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Anti-Competitive Market Distortions and Their Impact

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EXECUTIVE SUMMARY

India has long been considered a potential economic giant. However, periods of impressive growth have been bookended with underwhelming economic gains and stagnation. India holds a key place in the global economy, and given the current global economic slowdown, its future has powerful implications for the future of the world.

India has also long been seen as a place mired in burdensome regulations, excessive bureaucracy, and market distortions. Despite roughly three decades of reform efforts, the Indian economy still suffers from costly, inefficient regulatory regimes. To be clear, we use the term “regulatory regime” to mean the legal, economic, and governance structure that applies in the country as a whole. This document seeks to identify these problematic policies and attempts to quantify their impact on the Indian economy. By quantifying the impact of distortionary policies on the economy, we also estimate the potential gains available to India, were it to replace these policies with pro-competitive regulations.

We view the regulatory environment in India through the lens of anti-competitive market distortions (ACMDs) and begin with an explanation of ACMDs and their theoretical underpinnings. ACMDs are policies or regulations which provide a competitive advantage to some players or a player in the market to the detriment of others. These distortions come in a variety of forms and can sometimes be difficult to identify. ACMDs may cause similar inefficiencies and losses to welfare as the state-owned monopolies which India has favoured for most of its history since independence.

The paper develops a competitiveness diagnostic for the Indian economy specifically. The diagnostic identifies the economic constraints that are suffered by the Indian economy. We do this by identifying ACMDs in a number of sectors. The ACMDs we identify broadly cover each sector of the economy and fall into three categories: property rights protection, domestic competition, and international competition. The number of distortions is large and the implications for the competitive environment range in severity from somewhat mild to highly damaging. This study identifies the solutions to these distortions and constraints, and then evaluates the economic gains that can be derived from the removal of distortions.

We apply our Productivity Simulator in order to determine these potential gains. The Productivity Simulator is a proprietary tool we have developed to measure ACMDs. The results show that if all ACMDs in India were replaced with truly pro-competitive policies, then the productivity of the Indian economy could improve by as much as a factor of 19. Assuming an average domestic capture rate of 20%, domestic GDP would rise by a factor of 4, making India the fourth-biggest economy in the world behind only the EU, US, and China. Growth on this scale depends on India adopting the most pro-competitive policies in every possible instance. The further from this ideal India is, the further it will be from reaching the ideal amount of growth. The purpose of this study is not to predict what growth is likely to arise in India, but rather to illustrate the ceiling which represents India’s growth potential and to show how much wealth is being lost to the Indian economy by the ACMDs that prevail.

Overall, ACMDs are widely prevalent in India, and many of them result from an effort to protect particular industries or firms, as is confirmed by the industry studies. For the reforms undertaken in India to unleash the country’s true potential, the government should focus on many of these distortions and seek to eliminate them.

1. OVERVIEW OF ANTI-COMPETITIVE MARKET DISTORTIONS (ACMDS)

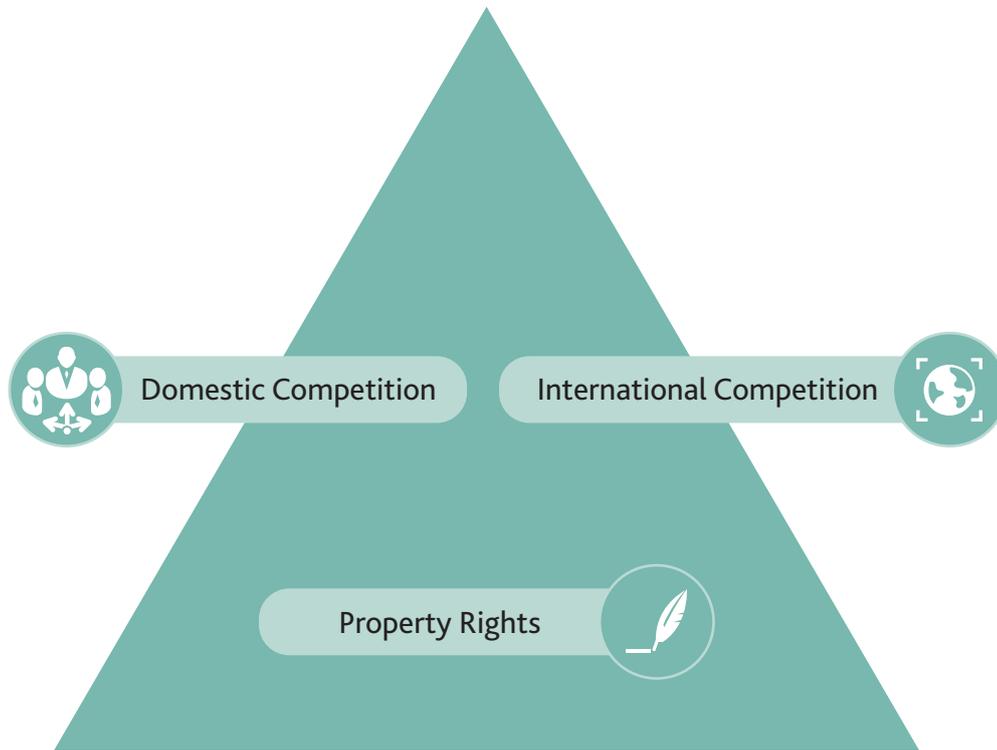
Markets everywhere may fail to reach competitive outcomes for many reasons, including market failures, anti-competitive behaviour by firms, and restrictive government policies. In the case of market failures and anti-competitive behaviour by firms, appropriate government policy may be used to partially or wholly eliminate damage to welfare. However, these policies have the potential to do more harm than good if they are not carefully implemented. The government can also implement policies that are not reactions to market failures or illegal firm behaviour but which also reduce welfare. When policy changes the way in which players in a market interact with each other, reducing welfare, the policy can be said to be an anti-competitive market distortion (ACMD), regardless of the reason for implementing the policy. Abbott and Singham (2011) define ACMDs as restrictions that "involve government actions that empower certain private interests to obtain or retain artificial competitive advantages over their rivals be they foreign or domestic".¹ There is a more comprehensive analysis of ACMDs in Appendix A.

Singham, Rangan, and Bradley (2014) categorise them into six types:² (1) government laws, regulations, or practices that eliminate competition completely; (2) government laws, regulations, or practices that lessen competition; (3) laws or regulations that are applied differently among firms, or regulatory exemptions given to some firms; (4) distortions caused by state-owned enterprises (SOEs); (5) action or inaction by competition agencies; and (6) anti-competitive state aid or support. ACMDs can fit into one or more of these categories and the impact on welfare will depend on the type of ACMD, the market the ACMD affects, if other ACMDs are present, and which ACMDs are present in related markets.

ACMDs are present in every economy, but the size of the burden of these distortions varies a great deal. The Indian economy is one of the most egregious examples of ACMDs because the Indian government has shifted its policy of import substitution and obvious trade barriers to more subtle and internal regulatory distortions. These include favouring SOEs in major sectors and protecting domestic production from foreign competition as well as favouring domestic production. While India is certainly not unique in its desire to maintain SOEs or to protect domestic firms, its growth while maintaining these tendencies suggests that there is considerable untapped potential for India to become a true economic force in the world. Preventing this realisation of potential are ACMDs. The difference between India's current reality and its potential reveals just how damaging these distortions are.

While Indian policy has moved away from SOEs monopolising markets and overt protectionism, current ACMDs are detrimental to welfare. There is more private enterprise to be sure, but many of these private firms are not able to operate in a competitive fashion. The Indian economy, its citizens, the global economy, and consumers worldwide are worse off because of it.

