

**Annex 10: Regulatory reforms and improved sector performance: A comparative analysis of Indonesia and India**

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**Regulatory reforms and improved sector performance:  
A comparative analysis of Indonesia and India**

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## **Introduction**

The conventional wisdom is that good policy and effective regulatory structure result in better telecom sector performance. This paper explores this *a priori* belief about the correlation between regulatory effectiveness and sector performance through a comparative analysis of Indonesia and India. Both countries undertook significant reforms of their telecom sector in 1999 but ended up with counterintuitive results. Despite having a more favourable institutional and regulatory climate, India's telecom sector performance scores lower than Indonesia's. A number of propositions are explored to explain the seemingly paradoxical outcome.

## **Conventional wisdom**

Regulatory reforms of the telecom sector, that include privatization, competition and regulation, are perceived to lead to improved sector performance. Empirical evidence also supports this hypothesis. Wherever comprehensive reforms of the telecom sector have been carried out in Asia, there are significantly higher number of lines and better service quality (Fink et al. 2001).

Along similar lines, it has been proposed that effective regulation is correlated with better sector performance. Poor regulatory performance is seen to limit the benefits of telecom reform, especially in countries with a tradition of weak governance (Smith and Wellenius 1999). Investment climate and investment opportunities in the telecom sector are shaped by policy and regulatory decisions (Melody 2005). Since telecom infrastructure deployment and services are dependent on the level of investment being made in the sector, regulatory effectiveness plays a key role in sector performance. This is also supported by empirical studies that, for example, have found regulatory effectiveness among EU countries to be strongly and positively correlated with investment in the telecom sector (Cadman and Dineen 2006). Similarly, a study of 19 Latin American countries found that institutional factors are a significant determinant of telecom investment (Gutierrez and Berg 2000).

Over the last decade, a large number of Asian countries have initiated reforms of their telecommunication sectors and have witnessed significant expansion of their telecommunication networks and striking improvements in productivity (Fink et al. 2002). For example, Asia's share of the global mobile telephone users has leapt from 13% to 35% during the last 15 years and is expected to reach 50% by 2010 (Fink et al. 2001).

However, neither telecom sector performance nor the trajectory of reform process has been uniform within or across regions. While there may be growing consensus that privatization of state-owned operators, the introduction of competition, the opening up of markets to private investments and the establishment of an effective regulator are desirable, rarely have countries adopted these steps in a comprehensive manner (Fink et al. 2002). In countries where these reform steps have been followed, the sequencing of reforms has varied from country to country, depending upon the political economy of reform.

## **Comparative analysis of the reform process**

Although Indonesia and India embarked on significant reforms of their telecom sector in 1999, each followed a different trajectory. Neither country whole-heartedly embraced the three mantras (privatization, regulation, competition) of the liberalization process nor did they follow them in the recommended sequence.

However, as can be seen on Figure 1, India has moved rapidly towards an open competitive model, made clear separations between the policy and regulatory functions, privatized one of the historical incumbents<sup>1</sup> and has adopted a Unified Access Regime hailed the world over as a forward-looking, technology neutral solution to convergence<sup>2</sup>. On the other hand, Indonesia has created a regulatory body but still embedded within the ministry, partially privatized both historical incumbents though the government has controlling shares in both, adopted a messy licensing framework that constraints infrastructure rollout and requires individual licenses for different services, introduced limited competition in the mobile market though the historical incumbents are dominant in the mobile and every other market in the telecom sector. Prima facie, India seems to be ahead of Indonesia in the reform process.

### Privatization

Neither country has fully privatized the state-owned incumbents. Indonesia partially privatized the fixed international incumbent PT Indosat in 1994 and the Government currently retains 14 percent of the shares and the “golden” controlling share in that company. PT Telkom, the fixed domestic incumbent, was partially privatized in 1995 and the Government retains 51.2 percent of the shares and control over the company. PT Telkom and PT Indosat also control the dominant GSM operators.

India privatized the international incumbent, VSNL in 2002, nearly 12 years after Indonesia. VSNL is currently run by a private company, Tata Indicom. The domestic fixed incumbent, BSNL, continues to be fully government owned.

### Regulation

Unlike European countries, where the setting up of a National Regulatory Authority (NRA) preceded the opening up of the market, in Indonesia and India, there was a reversal of sequence and the NRA came into being after GSM licenses were issued. In Indonesia, GSM licenses were issued nearly 10 years before the NRA was established; whereas in India the intervening time was only two years.

Unlike most countries in the world, Indonesia is endowed with two regulatory bodies but this hasn't translated into an effective regulatory environment. Although the Telecommunication Law of 1999 provided the government the option to create an independent regulatory agency, that option was not exercised until 2003. A ministerial decree in 2003<sup>3</sup> established the Indonesian Telecommunications Regulatory Body (BRTI)<sup>4</sup> to be effective starting January 2004. However, since its inception, BRTI was seen as a “transitional” body that would become fully independent only at some undetermined time (Koesmarihati 2005).

