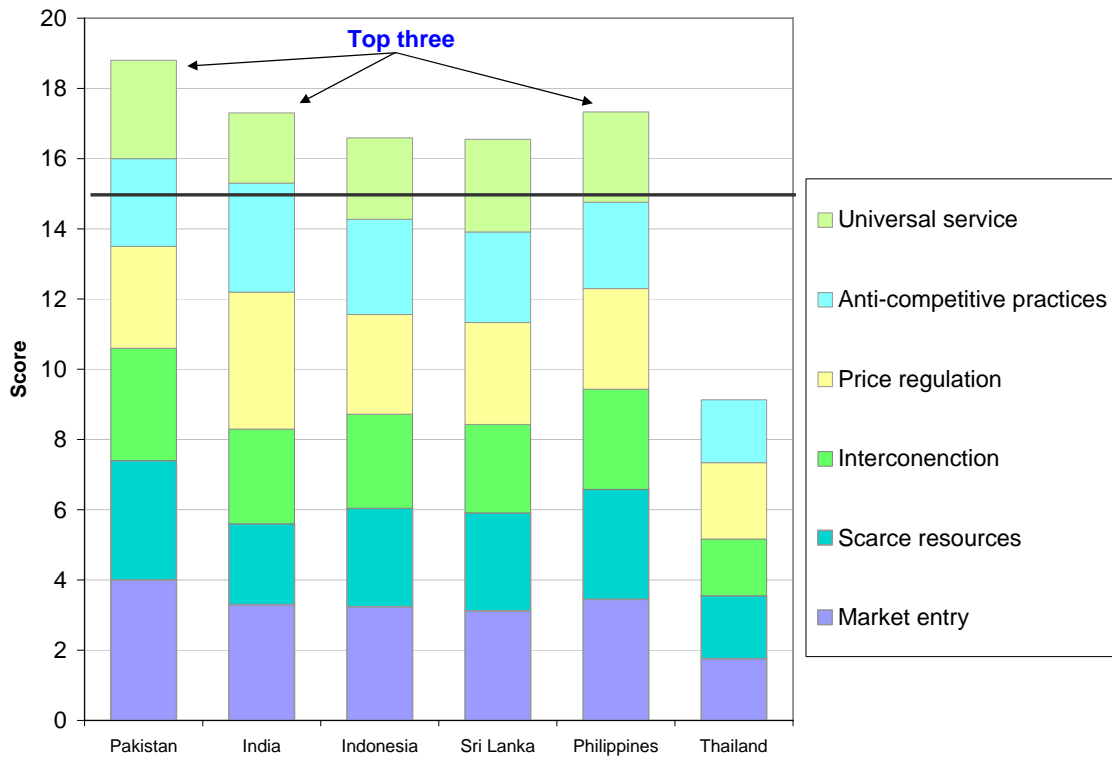


Source: Research team

Universal service was the dimension that attracted the fewest responses. The overall results were the lowest of the six dimensions, with India, the country with the second largest universal service obligation fund and a great deal of discussion and activity on the subject scoring the absolute lowest. Sri Lanka, a country with minimal universal service activity scored highest in fixed and was in the top three in mobile. As was the case with price regulation, the respondents appear to think that less is more with regard to universal service. The universal service question was not administered on the mobile side for Thailand.