The diagnostic laid out in this document highlights specific areas of potential growth, especially damaging policies, and the solutions to them. The solutions are typically the mirror image of the constraints present. We then apply our Productivity Simulator, which aggregates non-survey data to gauge the ceiling of an economy, as well as the cost of avoiding reform. The Productivity Simulator tells us the potential productivity gains for countries as measured in changes to GDP per capita. The potential reforms contemplated give an upper level to this type of economic gain. From here, overall GDP numbers can be computed for the country as a result of this optimised environment. The Simulator also tells us the percentage gain in productivity of different



levels of these optimised gains. These are analogous to Level 1 (L1), Level 2 (L2), and Level 3 (L3) scenarios depending on the number of ACMDs eliminated (see below). We map these gains first for the country as a whole, and then apply them to self-contained scenarios.

The figures above and opposite illustrate the three core principles of a good regulatory system that can deliver growth. Economic literature strongly posits that the foundation of a productive economy is property rights protection. If property rights are left unprotected, the incentive to invest, compete, and innovate is lost. If the returns from effort cannot be captured, can be taken away by others, or cannot be regained if wrongly taken away, what incentive is there to exert effort? Furubotn and Pejovich describe the nature of property rights in this way:

Property rights do not refer to relations between men and things but, rather, to the sanctioned behavioral relations among men that arise from the existence of

things and pertain to their use ... The prevailing system of property rights in the community, then, can be described as the set of economic and social relations defining the position of each individual with respect to the utilization of scarce resources [p. 1139, authors' italics].³

The authors add in a footnote: "Roman Law, Common Law, Marx and Engels, and current legal and economic studies basically agree on this definition of property rights." In other words, the very nature of an economic transaction is defined by the right to property and this definition is not disputed. So, a lack of property rights protection effectively undermines the ability of economic agents to be economic agents. In developing countries in particular, establishing and enforcing property rights plays a significant role in creating the preconditions for growth.⁴ Therefore, all other factors influencing economic outcomes depend on the level and quality of property rights protection.



Domestic competition plays a significant role in the efficiency of both domestic and foreign firms. Competition among firms encourages innovation and upgrading of production processes, as well as positive externalities in local markets.⁵ Each of these features of competition has an impact on welfare, which justifies its inclusion as part of this analysis.

The term “international competition” refers to the degree to which a country allows foreign firms to access its domestic market and the degree to which it allows domestic firms to access foreign markets. Greater access to a wider variety of goods benefits consumers and greater access to less expensive or higher-quality inputs benefits firms. In addition, openness to international trade and investment provides domestic firms with incentives for innovation, as does exposing them to potentially more efficient foreign firms. All of these forces combine to generate gains in welfare.⁶ The Washington Consensus also noted the importance of eliminating distortionary trade policies applied differently in different areas.⁷ Import liberalisation is seen as particularly important because it eliminates the export disadvantage created by restricted access to less expensive imported intermediate goods.

The different factors in various indices, such as the World Economic Forum’s (WEF) Global Competitiveness Indicator (GCI), the World Bank *Doing Business Index*, and the Heritage Foundation *Economic Freedom Index*, can be indexed into the triangle above.

The weights used in calculating the values for property rights, domestic competition, and international competition in our Productivity Simulator were found by optimising an estimating equation using standard statistical methods. First, each of our available data points from the World Bank and the WEF’s GCI databases were divided into subcategories within the three competition policy areas (this is shown in the diagram below and more thoroughly dealt with in Appendix B). Using the estimating equations of foreign direct investment (FDI) stock as a function of property rights, domestic competition, and international competition; health expenditures as a function of property rights, domestic competition, and international competition; domestic credit stock as a function of property rights, domestic competition, and international competition; school persistence as a function of property rights, domestic competition, and international competition; and GDP per capita as a function of FDI stock, domestic credit stock, health expenditures per capita, and school persistence, we determined the weights which would optimise the predictive power of the set of estimating equations.

We assigned a random weight to each potential indicator in each subcategory and a weight for each subcategory in each policy area. Then, the equations for FDI stock, domestic credit stock, health expenditures, and school persistence were estimated using OLS regressions. The fitted (or predicted) values for each regression were then used to estimate the regression for GDP per capita. The mean absolute prediction error was calculated as a percentage of GDP per capita. Then, the program assigned a new weight to each value and subcategory, re-ran the regressions, and then predicted GDP per capita using the new fitted values. We repeated this process in order to minimise the distance between the mean absolute prediction error and perfect predictive power (0 prediction error). The resulting weights predicted GDP increases with 93% accuracy, using the simple regression set-up, and now predict GDP increases with 96% accuracy using the current framework. Further detail on the Productivity Simulator and the weightings applied in India are set out in Appendix B.

In addition, we have looked at two specific case studies where ACMDs are present—in the cotton-textile-garment sector and in civil aviation. These form two specific and separately published sub-studies (available at www.li.com/publications).

2. ANTI-COMPETITIVE MARKET DISTORTIONS DIAGNOSTIC FOR INDIA

The tables below illustrate the distortions in the Indian market and what prevents the Indian economy from realising the economic gains that could be accrued. We have divided the Indian economy into different sectors and identified policies in each sector which have negative impacts on the sector through distorting property rights, domestic competition, and international competition. These three factors—property rights, domestic competition, and international competition—promote economic growth and underlie productivity in a modern economy.⁸

2.1 INTELLECTUAL PROPERTY (IP) AND INFORMATION SERVICES

CATEGORIES	BARRIERS	OPPORTUNITIES
PROPERTY RIGHTS	<ul style="list-style-type: none"> » High piracy rate. » Significant government use of illegal software. » Majority of Indian users have pirated software. 	<ul style="list-style-type: none"> » More stringent intellectual property protections, including the following key elements: <ol style="list-style-type: none"> 1. Scope—IP protection for patents, trademarks, and copyrights—includes Trade Related Intellectual Property Agreement (TRIPS)-based requirements. 2. TRIPS requirements on provisional measures for infringement. 3. Specialised IP courts. 4. Limitations on compulsory licensing only in cases of competition violation (as TRIPS Article 31). » Patent Term Restoration available in cases where there are delays in granting the patent right.
DOMESTIC COMPETITION	<ul style="list-style-type: none"> » 3G Spectrum licences—effective inter-circle roaming arrangement among operators. » Difficult to obtain licences and permits. 	<ul style="list-style-type: none"> » Make the licensing and customs processes more transparent.
INTERNATIONAL COMPETITION	<ul style="list-style-type: none"> » India also charges a service tax on the import of films, music, and gaming software based on the value of the IP rights, rather than just a customs duty on the value of the carrier medium. » Broadcast services cannot be cross-border; must have presence in India. » Satellite services must be sold to an Indian competitor (and only when the domestic firm lacks capacity). » Foreign investment in news and current affairs channels up-linking from India is limited to 26%. 	<ul style="list-style-type: none"> » Eliminate localisation requirements in telecommunications and broadcasting. » Recognise internationally accredited labs for quality assessments of goods. » Reduce and/or eliminate customs duties. » Eliminate preferential rules for domestic companies. » Eliminate use of No Objection Certificates. » Loosen restrictions on professional services.

table continues...