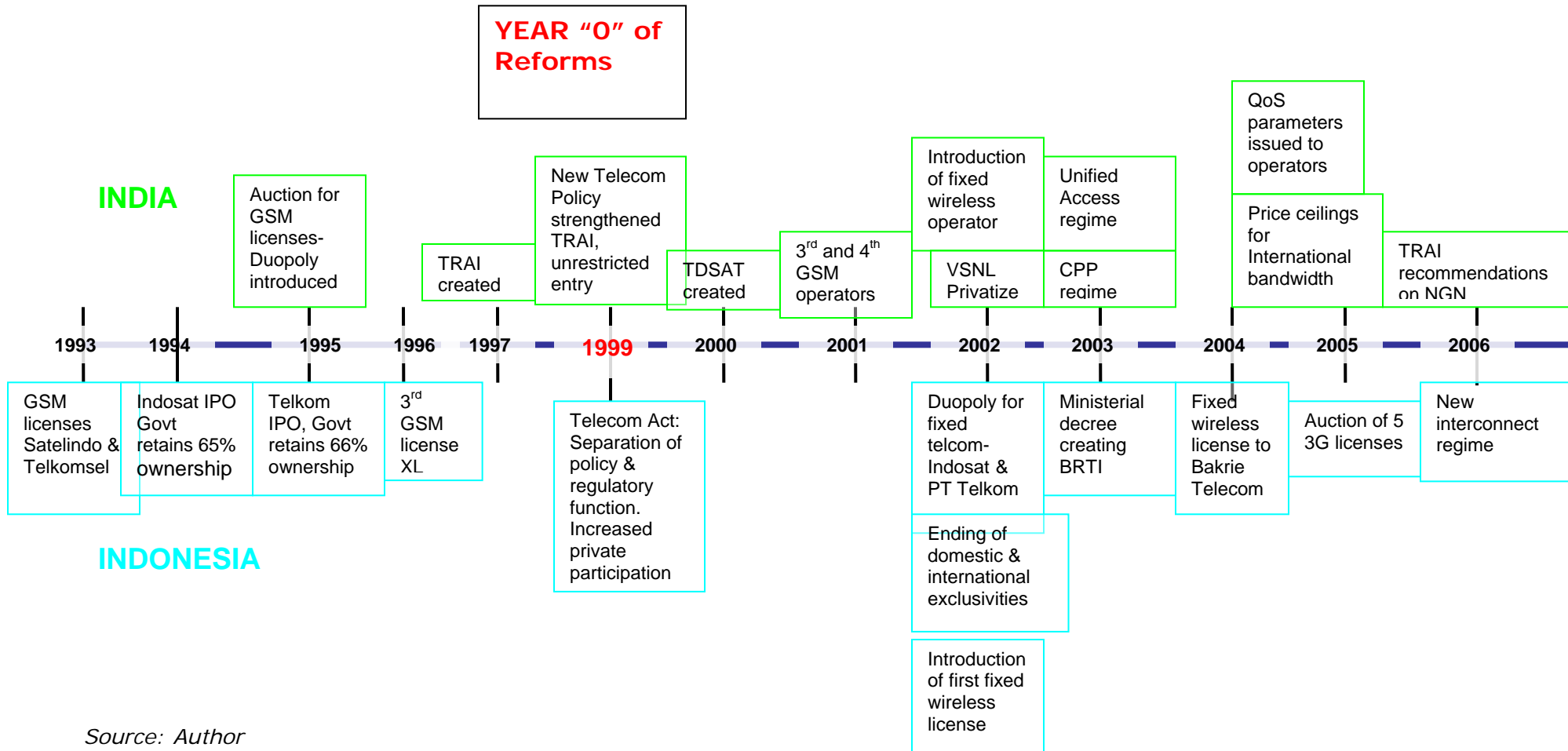
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<sup>1</sup>This unification process is incomplete as many technologies/ services do not come under the umbrella of the Unified Licence

<sup>3</sup> Ministerial Decree No. 31 of 2003.

<sup>4</sup> Badan Regulasi Telekomunikasi Indonesia (BRTI)

Figure 1: Timeline of Indonesia and India's Reform Process



In the interim, BRTI is crippled since legal powers have not been transitioned to the body and it lacks enforcement powers. Currently, the Regulatory body's budget is allocated from the Ministry (DGPT).

The Telecom regulatory Authority of India (TRAI) was established in 1997, nearly seven years before the Indonesian NRA. During the first two years of its existence, TRAI's effectiveness was severely constrained by its struggle with the Ministry that had it bogged down in litigation. It was only after the New Telecom Policy of 1999 (NTP-99) and the amendments to the TRAI Act of 2000 that TRAI became effective.

In January 2000, the government of India issued an amendment ordinance, which led to major changes in the institutional structure of TRAI. TRAI was split into two agencies, a "new" TRAI, divested of all its adjudicatory and dispute-settling powers, and a newly created agency named Telecommunications Dispute Settlement and Appellate Tribunal (TDSAT). The new institutional structure streamlined the legal appeals process and significantly cut down on delays that would have been encountered if telecom disputes were taken to the regular court system.

The successor TRAI has also been strengthened by three specific mandatory powers that deal with tariff fixation, fixing of interconnectivity charges and laying down standards for service and technology. In addition, it was now mandatory for the government to seek the opinion of TRAI on the need and timing of the new service providers although the recommendations will not be binding.

TRAI is widely perceived to be independent from the Ministry, unlike BRTI, and also more effective in carrying out its mandate. The Telecom Regulatory Environment (TRE) assessment conducted in both countries in 2006 find India scoring higher than Indonesia for both fixed and mobile sector, as can be seen on Figure 2 and 3. The TRE Assessment, developed by LIRNEasia and already implemented in a number of countries, is a perceptual index which gauges regulatory performance across six dimensions: 1) Market entry; 2) Scarce resources; 3) Interconnection; 4) Price regulation; 5) Anti-competitive practices; and 6) Universal service.