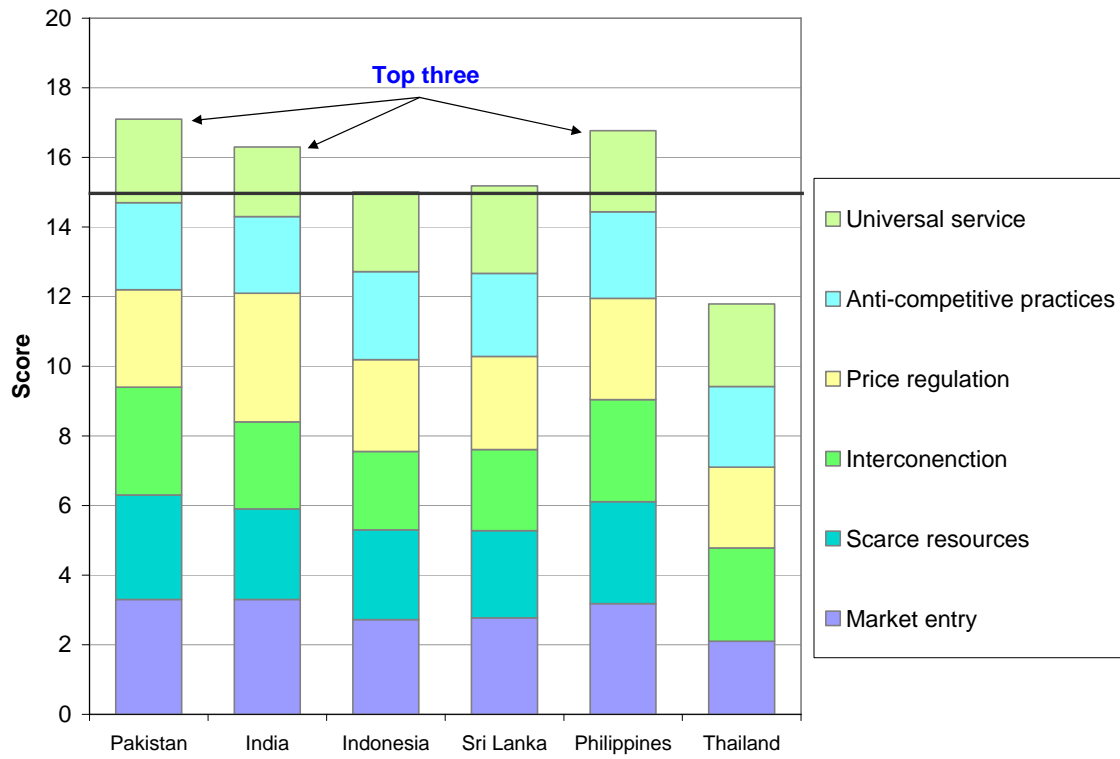
Figures 8 and 9 show the aggregate performance of the six countries on TRE, in the mobile and fixed sectors, respectively. Based on relatively good performance across all dimensions, both Pakistan and Philippines make it to the top three. With high performance in price regulation overcoming poor performance in scarce resources and universal service, India also makes it to the top three. Overall scores are better in mobile, with five countries above the satisfactory threshold (Figure 8), than in fixed (Figure 9), where only the top three exceed the threshold.