CATEGORIES	BARRIERS	OPPORTUNITIES
INTERNATIONAL COMPETITION <i>continued...</i>	<ul style="list-style-type: none"> » Requirement that certain telecommunication equipment receives testing and certification by Indian labs; certification by internationally recognised labs is not accepted. The US International Trade Commission's survey revealed that, despite the various challenges associated with complying with these Local Content Regulations, their effect on the ICT industry has been limited. » Government is planning to increase the custom duty on network equipment, required for broadband and wireless services—likely to be around 17.5%. » 36% customs duty on LCD and LED television sets that passengers bring along with them as part of the duty-free baggage allowance of 35,000 Indian rupees (INR). » Professional services (legal, accounting, architectural, etc.) are heavily restricted (see Appendix C). » These restrictions give Indian firms an uncompetitive advantage. » Must secure No Objection Certificates. » Preferential rules in ICT sector are prevalent. 	

2.2 FINANCIAL SERVICES

CATEGORIES	BARRIERS	OPPORTUNITIES
DOMESTIC COMPETITION	<ul style="list-style-type: none"> » State-owned banks control 72% of India's assets. » Reinsurance monopoly by SOEs. » There remain a large number of sectors where private investment of any kind is prohibited, e.g. atomic energy and railway transport (other than construction, operation, and maintenance of (i) suburban corridor projects through PPP; (ii) high-speed train projects; (iii) dedicated freight lines; (iv) rolling stock including train sets, and locomotives/coaches manufacturing and maintenance facilities; (v) railway electrification; (vi) signalling systems; (vii) freight terminals; (viii) passenger terminals; (ix) infrastructure in industrial park pertaining to railway line/sidings including electrified railway lines and connectivities to main railway line; and (x) mass rapid transport systems). 	<ul style="list-style-type: none"> » Eliminate localisation requirements. » Lower capital adequacy requirements. » Eliminate local licensing requirements. » End nationality requirements for boards. » Increase competition in banking by limiting power of SOEs. » Eliminate reinsurance monopoly. » Allow investment across all sectors (including atomic energy and railways).
INTERNATIONAL COMPETITION	<ul style="list-style-type: none"> » Foreign banks can only provide services to Indian citizens if they have a physical presence in India and are approved by the Reserve Bank of India. » Significant non-equity banking restrictions, including denial of new licences for banks which control more than 15% of total Indian banking assets; highly specific directed lending requirements (40% must go to priority sectors for wholly owned subsidiaries, and 32% must be directed to priority sectors for branches, including specific percentage requirements for agriculture, small industry, and exports). » A majority of any bank's board of directors must be in-country Indian nationals. » Foreign banks may only establish 12 branches per year, and must meet a \$25 million capital adequacy requirement before opening the first branch. » Access to foreign currency is limited. » Priority Sector Lending requirements limit competition and increase the interest rate. » All investment from Pakistani citizens and companies must be approved by the central government; no investment is permitted in defence, space, or nuclear sectors at all. » Foreign investment is still prohibited for real estate, construction, tobacco products, chit funds, and gambling/lotteries. 	<ul style="list-style-type: none"> » Open up access to foreign currency, loosen restrictions on rupee conversion. » Allow foreign investment in B2B and B2C. » Lower or eliminate FDI caps across all sectors; this will be beneficial to Indian companies (see Appendix D). » Open competition in the banking sector by lowering barriers to entry for foreign banks. » Allow unfettered investment across all sectors for all nationalities. » End practice of denial of new licences for large foreign banks. » Eliminate directed lending requirements. » Eliminate nationality requirements for boards of trustees. » Lower capital adequacy requirements. » Open up professional services by ending Indian-specific licensing requirements. » Allow any qualified employee to become an equity partner in Indian firms.

table continues...

CATEGORIES	BARRIERS	OPPORTUNITIES
INTERNATIONAL COMPETITION <i>continued...</i>	<ul style="list-style-type: none"> » FDI equity caps in multiple industries. » These caps have been raised in multi-brand and single-brand retail, aviation, broadcast, and power exchanges. » A lifting of equity caps could lead to an increase of 100% in sales for US companies (if all restrictions were lifted). » Defence contracting has a 49% equity cap and remains subject to industrial licensing. » No foreign investment allowed in B2C e-commerce. » Even where FDI restraints have been lifted, other restraints make it difficult for multinational firms to control local affiliates, limiting their economic activity. » Foreign accounting firms may only practise in India if their home country provides reciprocity to Indian firms. » Only firms established as a partnership may provide financial auditing services, and foreign-licensed accountants may not be equity partners in an Indian accounting firm. » Restrictions on who can serve on the boards of insurance companies. 	

2.3 HORIZONTAL SYSTEMIC ISSUES

CATEGORIES	BARRIERS	OPPORTUNITIES
PROPERTY RIGHTS	<ul style="list-style-type: none"> » Use of compulsory licensing (e.g. Nexavar). 	<ul style="list-style-type: none"> » End use of compulsory licensing except where permitted under WTO regulations.
DOMESTIC COMPETITION	<ul style="list-style-type: none"> » Many sectors are both owned and regulated by the government, meaning that regulation is generally weak—regulatory bodies’ funding is dependent upon politicians. » The Essential Commodities Act of 1955 allows the central government to set the price of certain commodities (foods, cotton, iron, petroleum, auto parts, pharmaceuticals, textiles, steel products, etc.). It also allows the government to regulate the manufacture and distribution of these commodities, and to compel the sale of these commodities to the government. 	<ul style="list-style-type: none"> » Introduce truly independent regulatory bodies across all sectors. » Discontinue price-setting practices, including for ‘essential’ commodities.
INTERNATIONAL COMPETITION	<ul style="list-style-type: none"> » Domestic firms in certain industries (textiles, agriculture, fisheries, leather products, etc.) receive subsidised loans, minimum pricing schemes, and lowered export duties. » Special Economic Zones (SEZs) must export 100% of what they produce (most other nations require 50% export). » India’s stringent and non-transparent regulations and procedures governing local shareholding inhibit investment and increase risk to new market entrants. Even when legally permissible, attempts by non-Indians to acquire 100 percent ownership of locally traded companies often face regulatory hurdles that render such ownership unobtainable. » Certain items can only be imported via certain ports. » Extremely complex tariff system, exacerbated by the gap between the bound rate and the applied rate, which is exploited to handle changes in domestic demand by changing the tariff. Compound tariffs tax producers multiple times for the same product. » Use of quotas and import licences. » Lengthy customs clearance processes and delays. » Poor trade facilitation measures. » Particular problems with enforcement of Technical Barriers to Trade (TBT) and Sanitary and Phytosanitary (SPS) WTO treaties. » States impose excise taxes on different products (e.g. Maharashtra’s excise tax on wine). 	<ul style="list-style-type: none"> » End subsidies and other uncompetitive advantages for certain industries. » Lower export requirement in SEZs to embed them more firmly in economy. » End use of quotas and import licences. » Properly enforce WTO treaties to which India is already a signatory. » Simplify tariff structure and bring applied rate and bound rate together. » Improve trade facilitation practices. » Reduce barriers to FDI. » Allow free exchange of goods via all ports. » Eliminate excise taxes at the state and federal levels. » Improve customs processes. » The proposed Goods and Services Tax (GST) may eliminate distortions introduced by local excise taxes

2.4 CUSTOMS AND TAXATION

CATEGORIES	BARRIERS	OPPORTUNITIES
PROPERTY RIGHTS	<ul style="list-style-type: none"> » Retroactive taxation is used through changes to transfer pricing mechanisms. » The central government selectively imposes retroactive taxes and maintains a transfer pricing system 	<ul style="list-style-type: none"> » End use of retroactive taxation and the transfer pricing system.
DOMESTIC COMPETITION	<ul style="list-style-type: none"> » There are different tax systems in different states, often very unclear. » Government officials retain great discretion in how to administer tax regulations—this encourages and perpetuates corruption. 	<ul style="list-style-type: none"> » End retroactive tax collection. » Clarify the federal and sub-federal tax codes. » Reduce discretion in enforcement of tax policy.
INTERNATIONAL COMPETITION	<ul style="list-style-type: none"> » The general anti-abuse rule (GAAR) proposed in 2012 would allow for the prosecution of any transaction with tax liability implications, and not only those that primarily aim to reduce tax liability, contrary to international norms. » Manganese ore, which is used for steel manufacturing, has an import duty of 2%—the Steel Ministry seeks to increase this. » Domestic rubber growers have approached the government to increase duty on the import of natural rubber in order to combat falling prices and ever-increasing import of rubber. MPs from Kerala, one of the largest producers of natural rubber, have approached the central government to fix import duty at a minimum of 20% as against 20% or 20 Indian rupees per kg, whichever is lower. » 10% export duty on iron pellets (in an effort to reduce the loss faced by domestic steel industry due to export of iron ore in the form of pellets by exporters in India.) 30% duty charged on export of iron ore lumps and fines. 	<ul style="list-style-type: none"> » Conform taxation standards to internationally recognised norms.