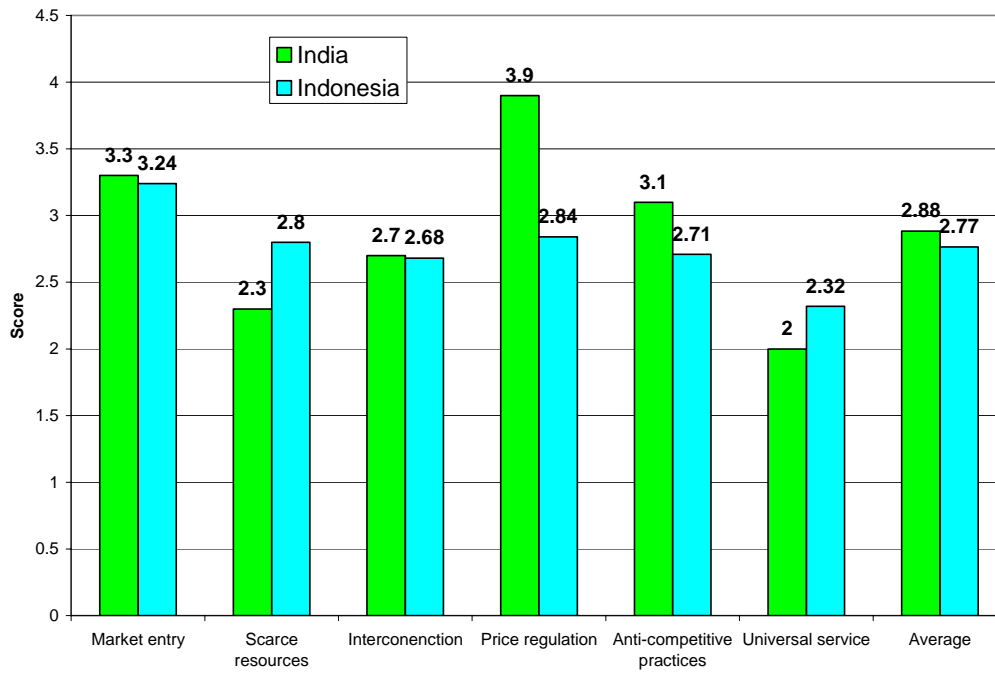
India's average TRE score for the fixed sector is 2.72 versus Indonesia's score of 2.50. Out of the six dimensions, India scores higher than Indonesia on four dimensions. India's TRE score for the mobile sector is 2.88 and higher than Indonesia's score of 2.77. India outperforms Indonesia on four dimensions out of six for the mobile sector.

### Competition

With the New Telecom Policy of 1999, India has moved rapidly towards fully competitive telecom markets. The theme of NTP-99 was to usher in full competition through unrestricted private entry in almost all service sectors, unless restricted by spectrum availability, under the aegis of a strong regulator (Malik 2005). Although liberalization initiated in 1995 stuttered for a few years, the NTP-99 marked a new beginning in India with the government at the centre committed to the implementation of this policy. The transition to the Unified Access Regime (UAR) in 2003 provided a strong boost to competitive forces by significantly lowering barriers to entry and simplifying licensing procedures. The UAR has been widely acknowledged to be forward-looking and geared to meet the challenges of the converged landscape.