**Figure 8: TRE component score comparisons: Mobile**



Source: Research team

**Figure 9: TRE component score comparisons: Fixed**



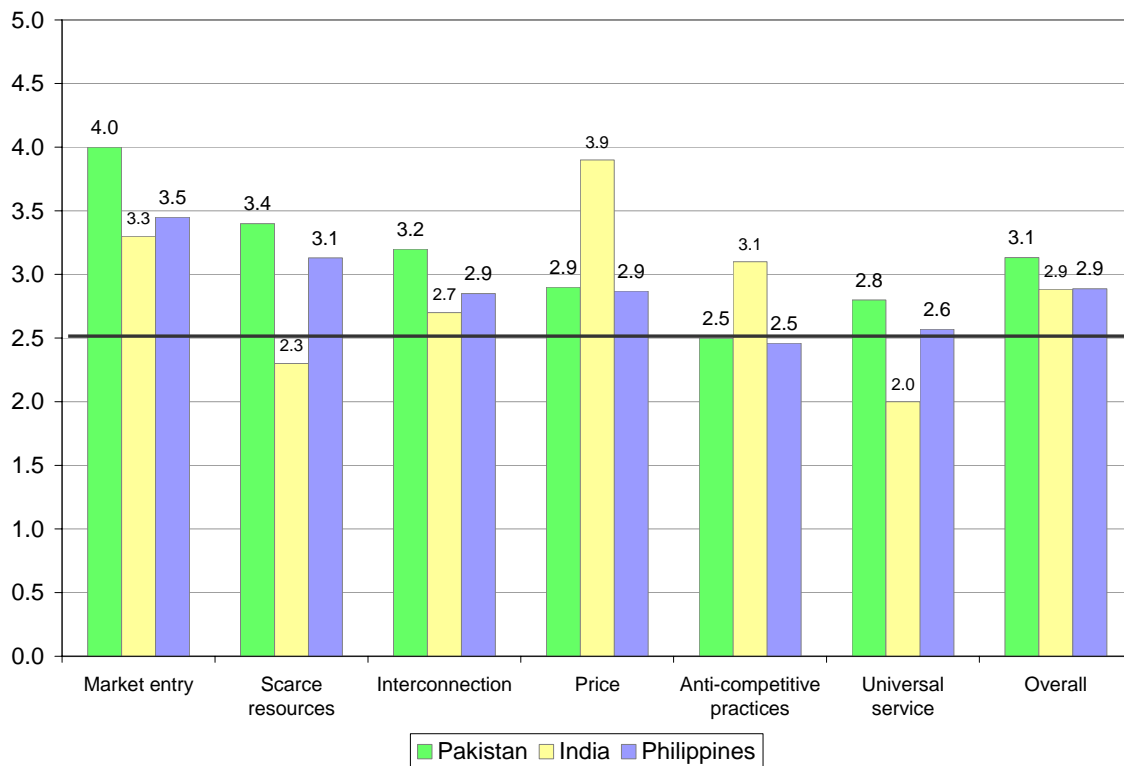
Source: Research team

Across both mobile and fixed, Pakistan, the Philippines and India make up the top tier. The next tier is populated by Indonesia and Sri Lanka; Thailand brings up the rear.

All countries show room for considerable improvement, with the highest scores being 18.8/30 and 17.1/30 for mobile and fixed respectively. The mobile aggregates are higher than fixed in all cases, except Thailand. The average fixed aggregate barely clears the threshold at 15.4/30. In mobile, the average aggregate is 16/30.

The relative performance across the dimensions by sector can be seen in the presentation of the results for the top three, by sector, in Figures 10 and 11.

**Figure 10: Mobile TRE compared: Pakistan, India and Philippines**

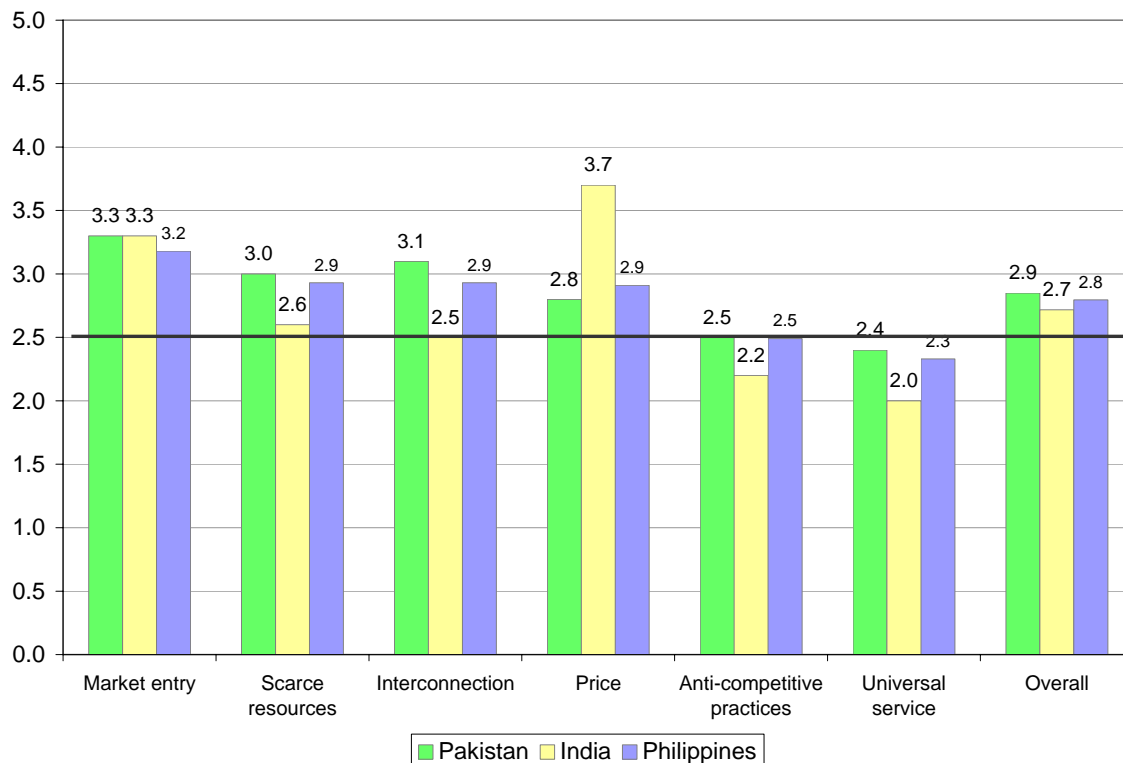


Source: Research team

The highest scores are recorded by Pakistan for market entry (4.0) and India for price (3.9). The lowest scores are for India in scarce resources (2.3) and universal service (2.0). Both areas are outside the purview of the Telecom Regulatory Authority of India and are controlled by the Department of Telecom.