2.5 AGRICULTURE

CATEGORIES	BARRIERS	OPPORTUNITIES
DOMESTIC COMPETITION	<ul style="list-style-type: none"> » Producers are given subsidies for fertiliser and fuel—the cost of these subsidies in 2013 was \$29.8 billion. » Wheat and rice have minimum price requirements and are resold to consumers at subsidised rates. » Limitations on approval of genetically modified organisms (GMOs)/GMO processes. » Highly restrictive labelling requirements. » Full table of SPS limitations in Appendix D (section 5.4.5). 	<ul style="list-style-type: none"> » End fuel and fertiliser subsidies. » Eliminate both minimum price requirements and highly inefficient food distribution and subsidy programmes. » Eliminate restrictions on GMOs in accordance with WTO principles. » End requirement of industrial licences. » Conform to international labelling standards.
INTERNATIONAL COMPETITION	<ul style="list-style-type: none"> » Export taxes, quotas, and bans are still imposed. » Imports must comply with regulations outside the international norm. » Quotas still exist for milk, corn, and oils. » Import licences are required for hundreds of agricultural products. » Pickles, mustard oil, groundnut oil, and bread are reserved for micro and small businesses and retain FDI caps. » FDI caps have been raised to 100%, except for products “reserved for micro and small enterprises”. » FDI in alcohol requires an industrial licence. 	<ul style="list-style-type: none"> » In conformity with WTO principles, end all export taxes, quotas, and bans. » Conform import standards to internationally recognised norms. » Eliminate quotas for foodstuffs. » Eliminate import licences.

2.6 EDUCATION

CATEGORIES	BARRIERS	OPPORTUNITIES
DOMESTIC COMPETITION	<ul style="list-style-type: none"> » Very high barriers to entry for new universities. » Rampant government intervention in the tertiary education sector. » Only non-profit universities can be accredited. » The government decides how many seats are available in private institutes and universities. » In primary education, schools must have government-trained teachers to offer proof of completion of primary school. » According to a 2001 Centre for Civil Society study, it takes 14 different licenses from four different authorities to open a private school in New Delhi—a task that, if done legally, could take years. 	<ul style="list-style-type: none"> » Introduce a central, independent regulatory body for primary, secondary, and tertiary education. » Open up private education to the market clearing point (no government set rate of seats). » Allow for-profit universities to open. » Reduce number of licences needed to open educational institutions. » Eliminate local-training requirement for teachers. » Allow teachers licensed abroad to teach in India.
INTERNATIONAL COMPETITION	<ul style="list-style-type: none"> » The Foreign Educational Institutions Bill of 2010 allows foreign universities to set up branches in India, but requires them to have 500 million rupees in an Indian bank, does not allow them to repatriate any funds, and requires a minimum of 20 years' experience in their home country. 	<ul style="list-style-type: none"> » Reduce barriers to entry for foreign universities and tertiary education providers.

2.7 AVIATION

CATEGORIES	BARRIERS	OPPORTUNITIES
DOMESTIC COMPETITION	<ul style="list-style-type: none"> » The air transport issue is both cabotage and the role of the SOE Air India, but also the slot allocation rules that are set by the Airports Authority of India. » Slots are grandfathered, and then a “use or lose” rule is applied. This favours incumbents. New airlines only receive their allocations from 50% of the slots remaining. » The Airports Authority of India is both the operator and the regulator of India’s airports. 	<ul style="list-style-type: none"> » Create an independent regulatory body for the airline industry. » Increase FDI cap for airlines, and in sector as a whole. » End the grandfathering of slot allocations. » End the “use or lose” principle with slot allocations.
INTERNATIONAL COMPETITION	<ul style="list-style-type: none"> » A foreign airline can start a new airline with a 49% stake in an Indian company that is 51% owned by local investors (the FDI cap can be raised to 74%, with government approval). » 100% FDI is permitted for greenfield airport projects under the automatic route. » Up to 74% FDI is permitted for existing airport projects under the automatic route, above 74% and up to 100% permitted under government approval route. » Up to 49% FDI is permitted in domestic scheduled passenger airlines under the automatic route. 100% permitted for Non-Resident Indians (NRIs). Up to 49% FDI under the automatic route is permitted in Non-Scheduled Air Transport Service. FDI above 49% and up to 74% is permitted under government approval route. 100% FDI permitted for NRIs. » Up to 100% FDI is permitted in helicopter services and seaplanes under the automatic route. » Up to 49% FDI is permitted in ground handling services under the automatic route. FDI above 49% and up to 74% is permitted under government approval route. 100% FDI permitted for NRIs. » Up to 100% FDI is permitted in maintenance and repair organisations; flying training institutes; and technical training institutes under the automatic route. » Investments are subject to relevant regulations, approvals from the Directorate General of Civil Aviation (DGCA) and security considerations. Foreign airlines are also allowed to invest in the capital of Indian companies, operating scheduled and non-scheduled Air Transport Services, up to the limit of 49% of their paid-up capital. Investments will be subject to government route. 	<ul style="list-style-type: none"> » Increase FDI caps across aviation-related sectors. » End requirement of central government approval for foreign airline investment.

2.8 MARITIME

CATEGORIES	BARRIERS	OPPORTUNITIES
INTERNATIONAL COMPETITION	<ul style="list-style-type: none"> » Foreign ships cannot be registered. » Full cabotage restrictions apply. » There are service taxes for transport of goods on inland waterways. » 100% FDI cap on construction and maintenance of ports/harbours. 	<ul style="list-style-type: none"> » Allow registration of foreign ships. » Eliminate service taxes on inland waterways. » End cabotage restrictions.