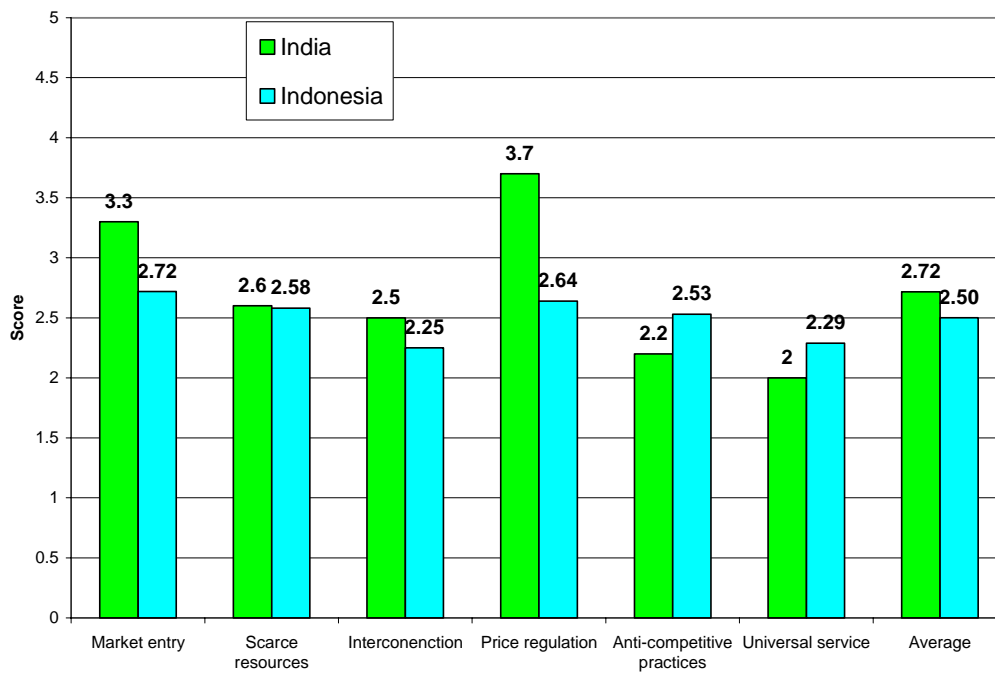
**Figure 2:**

**TRE Mobile Comparison: Indonesia and India 2006**



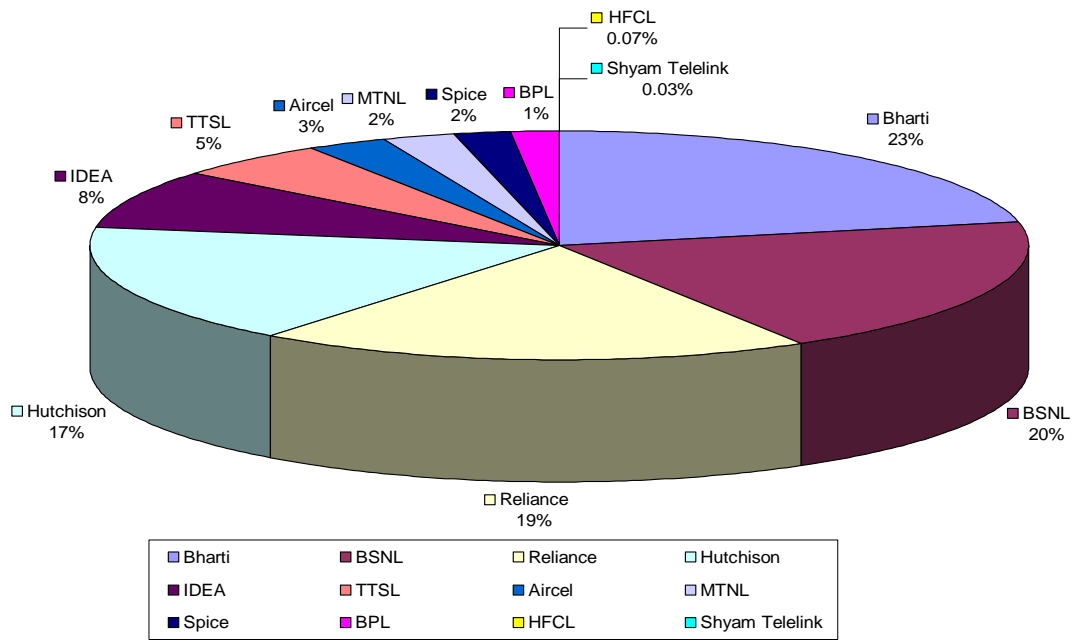
**Figure 3:**

**TRE Fixed Comparison: Indonesia and India 2006**



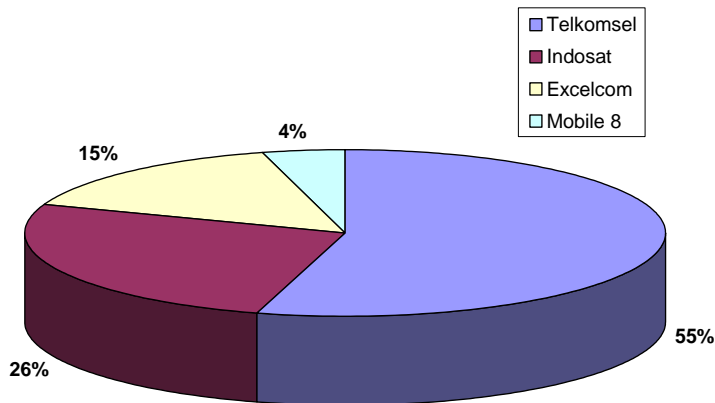
Source: Authors

**Figure 4: Market Shares: Indian Cellular Service Providers**  
(March 31, 2006)



**Figure 4: Market Shares: Indonesia's Cellular Service Providers**  
(June 30, 2006)

**Mobile market share by subscriber**





*Source: Authors*

The Indian mobile sector is competitive based on the number of players in the market<sup>5</sup> and taking into account how widely the market is shared among the operators, as can be seen on Figure 4.

Although Indonesia allowed private and foreign investment into the telecom sector through concessions (KSOs) a number of years before India did, none of markets in the Indonesian telecom sector can be described as being competitive. The mobile sector comes closest to having some degree of competition although it is dominated by the incumbent that has 55 percent of the market-share, as can be seen on Figure 4. The Herfindahl-Hirschman Index, a conventional measure of market concentration, measures Indonesia's mobile market at 5,082. A score above 1,800 indicates a highly concentrated market i.e., not enough competition. The HHI for the Indian mobile sector is 1686.

The Indonesian Government introduced a duopoly for fixed local, long distance and international in 2002. However, except for international gateway where a duopoly actually exists, for other fixed services PT Telkom is the monopoly provider. The Telecom Act of 1999 changed the legal framework to allow greater private participation. However, it took a while before Fixed Wireless Access providers using CDMA were introduced (2004) and new 3G operators (2006).

### **Comparative analysis of sector performance**

Sector performance can be measured across four dimensions: connectivity, price, quality of service and choice (Samarajiva et al. 2007). We have already covered choice in the previous section where we have seen Indian consumers having a wider selection of service providers to choose from in the mobile sector compared to Indonesia. India's advantage over Indonesia in terms of choice also stands for other markets like fixed wireless, wireline and Internet service. Quality of service (QoS) indicator data is collected for India by TRAI but is not currently collected in Indonesia by BRTI or DGPT. Hence, comparative assessment of QoS performance cannot be conducted. In this section, the analysis will focus on sector performance in terms of connectivity and price.

India and Indonesia are among the fastest growing telecom markets in the world (Gartner 2006) regardless of which reform trajectory either country adopted. Based on where the two countries stand in the reform process and taking into consideration the regulatory environment in both countries, one would expect the Indian telecom sector to post a stronger performance when compared to Indonesia. However, India lags Indonesia in mobile, fixed and Internet penetration. At the end of 2005, Indonesia had 21.6 mobile subscribers per 100 inhabitants compared to India's 8.22<sup>6</sup> percent. Indonesia's mobile penetration figures are nearly three times higher than India's. Although the difference is not as stark for the fixed sector, Indonesia at 5.99 fixed phones per 100 inhabitants is ahead of India's 4.58 percent at the end of 2005. Internet penetration for Indonesia and India are nearly similar (0.69 and 0.59 percent respectively) although even here, Indonesia leads.

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<sup>5</sup> Initially licenses were granted to operators on the basis to "circles" or regions. Currently, operators are free to opt for national licenses or a selection of regions of their choice based purely on business decision rather than regulatory requirement.