The best performance overall is in market entry and worst in universal service.

**Figure 11: Fixed TRE compared: Pakistan, India & Philippines**



Source: Research team

Fixed market entry is generally seen as good, though the highest TRE is recorded for India in the area of price regulation. Again, universal service is the area of worst performance. Pakistan is marginally ahead overall, due to relatively good performance in scarce resources and interconnection, in addition to market entry.

## Discussion

Except for Thailand, which is the most prosperous among the six countries and which also has the highest fixed+mobile per 100 numbers, the results are not counter intuitive. The Thai survey was conducted in the context of the controversies that followed the sale of 49.6 per cent share held by the then Prime Minister Shinawatra's family in January 2006, the subsequent contested elections and protracted political uncertainties. Telecom and the Thai government institutions dealing with the sector were generally in serious disrepute at the time the research was conducted.

Another factor contributing to the low scores may be the fact that the Thai regulatory body operates within a highly confined environment where most private operators are subject to terms and conditions of the BTO [Build Operate Transfer] concessions that grant regulatory power to the state-owned operators, in particular TOT [Telecom Organization of Thailand]. Certain private operators still have to pay high access charges, rather than interconnection charges to the TOT. There is nothing that the National Telecom Commission can do as the Telecom Law states that the terms and conditions of the concessions will continue to be observed. Recently, TOT refused

to allow 3 million new fixed lines installed by a private operator to be connected to its network because the private operator refused to pay access charge according to the concession agreement. The TOT refusal contradicted the NTC's order for mandatory interconnection. The fundamental problems caused by the continuing adherence to concessions are rooted in policy, not in action or inaction by the regulator.

Pakistan undertook major sector reforms based on a new policy framework in 2003-2004 and followed through with concerted and coherent regulatory actions through a well-resourced and empowered regulatory agency with a strong leader. All six dimensions of TRE were under the control of the Pakistan Telecom Authority (PTA), which plays a strong role in policy as well. Its decisions have not been subject to litigation, appeal and reversal by government, unlike in the other countries in the set.

Not only is the regulatory picture in Pakistan quite rosy; the results in terms of sector performance have been more than satisfactory (Table 2). Despite being the country with the lowest per capita GNI in the set which until 2005 lagged both Sri Lanka and India in terms of fixed + mobile per 100 people, it has now overtaken both with a spectacular burst of growth in mobile.

**Table 2: Income & selected sector performance data for Pakistan, India & Sri Lanka**

	Pakistan	India	Sri Lanka
<b>GNI per capita (2005), USD, Atlas</b>	690	720	1,160
<b>GNI per capita (2005), USD, PPP</b>	2,350	3,460	4,520
<b>Fixed/100 population</b>	4.16	4.58	7.5
<b>Mobile/100 population</b>	25.22	8.82	21.5

Sources: PTA, TRAI and TRC websites. Data as of September 2006; current numbers will be higher.

Investment, the necessary condition for improved sector performance has increased significantly in Pakistan, with most of the investment being in the form of foreign direct investment (FDI).

**Table 3: India and Pakistan 2005-2006 telecom investment compared**

	Total telecom investment (USD billions)	Telecom FDI (USD billions)	FDI as percentage of total telecom investment	Telecom FDI as percentage of total FDI
<b>India</b>	4.85	0.02	0.43	7.8
<b>Pakistan</b>	2.14	1.9	89.11	54.11

Source: Calculated by authors based on Research by Payal Malik and Joseph Wilson

However, the total investment and FDI for Pakistan in Table 3 includes the one-time proceeds of the partial privatization of the incumbent Pakistan Telecommunication Company Limited in 2005-06. While the payment by Etisalat does constitute FDI, it

does not directly contribute to network rollout. Therefore, Table 4 compares the 2005-06 investments in India and Pakistan, less the privatization proceeds.