2.9 ENERGY

CATEGORIES	BARRIERS	OPPORTUNITIES
PROPERTY RIGHTS	<ul style="list-style-type: none"> » 35% of electricity generated in India is stolen—broadly speaking, there is resistance to the idea of electricity being a private good. 	<ul style="list-style-type: none"> » Privatising the electricity generation and supply sector—this has been shown to reduce the amount of electricity stolen in certain Indian states.
DOMESTIC COMPETITION	<ul style="list-style-type: none"> » The government owns, operates, and regulates the major energy sectors (coal, oil, and gas). » Local content requirement in solar panels, through the J. Nehru National Solar Mission. » Certain states (Andhra Pradesh, Haryana, Punjab, Madhya Pradesh, Maharashtra, Rajasthan, Tamil Nadu, Gujarat, Kerala, Punjab, Orissa, and West Bengal) have preferential tariffs for wind power projects. » Massive subsidies granted in solar, hydro, biomass, and wind power generation in the form of reduced taxes and customs duties, buy-back programmes, financial assistance, and cash transfers. 	<ul style="list-style-type: none"> » Introduce an independent regulatory body. » Privatising major energy sectors. » End local content requirements. » Ensure electricity sector maximising competition. » End subsidy programmes.
INTERNATIONAL COMPETITION	<ul style="list-style-type: none"> » Import duties on solar panels manufactured in China—potentially 26.9% on all companies, differing slightly from manufacturer to manufacturer. » 100% FDI cap in hydroelectric, coal, lignite, oil, and gas power plants—nuclear energy equity investments are curbed. » 49% FDI cap on power exchanges. » The Foreign Exchange Management Act stipulates that “FII/FPI [Foreign Institutional Investment/Foreign Portfolio Investment] purchases shall be restricted to secondary market only. No non-resident investor/entity, including persons acting in concert, will hold more than 5% of the equity in these companies and the foreign investment would be in compliance with SEBI (Securities and Exchange Board of India) regulations. Other applicable laws/regulations, security and other conditionalities apply.” 	<ul style="list-style-type: none"> » Raise FDI caps in all steps of the power generation process. » Eliminate preferential tariffs. » Lower import duties on solar panels and other such technology.

2.10 ROAD AND RAIL

CATEGORIES	BARRIERS	OPPORTUNITIES
DOMESTIC COMPETITION	<ul style="list-style-type: none"> » Indian Railways (IR) holds a virtual monopoly on rail travel in India. » For the few private lines that do exist, IR has the right to decide their freight tariffs. » The IR acts as its own regulator. » High motor vehicle tariffs. » 100% tax exemption for companies building roads for five years, and 30% for the following five years. » Subsidies available to companies doing industrial projects, including land rebates, stamp duty relaxation, electricity, loans, tax incentives, location-based incentives, and export incentives. 	<ul style="list-style-type: none"> » Break up and privatise IR. » Introduce an independent regulator for railways. » Eliminate tax holidays and subsidies.
INTERNATIONAL COMPETITION	<ul style="list-style-type: none"> » FII cap on infrastructure corporate bonds is \$25 billion 	<ul style="list-style-type: none"> » Raise FII cap.

2.11 TOURISM AND MEDICAL TOURISM

CATEGORIES	BARRIERS	OPPORTUNITIES
PROPERTY RIGHTS	<ul style="list-style-type: none"> » The central government has issued compulsory licences, revoked patents, and otherwise refused to protect the IP of several foreign pharmaceutical companies. 	<ul style="list-style-type: none"> » End the practice of compulsory licensing, except in line with WTO best practices. » Protect patents in a more robust manner.
DOMESTIC COMPETITION	<ul style="list-style-type: none"> » Price controls, labelling requirements, and complex regulation limit competition in the medical device sector—lack of foreign activity here is devastating, as India has a major shortage of medical supplies, particularly advanced medical devices. » The US International Trade Commission notes that “One estimate suggested that if the Indian government removed barriers to medical devices from abroad, the market could reach \$50 billion by 2025”—as opposed to \$4 billion today. » Certain medical devices (e.g. stents, heart valves, etc.) have price controls mandated. » The US International Trade Commission notes “Every USD 1 million invested in tourism creates 78 jobs.” » Drugs manufactured through domestic R&D are exempt from price controls for five years. 	<ul style="list-style-type: none"> » End price controls on medical devices. » Reduce labelling requirements on medical devices. » Level playing field between domestic and foreign-manufactured drugs by removing price controls across the board.
INTERNATIONAL COMPETITION	<ul style="list-style-type: none"> » Requirement that foreign acquisition of pharmaceutical firms be approved by the Competition Commission of India (CCI). In deciding whether to approve acquisitions, the CCI is charged with “balancing” the need to attract FDI with public health concerns. This “balancing” requirement erroneously presumes that FDI in the pharmaceutical sector is in tension with the government’s public health objectives. » Price control regulations in some sectors, such as the pharmaceutical sector, have further undermined the attraction to foreign investors of increasing their equity holdings in India. » Non-compete clauses are not allowed in pharma. » Tourism sector is propped up by massive subsidies: for land, stamp taxes, electricity, loans, “backward area” subsidies (Jammu, Kashmir, Himachal Pradesh, Uttarakhand), and other subsidies for “mega” projects. » Foreigners are only allowed to provide not-for-profit services. » FDI cap has been raised to 100% for greenfield—brownfield must still go through the government for pharmaceuticals. 	<ul style="list-style-type: none"> » Reduce the CCI’s purview to actual issues of competition, and not general regulatory oversight across several sectors. » End price controls. » Allow non-compete clauses. » End subsidies prevalent in the tourism sector. » Allow foreigners to provide for-profit medical services. » Raise FDI cap on brownfield development.

3. POTENTIAL GAINS TO THE INDIAN ECONOMY FROM SOLVING ACMDs

Scenario L1 applies the most basic improvements in doing business, for example making it easier to register a business, creating a one-stop shop for a businesses, and so forth. In particular, we simulate the improvement in domestic competition by improving the value to 6 (the maximum score possible for each underlying indicator, implying removing all distortions in that particular competition policy area) for the time it takes to get electricity, the cost of getting electricity, the cost of starting a business, the paid-in-minimum capital for starting a business, and the time it takes to deal with construction permits. Increasing these values to 6 simply means matching the country that has the best record in each of these categories.

Scenario L2 is based on improving the following values in India to equal 6: freedom to own foreign currency bank accounts; international capital controls; resolving insolvency—time (years); resolving insolvency—cost (% of estate); resolving insolvency—outcome (0 as piecemeal sale and 1 as going concern); resolving insolvency—recovery rate (cents on the dollar); intellectual property protection; favouritism in decisions of government officials; transparency of government policymaking; and improvement in all of the Doing Business indicators from L1.

Scenario L3 is the fully realised concept with a pro-competitive regulatory framework to encourage large-scale infrastructure investment. It is tantamount to catapulting India to the top of WEF, Global Competitiveness Forum, and other rankings. It also requires a governance mechanism that will generate trust for investors, consumers, and participants.

3.1 APPLICATION OF SIMULATOR TO THE INDIAN ECONOMY

The impacts on productivity are as follows:

Level 1	Essentially 0% increase in productivity	GDP per capita increases from constant USD \$1,500 to \$1,507
Level 2	148% increase in productivity	GDP per capita increases from constant USD \$1,500 to \$3,723
Level 3	1,875% increase in productivity	GDP per capita increases from constant USD \$1,500 to \$29,691

This is the total economic activity or output which will be created as a result of productivity gains arising from the better regulatory environment. However, some of this economic activity does not flow entirely into the Indian economy.

The total gain in productivity represents the value per person of all production of goods and services in India, as well as gains in production for other countries as a result of India's gains. When India becomes more prosperous, other countries will benefit from the larger Indian market which will increase demand for imports. Producers in other countries will benefit from access to more efficiently produced intermediate goods. The table above shows the total per person value of all these production gains generated by Indians.

The table and graphs below, however, show the per capita gains in GDP retained by India. At the first level of regulatory improvement, we estimate that only 10% of total gains will be retained. Only minor reforms are made at this level, which will not allow for meaningful changes in the competitive environment in India, so the gains will likely leak out of the country. At the second level of reform, an estimated 25% of productivity will be retained. At this level, improvements to regulations concerning foreign capital and currency will attract investment to India and increase the likelihood of productivity. At the third level of reform there will be a distortion-free regulatory system and 35% of total productivity gains will be retained. This capture rate is estimated considering the deep connections between economies globally. The majority of gains that will come from India becoming as competitive as possible will be realised globally. However, these large global gains only come about as a result of India's significant domestic improvements. These improvements will also lead to improvements in human capital stock, which will lead to higher capture rates as more of the productivity gains can be deployed by the local workforce. By way of comparison, the estimated capture rate for Chinese SEZs is 7% since their incentive structure is exclusively tax-based.