<sup>6</sup> This figure is till March 2006

The next section of the paper will try to explain why Indonesia's sector performance is better despite an unfavourable policy and regulatory environment as well as why despite having a favourable environment India's telecom sector has not performed better. Three possible explanations are offered below to shed more light on the counterintuitive results.

### Propositions

1. In 1999, when India and Indonesia embarked on substantive reforms of the telecom sector, India's telecom development was lower than Indonesia's and hence it has been playing catch-up ever since. It is a matter of time when the advantages of being ahead in the reform process and possessing a more favourable regulatory environment will push India ahead of Indonesia in sector performance.
2. India's lower average per capita income compared to Indonesia dictated the slower pace in the uptake of telecom services.
3. Lower prices in Indonesia have made telecom services more affordable and have stimulated demand and hence growth of the telecom sector compared to India.
4. Greater per capita investment in the Indonesian telecom sector compared to India has driven network rollout and penetration in Indonesia.
5. The democratic process of decision making has at times been a drag on the speed at which reforms can be implemented and the incumbent in India being one of the largest employer has vested interest groups that have slowed down the process

### Methodology

In order to compare the relative effectiveness of reforms in two or more countries, it is necessary to normalize the starting year when reforms were initiated in the countries being compared. Otherwise one would be comparing, for example, sector performance in a country with 10 years of reforms under its belt versus another which is in its second year of reforms. For the purposes of our analysis, we have marked the year in which reforms were initiated as "Year 0" and the subsequent years are marked as "Year 1," "Year 2" etc. This methodology allows us to compare countries that have embarked on the reform path in different years and provides a more valid basis of determining effectiveness of reforms in the countries being compared. Coincidentally, the "Year 0" of both Indonesia and India happens to be 1999.

### Proposition 1: India playing catch-up

In the Year 0 of reforms, India and Indonesia had practically the same penetration numbers for fixed and Internet. For mobile penetration India started at a lower number than Indonesia. However, as can be seen on Figure 5, the small gap differentiating India and Indonesia's mobile penetration has been widening with every passing year. India has not been playing catch up; rather it has been falling behind Indonesia on mobile penetration every year since Year 0.

Fixed penetration has been growing at nearly the same pace for India and Indonesia until Year 4, when Indonesia introduced a new entrant in the Fixed Wireless market. From Year 4, Indonesia's fixed penetration has been growing at a faster pace than India's and the gap has been widening.

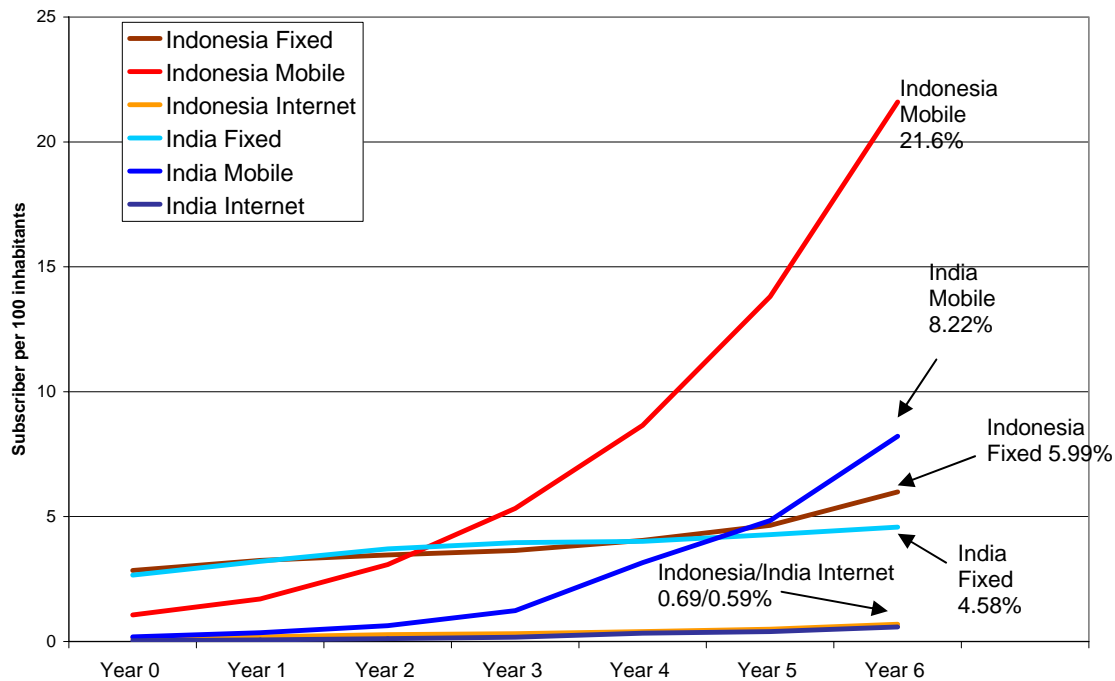
Internet penetration growth rate although indistinguishable for India and Indonesia, is low. In both countries, the incumbent is overwhelmingly dominant in the fixed

wireline market. Since Internet access in India and Indonesia relies mainly on dialup over wireline, the lack of competitive forces in the fixed market, the absence of mandated unbundling of the local loop and undersupply of fixed lines have negatively affected Internet access.

Based on the above, it is clear that Proposition 1 does not explain the anomaly between India's more enabling regulatory environment and its poorer sector performance vis-à-vis Indonesia.

**Figure 5:**

**Comparative ICT Penetration in India and Indonesia Post Reforms**



Source: Authors

Proposition 2: India is poorer

Generally, richer countries have a relatively larger addressable market for telecom services than poorer countries. Since a larger proportion of the population in richer countries find telecom services more affordable, the demand for telecom services is greater which in turn drives growth. If per capita income in India is significantly lower than Indonesia's it is but expected that India will have lower penetration.