**Table 4: India and Pakistan 2005-2006 telecom investment (less privatization proceeds) compared**

	Total telecom investment (USD billions)	Telecom FDI (USD billions)	FDI as percentage of total telecom investment	Telecom FDI as percentage of total FDI
India	4.850	0.020	0.43	7.8
Pakistan	0.954	0.721	75.59	20.0

*Source: Calculated by authors based on Research by Payal Malik and Joseph Wilson*

Per-capita investment figures in Table 5 shed some light on the Pakistani growth spurt in relation to India. Pakistan has invested per citizen, one third more than what India has invested. In terms of FDI Pakistan has invested 220 times what India has, on a per capita basis.

**Table 5: India and Pakistan 2005-2006 per capita telecom investment compared**

	Per capita investment in telecom (USD)	Per capita FDI in telecom (USD)	Population (millions)
India	4.43	0.02	1,096
Pakistan	5.82	4.4	164

*Source: Calculated by authors based on Research by Payal Malik and Joseph Wilson*

One may argue that per capita investment is not the most relevant for large, low-penetration countries such as India and Pakistan. However, correcting the total investment and FDI by subscriber numbers is even less relevant because investment is intended for future subscribers, not the existing ones. There is however a relationship between investment in a specific year  $n$  and subscriber additions in year  $n+x$ . The value of  $x$  requires further investigation and is most likely different for fixed and mobile. As an imperfect proxy for this indicator,  $n$  is assumed to be zero in the present instance.

**Table 6: India and Pakistan 2005-2006 telecom investment per added subscriber compared**

	Investment per added subscriber (USD)	FDI per added subscriber (USD)
India	116	0.49
Pakistan	42	32

*Source: Calculated by authors based on Research by Payal Malik and Joseph Wilson*

Overall, it appears that Pakistan is reaping the benefits of significantly increased investment, enabled by the policy reforms and effective implementation reflected in the high TRE scores. The fact that India has a higher investment per added subscriber, but is falling behind Pakistan, can be explained either in terms of  $x=0$  not

yielding a satisfactory proxy or over-investment in backbone (Singh and Samarajiva, forthcoming).

More cannot be said at this point about the former explanation. It requires additional data and investigation. However, there is enough evidence to suggest that the latter explanation regarding wasteful duplication of backbone has value even if it may not be the sole contributor to India's inferior performance compared to Pakistan.

It is well known that India's government-owned incumbent operator, now active in both fixed and mobile, has invested massively in backbone infrastructure, which, with the support of the government and tolerance of the regulatory agency, it has refused to share with new entrants. As a result, the new entrants are currently engaged in a massive rollout of backbone infrastructure (Singh and Samarajiva, forthcoming). It is possible that the high investment figures captured by the researchers in 2006 reflect this wasteful duplication of infrastructure. In contrast, it may be that the investment in Pakistan is going directly to the access network and is yielding faster growth at lower cost.

Another possible explanation lies in the significantly higher FDI deployed by Pakistan. It is possible that TRE is more directly related to FDI than to domestic investment. According to this explanation, the superior TRE in Pakistan has attracted a higher amount of FDI than India. Because of the greater demands for efficiency and quicker and higher returns made by foreign investors, it is possible that the FDI recipients have been highly disciplined in the deployment of the capital, yielding qualitatively superior results with less capital.

The above explanations will be rigorously assessed in the next stage of the research.

## **Next steps**

The most important task is to repeat the TRE in the six countries that were studied in 2005 and possibly increase the country coverage. Efforts will be made to keep consistent the composition of the respondent panel in terms of the broad categories given in Table 1 for greater comparability of results across the countries.

Suggestions made to add the dimensions of consumer protection and quality-of-service regulation to the current six dimensions will be considered in designing future studies. However, increasing the number of questions can lower the yield of completed questionnaires. Furthermore, increasing the deviation from the core measures represented by the GATS Fourth Protocol Reference Paper has implications for general application that must be considered.

Although ECTA's Regulatory Scorecard cannot be implemented in other countries as it is structured, it may be possible to supplement the TRE with some "objective" measures similar to those in ECTA's scorecard. For example, measures of regulator's internal efficiency, transparency of decision-making process, general market access conditions etc. may be captured in a carefully designed balanced scorecard. The advantage of balanced scorecards is that they minimize information overload and allow decision-makers to gauge outcomes from complex processes (Kaplan and Norton 1992).

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<sup>7</sup> Discussion Paper 0303a, which did not include the pilot study was posted on 11 March 2003, but is no longer on the website due to a reorganization (<http://www.regulateonline.org/2003/dp/draftpapers.htm>); Discussion Paper 0303b, with the annex containing the pilot study, was posted in September 2004.