LEVEL OF REFORM	PRODUCTIVITY INCREASE	CAPTURE RATE	GDP PER CAPITA
None	—	—	\$1,500
Level 1	0.50%	10%	\$1,507
Level 2	148%	25%	\$2,504
Level 3	1,875%	35%	\$11,335

3.1.1 Level 1 (L1)

The negligible increase found in L1 comes from the process outlined in the section above. Improving the Doing Business indicators for India increases its domestic competition score from 3.77 out of 6 to 3.99 out of 6. For each of the models below, domestic competition = 0.22, property rights = 3.02, and international competition = 4.08.

Before any regulatory changes, India's log of GDP per capita was 7.31. Changing the Doing Business indicators increases this value to 7.419. This translates to an increase in GDP per capita from constant US \$1,500 to \$1,507. This is essentially a 0% increase in GDP per capita. Therefore, improving the time it takes to get electricity, the cost of getting electricity, the cost of starting a business, the paid-in-minimum capital for starting a business, and the time it takes to deal with construction permits each to a score of 6 will increase productivity by 0.5%, compared to the current environment with no regulatory changes.

It is initially surprising that the L1 changes do not meaningfully report productivity. However, when one considers how distorted the Indian market actually is, the fact that the productivity gains are very low for L1 can be explained by the following. The classic Doing Business indicators will make it easier for new businesses to be formed, but if those new businesses are not able to be effective and compete with entrenched, incumbent elites, then productivity gains will not be realised. This is a very significant discovery, because the conventional wisdom is that solving for the level of Doing Business indicators that are implicated by registration of businesses, property, and construction permitting, for example, will lead to significant economic benefits for India.⁹ The Indian government has itself set high stock in the World Bank *Doing Business Index* as a way of solving the economic constraints in the country.

The data shows that merely solving for these restraints without looking at the overall regulatory environment (which we solve for in L2 and L3 below) will not in fact yield significant gains for the economy. We are not saying that these barriers are not important. Indeed, data from other countries shows that as a country's market becomes more competitive, these issues become more important. And failure to address these issues will have a detrimental impact on overall economic development in India. However, exclusive focus on the Doing Business materials, to the exclusion of the deeper regulatory and legal/economic changes that are necessary to see productivity increases, is not sufficient. For example, without labour reforms, most new businesses are likely to be small businesses with low investment needs. Solving for these Doing Business issues will motivate necessity-driven entrepreneurialism and, as a result, small businesses with small output and low economies of scale.¹⁰

The gains in productivity realised in L1 do not translate directly to the same percentage increase in GDP for India. Our projected increase in productivity represents the gain in productivity for India's portion of the global supply chain. Other countries will benefit from improvements in India, which will increase GDP in those countries. Therefore, India will not capture all of the gains in efficiency generated by L1 in GDP terms. The production that it captures will be limited by low levels of human capital, which reduces the incentive for international dollars to remain in India despite the friendlier business environment.

The amount of production captured relative to the increase in productivity will vary by country. For less developed countries like India, which score poorly in property rights protection and international competition, the improved business environment of L1 will increase import demand and will not have a significant impact on the flow of capital into the country. This means that little of the productivity growth will remain in India. To account for this fact, we utilise a capture coefficient—a percentage of the increase in productivity which remains in, or is captured by, India's domestic economy. India's L1 capture coefficient is set at 10%, which means India's GDP would increase by 0.05% in L1.¹¹

India's current GDP is about \$1,877 billion. India's L1 GDP is, therefore, \$1,878 billion—virtually no change.

3.1.2 Level 2 (L2)

The 148% increase found in L2 uses the model outlined in the section above as well. Now, India's score for property rights protection climbs from 3.02 out of 6 to 4.46, the domestic competition score rises from 3.77 to 4.66, and the international competition score increases from 4.08 to 4.38.

This brings India's log of GDP per capita up from 7.31 to 8.22, or GDP per capita from \$1,500 to \$3,722.7—a 148% increase. Unlike L1, which only solved for the Doing Business issues, L2 addresses some more significant ACMDs. Removing ACMDs with respect to freedom to own foreign currency bank accounts, international capital controls, and resolving insolvency (in terms of time, cost, outcome, and recovery rate) allows more foreign money to come into the economy and pulls money previously stuck due to poor insolvency-solving processes back into the economy. Improving these areas makes capital move more freely and increases the amount of capital available compared to L1 or the status quo. Addressing ACMDs in intellectual property protection, favouritism in decisions of government officials, and transparency of government policymaking will increase investor and firm confidence. ACMDs in these areas leave people uncertain about the ownership and use of their ideas, how regulations will be interpreted, and how or why policies are made in the first place. Removing these uncertainties allows consumers and firms to use their time and money more confidently. The combination of these effects with a more entrepreneurial environment created by solving the Doing Business issues makes it more

profitable to utilise time and money in India and more likely that such activity will occur, compared to the status quo. This fact will bring about the gains in efficiency predicted here.

As in L1, the gains in productivity realised in L2 do not translate directly to the same percentage increase in GDP for India because our projected increase in productivity represents the gain in productivity for India's portion of the global supply chain and India will not capture all of the gains in efficiency generated by L2 in GDP terms.

Initially improvements in productivity will lead to rising investment and boost the economic growth rate. If at the same time (as we advocate) trade and investment distortions are eliminated, economic growth will lead to higher imports. In turn, the imports will help local firms take advantage of specialisation using low-cost foreign inputs, which will trigger another round of growth, exports, and, of course, imports. Since this is a complex chain that occurs over time, we again use a capture coefficient to account for this process. However, L2 improves property rights protection and international competition variables, and this provides the incentive for more of the gains to remain in India relative to L1. India's L2 capture coefficient is set at 25%, which means India's GDP would increase by 37% in L2.¹² India's L2 GDP is, therefore, \$2,571 billion.

3.1.3 Level 3 (L3)

L3 generates such an exponential increase in economic activity because it includes the final stages of reform that maximise consumer welfare and remove existing distortion. L3 is an idealised environment where all regulatory distortions are removed. It represents an absolute maximum for productivity.

The 1,875.42% increase was found using the model outlined in the section above. It is equivalent to saying that GDP per capita will be roughly \$29,690, or that each person will produce the equivalent of \$29,690. Although the increase over the initial value is very large, the per capita output is not unreasonable.

This productivity increase was calculated by simulating the idealised regulatory environment through changing the scores for property rights protection, domestic competition, and international competition each to equal 6. This represents a regulatory environment which removes ACMDs in every possible area. In this case India has the potential to unleash 18.75 times its current productivity.

This brings India's log of GDP per capita up from 7.31 to 10.299, or GDP per capita from \$1,500 to \$29,690—a 1,875% increase. This gain represents a ceiling for productivity. It tells us the maximum level of productivity which could be generated in India as it stands today if all ACMDs in the country were removed simultaneously. It imagines a scenario where no distortionary policies or practices exist at any level and predicts how productive the Indian population could be. It also tells us the amount of wealth which is being destroyed by ACMDs today.

As in L1 and L2, not all of the productivity gains will be retained by the Indian economy. However, because L3 improves the regulatory environment to an idealised level, the percentage of productivity which remains in India will be greater than in L1 or L2. India's L3 capture coefficient is set at 35%. This means that GDP increases by 656% in L3. India's L3 GDP is, therefore, \$14,190 billion.