However, as can be seen on Figure 6, there is not much difference in the Gross National Income (GNI) per capita<sup>7</sup> between India and Indonesia although Indonesia enjoys a slight advantage. Hence, Proposition 2 can be rejected as a possible explanation for India's poor sector performance in relation to Indonesia.

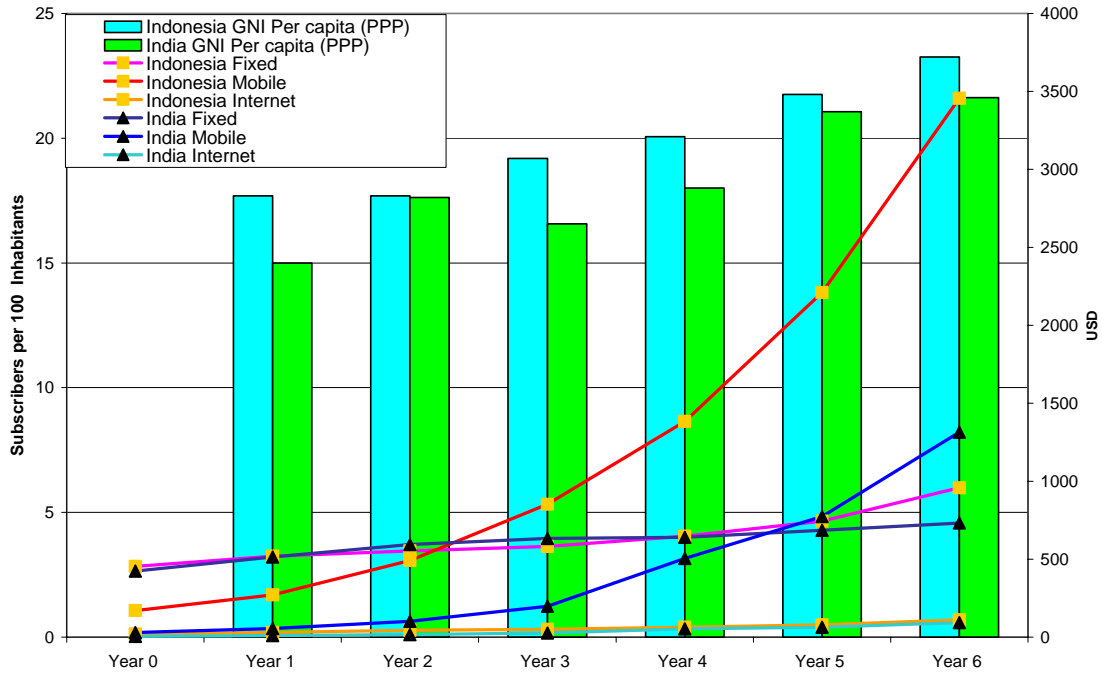
Proposition 3: Indonesia is cheaper

<sup>7</sup> PPP adjusted, Atlas method, The World Bank.

Lower prices expand the addressable market for telecom services. It has the same effect on demand and growth as having higher incomes, explored in Proposition 2. If Indonesia's telecom services were cheaper than India's, one would expect the former to have a relatively larger addressable market. Lower prices in Indonesia would stimulate demand and hence higher growth of the telecom sector in that country compared to India. However, as can be seen in Figure 7, Table 1 and 2, telecom services in Indonesia are significantly more expensive than India's.

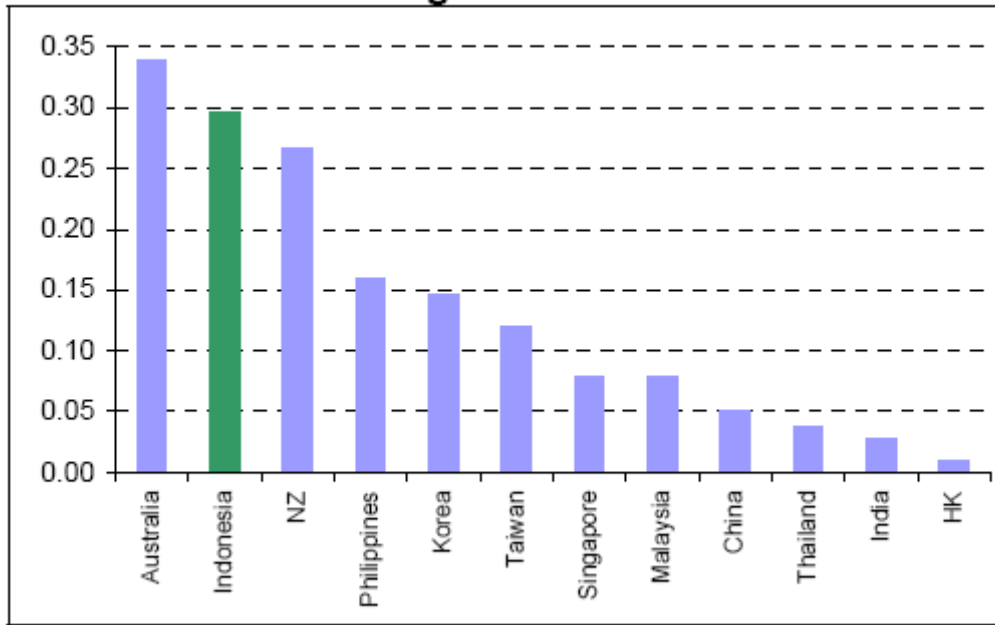
**Figure 6:**

**Comparative GNI Per Capita & Penetration in India and Indonesia**



**Figure 7:**

## Asian Wireless Telcos: Per Minute Pricing (US\$) in Indonesia Remains High



Source: Company data, Morgan Stanley Research

Indonesia's mobile calling prices are amongst the highest in Asia and India's are amongst the lowest, as can be seen on Figure 7. Therefore, it is surprising that Indonesia, despite having significantly higher mobile prices than India, is so far ahead of India in mobile penetration.

Leased lines are usually rented from a telecom operator by a private party to provide dedicated high-bandwidth connectivity between two or more locations. Hence leased lines are crucial inputs for providing a host of communication services required by Internet Service Providers (ISPs) and businesses among others. In 2006, Indonesia's leased line prices were 48 times the price for an equivalent line in India as can be seen in Table 1.

**Table 1: Annual Domestic Leased Line Prices**

2Mbps Link	2km	200km
Indonesia	\$18,000	\$45,000
	Ratios	
	India 1: <b>48</b>	India 1: <b>6</b>
India	\$376	\$7,603

Source: Goswami (2006)

Broadband Internet services in Indonesia are about two to three times the price in India as can be seen in Table 2.

**Table 2: Comparison of monthly ADSL retail prices in Indonesia & India : Prices (USD) and price ratios**

<b>Bandwidth</b>	<b>Indonesia*</b>	<b>India**</b>	<b>Price Ratio</b>
<b>384 Kbps</b> Usage limit: 1GB* 2GB**	USD74	USD23	3:1
<b>512Kbps</b> Usage limit: 2 GB*	USD93	USD41	2:1

*Source: Goswami (2006)*

It is evident that Proposition 3 does not explain the disjuncture between India's more favourable regulatory environment and its poor sector performance in relation to Indonesia.

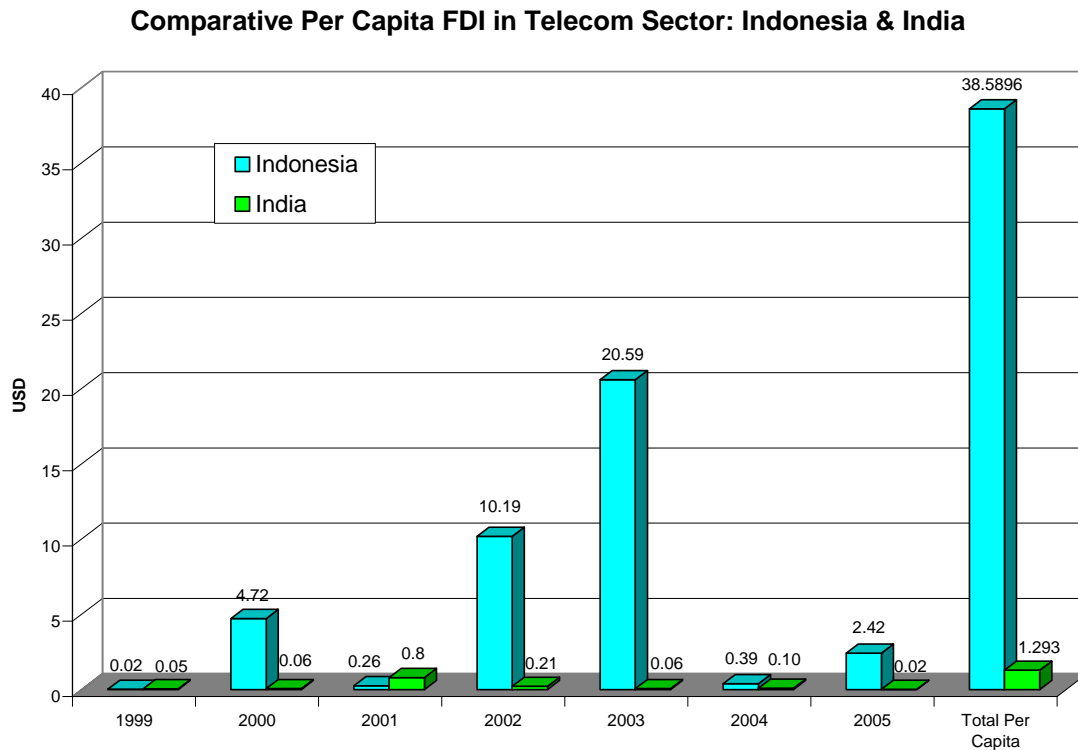
Proposition 4: Investment drives growth

As I have alluded to in the opening sections, a number of empirical studies have found strong and positive correlation between a favourable telecom regulatory environment and investment flows. For a capital intensive sector like telecom, investments are key to any efforts at rolling out network infrastructure. Based on empirical evidence and conventional wisdom we would expect India, with a more favourable regulatory environment and further down the reform road to attract more investment than Indonesia.

In the absence of comparable data on domestic investment in the telecom sector, we have focussed on Foreign Direct Investment (FDI) flowing into the telecom sector (available data seems to indicate that most telecom investments in the two countries are in the form of FDI). FDI per capita has been used instead of total investment to control for the differential in the size of the two economies.

Surprisingly, Indonesia has attracted more FDI per capita in the telecom sector than India in four out of the seven years since Year 0. When the per capita FDI is added up for all seven years, Indonesia has invested USD 37.58 per capita versus USD1.3 for India, a ratio of 1:30.