3.2 POTENTIAL GAINS FOR INDIAN ECONOMY

Our Productivity Simulator suggests that the ceiling for the Indian economy's productivity is 1,875% higher than current productivity. This represents both the potential for the Indian economy and the losses caused by all these constraints. Economic losses of this magnitude generate a significant amount of poverty and destroy a large number of jobs.

If these constraints were completely removed, economic gains would be massive. In terms of GDP per capita, India currently ranks 169th in the world; however, if these constraints were removed, it would jump to 67th.¹³ The impact of this on job creation and poverty alleviation would be immense.

3.2.1 Potential Job Creation

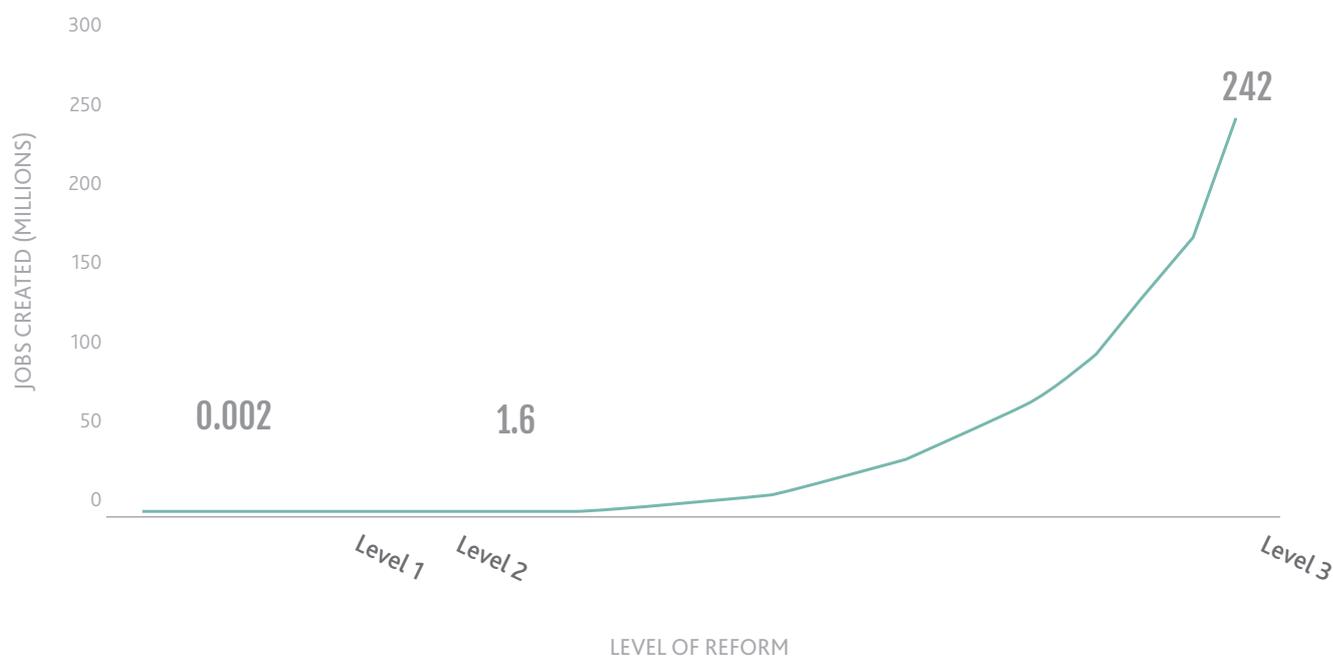
The figure opposite shows the large number of jobs which could be created if ACMDs in India were solved. The curve shows that job creation and ACMD correction have an exponential relationship, not a linear one. The non-linear shape is a result of spill-over effects, the size of impact for each issue, and interactions between ACMDs. Clearly the job numbers in L3 represent an aspirational goal, not an ultimate projection of what job numbers would actually look like. The actual job numbers that could be unleashed are more likely to be at the beginning of the curve between L2 and L3.

The gain in economic activity generated by solving for each particular ACMD will depend on which ACMD is solved for and the level of distortion in all other areas. However, there is a spill-over effect for each ACMD which is solved for. The gains from removing an ACMD are not felt only in that distortion's particular area, they are also felt in other areas as the added productivity spills over to the rest of the economy. The amount of spill-over will depend on which distortion is solved for and the size of the distortion.

Similarly, because each distortion has a different impact on productivity, the gains from any one distortion are different. This is another reason why the job creation curve is exponential. L1 and L2 correct for some of the relatively easier distortions to solve for. This means the impact on productivity is also relatively small. As we move towards L3, we move towards solving for all distortions—including those that are very difficult to solve for.

Also, as we solve more of the difficult distortions, the impact on the rest of the economy grows cumulatively because distortions interact with each other. A distortion which reduces productivity by itself by reducing a firm or individual's ability to maximise profit or utility, respectively, will reduce this ability by a greater amount if other distortions have the same impact. In other words, two distortions will tend to have more than twice the productivity-damaging effect of the sum of each distortion individually. The interactions between distortions also mean that the gains from solving ACMDs have increasing returns.¹⁴

This idea of cumulative interaction effects among various constraints and their removal is important in understanding the exponential impact on employment, productivity, and GDP growth. An example should help here. If property rights are well recognised and easily enforced, the owners of a commercial real-estate property are more likely to invest in enhancing the value of the property and gaining more productivity from the use of the real-estate property. In turn, this forces businesses which were previously using the real estate at a lower level of productivity to move to another real-estate property which was being used at an even lower level of productivity by another business. Such cascading displacement of lower-productivity firms leads to higher levels of employment and investment in skill development,



especially if labour laws allow more flexibility in the deployment of labour and investment in skills augmentation becomes critical as competition laws push firms to compete more effectively. Thus, a cascading upgrading of properties and their better utilisation spreads through the economy, enhancing investment, productivity, employment, and GDP.

There are currently 481,235,954 people in India's labour force.¹⁵ The unemployment rate is about 9%,¹⁶ which means about 439 million people are employed in India.¹⁷ In L1, GDP growth is 0.005%, which means about 2,000 jobs will be created by changing the World Bank Doing Business indicators alone.¹⁸ This is essentially no job growth in a country with a workforce of about 439 million. For any real job growth substantive changes need to be made in other areas.

For the potential growth in GDP estimated in L2 (37%), India's GDP per capita would grow to about \$2,054. This means it would remain a lower-middle income country for purposes of the elasticity of employment. A 37% increase in productivity for a lower-middle income country yields a 0.37% increase in employment across the country.¹⁹ This translates to about 1.6 million new jobs in India.²⁰

Above: Jobs Created

The L3 scenario shows that India has the potential to move from the lower-middle income category to the upper-middle income category. To estimate the number of jobs this will yield, we imagine India's economy growing gradually from its current size and creating new jobs according to this growth and the elasticities described in Appendix F.²¹

When India moves from the lower-middle income category to the upper-middle category, its economy grows by 164%.²² Growing 164% as a lower-middle income country results in a 16.4% growth in long-term employment.²³ Once India reaches the upper-middle income category, it will grow another 185%.²⁴ Growing 185% as an upper-middle income country results in a 33% growth in long-term employment.²⁵

Growing from a lower-middle to an upper-middle income country, therefore, creates about 72 million jobs.²⁶ This would bring the total employment size to 511 million people. Growing as an upper-middle income country to the projected productivity ceiling then creates about 170 million more jobs,²⁷ bringing total employment to 681 million. Total job creation is then about 242 million.