**Figure 8:**



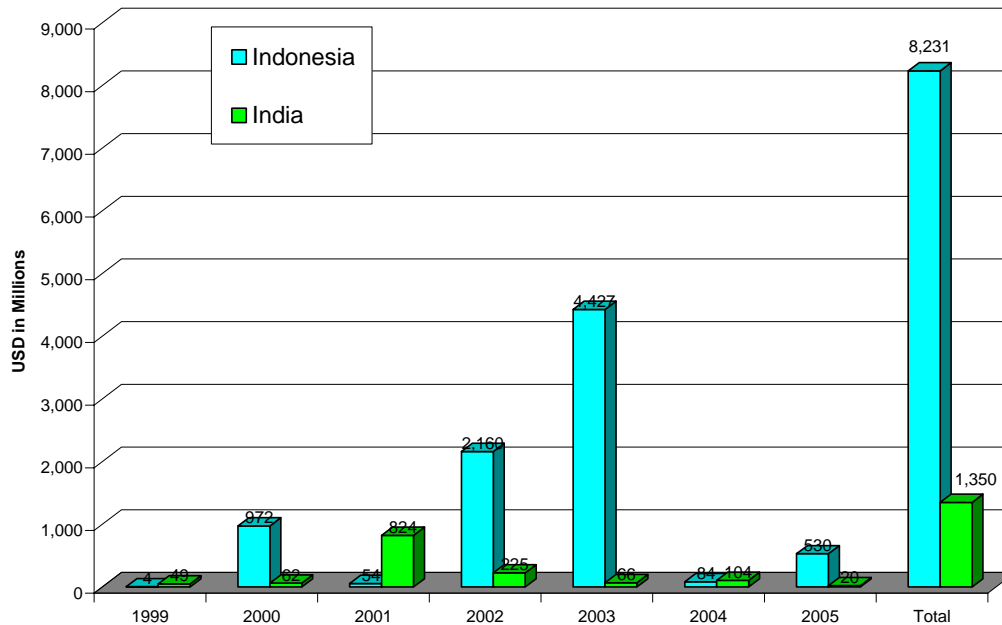
*Source: Authors*

Even if we consider total FDI flowing into the telecom sector, Indonesia attracts more FDI in five out of the seven years than India, as can be seen in Figure 9. The total investment made in the telecom sector in Indonesia during the seven year period is about 4.5 times greater than India's.

The most likely explanation for Indonesia's strong sector performance lies here. Despite possessing a more favourable regulatory environment, India has not been able to attract as much FDI into its telecom sector as Indonesia has. This finding is counter-intuitive because it goes against conventional wisdom and a number of empirical studies that posit a positive correlation between regulatory effectiveness and investment. Greater investments flowing into the sector has allowed Indonesian mobile operators to deploy BTS and network infrastructure at a more rapid pace and with greater geographical than India's.

**Figure 9:**

**Comparative FDI Flow Post Reforms in the Telecom Sector: Indonesia & India**



**Conclusion**

This paper calls attention to the fact that there may be more factors at play in shaping the attractiveness of a country's telecom sector to investment than regulatory effectiveness. Although the telecom regulatory environment is an important consideration in investment decisions, it may not be the only factor.

Taking the specific case of Indonesia, we can speculate on the factors that may have made it an attractive destination for FDI. Investors are usually looking for a stable environment where investments are insulated from arbitrary administrative action, sudden shifts in policy or market conditions. By granting exclusivities to the state owned incumbents in their respective markets and by tightly restricting entry, Indonesia was able to guarantee a relatively stable investment environment even though regulatory effectiveness was lacking. As Levy and Spiller (1994) note:

Some countries have regulatory regimes that drastically limit the scope of regulatory flexibility. Although such regulatory regimes may look inefficient, they may in fact fit the institutional endowments of the countries in question, and may provide substantial incentives for investment.



## References

- Cadman, R. and C. Dineen, (2006) *European telecom's lost investment: An analysis of the ECTA Scorecard*. SPC Network, Norwich: UK.
- Fink, C., Mattoo, A. and Rathindran, R. (2001). *Liberalizing Basic Telecommunications: The Asian Experience*, The World Bank, Washington DC.
- Fink, C., Mattoo, A. and Rathindran, R. (2002). *An Assessment of Telecommunications Reform in Developing Countries*. Policy Research Working Paper 2909, The World Bank: Washington DC.
- Gartner. (2006). Gartner Says Emerging Markets Hold the Key to Future Telecoms. URL: <http://www.gartner.com/it/page.jsp?id=499110>. Accessed on January 14, 2007.
- Goswami, D. (In Press). "WiFi: The Network Fix," in R. Samarajiva & A. Zainudeen, *Connectivity: Beyond Technology*.
- Gutierrez, L. and Berg, S. (2004). Telecommunications liberalization and regulatory governance: lessons from Latin America. *Telecommunications Policy* 24, pp. 865-884).
- Koesmarihati, S. (2005). Based on personal communication at BRTI, Jakarta, August 24, 2005.
- Levy, B. and Spiller, P. (1994). The institutional foundations of regulatory commitment: A comparative analysis of telecommunication regulation. *Journal of Law, Economics & Organization*, Vol. 10, no. 2, 201-246.
- Levy, Brian, and Pablo T. Spiller, eds. 1996. *Regulations, Institutions, and Commitment: Comparative Studies in Telecommunications*. Cambridge: Cambridge University Press.
- Malik, P. (2005). Regulation and Investment: Case Study of Indian Telecommunications Sector. In Melody, W. and Mahan, A. (eds.), *Report on the World Dialogue on Regulation Stimulating Investment in Network Development: Roles for Regulators*. WDR: Lynby, Denmark.
- Melody, W.H. (2005). "Regulation and network investment: A framework for analysis," in *Stimulating investment in network development: Roles for regulators*, eds. A.K Mahan and W.H. Melody, pp. 19-38. Lyngby, Denmark: World Dialogue on Regulation.
- Samarajiva, R., Goswami, D. and Galpaya, H. (2007). Telecom Regulatory Environment (TRE) Assessment: A six-country comparison. CPRSouth Conference, Manila, Philippines, January 19-21.
- Smith, P. and Wellenius, B. (1999). *Mitigating regulatory risk in Telecommunications*. Public Policy for the Private Sector, Note No. 189. The World Bank: Washington DC.