These numbers represent the number of jobs that could be created in an idealised situation where all distortions in the country were eliminated. The difference between this ideal scenario and the current situation represents the number of jobs lost due to distortions.

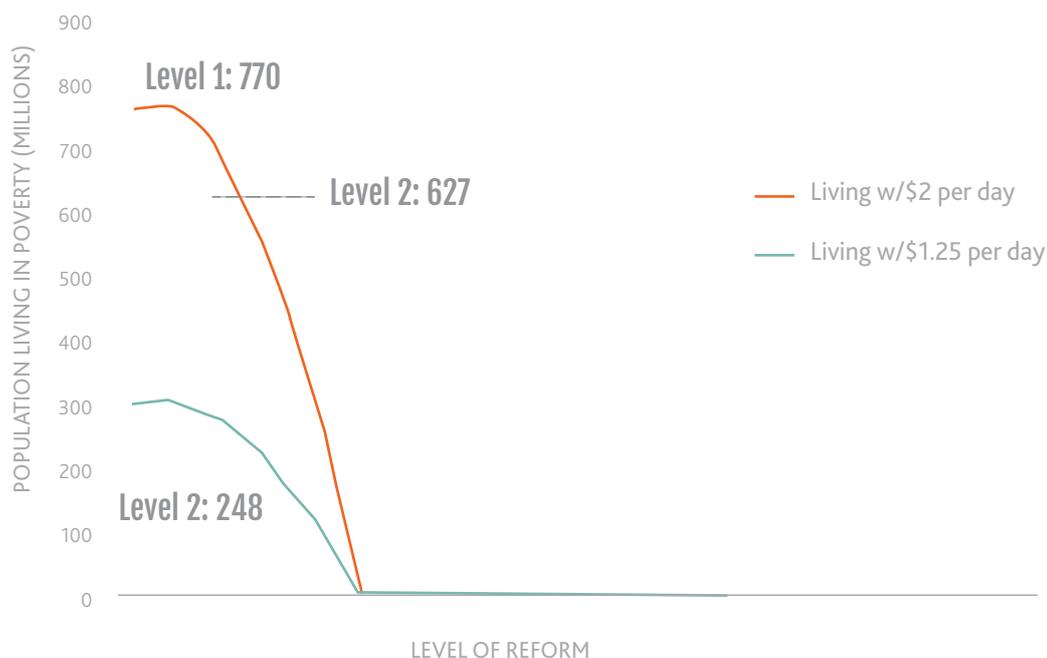
3.2.2 Ending Poverty in India

Currently, the poverty rate in India stands at about 59.2% for people living on \$2 per day or less,²⁸ and at about 23.6% for people living on \$1.25 per day or less.²⁹ That is, about 770 million Indians live on less than \$2 per day and about 307 million Indians live on less than \$1.25 per day. Solving for ACMDs does not have a linear effect on the poverty rate, as can be seen in the figure opposite. The exponential relationship between ACMD removal and poverty elimination is a result of the exponential relationship between growth and distortion removal. The spill-over effects, size of particular distortions, and interaction between distortions are the cause of this relationship, as was discussed in the previous section (3.2.1) above.

India's income elasticity of poverty has been estimated to be 0.43.³⁰ This means that for every 1% increase in income per capita, there is a roughly 0.43% decrease in the poverty rate.

The roughly 0% growth associated with L1, therefore, yields a 0% change in the poverty rate. There is no effect on poverty from L1.

L2 generates an increase in GDP of 37%. We will use the gains in GDP instead of GDP per capita for our estimates to capture the true effect on the Indian economy, which is what will translate to poverty reduction. With an elasticity of poverty of 0.43, this translates to a reduction of the poverty rate by 19%. For people living on under \$2 per day, the poverty rate would fall by about 11% to about 48.2%,³¹ which means that about 627 million Indians would be making less than \$2 per day,³² and 143 million Indians who currently make less than \$2 per day will now make more than \$2 per day. For people living on less than \$1.25 per day, the rate will fall by about 4.5% to about 19.1%, which means that about 248 million Indians will live on \$1.25 per day or less,³³ and that about 59 million Indians who lived on \$1.25 or less per day will make more than \$1.25 per day.



The potential growth in GDP of 656% from L3 can lead to a 282% reduction in the poverty rate.³⁴ This estimate tells us that this type of growth would eliminate poverty in India at both the \$1.25 per day level and the \$2 per day level.

However, raising productivity and incomes along these lines will also increase prices across the country. Therefore, the poverty line defined at a national level in India will rise alongside prices and incomes. One measure of poverty, which the OECD reports, estimates poverty rates as people earning less than 50% of the median income nationally. In the US, for example, about 17% of the population earns less than 50% of median income.³⁵ Rising poverty lines equate to rising standards of living across the income distribution. The potential growth in income in India would vastly improve the quality of life of millions.

Above: Population Living in Poverty

3.3 POLICY PRESCRIPTIONS AND RECOMMENDATIONS

We have therefore developed a prioritisation plan for Indian policy-makers to determine what their policy priorities should be. The priorities are as follows:

1. Flexibility of labour market reform is key to economic advancement in India.³⁶
2. The regulatory reform process should be made more transparent, with greater emphasis on cost/benefit analysis.
3. To increase competition in infrastructure, we advocate a particular type of privatisation which improves competition in major infrastructure areas such as energy, road, and rail.
4. Stronger protection for property (including intellectual property) is needed.³⁷
5. The Doing Business climate in India should be improved as World Bank data advocates.³⁸

4. CONCLUDING REMARKS

Our major conclusions are as follows:

1. Anti-competitive market distortions (ACMDs) have a major detrimental impact on the productivity of an economy and thus the economic growth of a country.
2. ACMDs can be classified according to three major dimensions: property protection, domestic competition, and international competition.
3. Modelling the effect of ACMDs on productivity and thus on economic growth using panel (cross-sectional and time series) data from more than 100 countries over a ten-year period allows us to measure the impact of ACMDs for a specific country.
4. Applying the model to India shows that India's economic growth potential is substantial if serious attempts are made to tackle ACMDs.
5. We augment our modelling-based analysis with two separately published case studies which are available on the Legatum Institute website (www.li.com) on Indian industries—cotton/textile/garment and civil aviation—to do a sectoral assessment of the ACMDs and their impact on the two industries' economic potential. We conclude that these industries could be substantial wealth generators for India if ACMDs were removed or at least substantially reduced.
6. While every country has a growth potential curve which is exponential (GDP plotted against percentage of distortions eliminated), India's is particularly steep. This is why the productivity gains from merely optimising the World Bank Doing Business Indicators are comparatively slight. Most of the real gains are to be had by eliminating the types of distortions that are more deeply embedded in the economy, which is clearly a policy challenge for the Indian government.

We have established that India's growth potential is untapped and that tapping the full potential will require a significant policy investment because the real gains in India lie in the distortions that are supported by powerful industry groups. These are solved only at Levels 2 and 3 in our productivity model. Avenues for future study include more specific case study work in other areas where we can develop further specific recommendations.

5. APPENDICES

5.1 APPENDIX A: ANALYSIS OF ACMDs

The economic literature traditionally takes the perspective that governments intervene with policy when there is a market failure, defined by Winston (2006) as “an equilibrium allocation of resources that is not Pareto optimal—the potential causes of which may be market power, natural monopoly, imperfect information, externalities, or public goods”.³⁹ Ideally, policy will address market failures in such a way that no one is made worse off and total welfare increases. When a policy increases inefficiencies caused by a market failure, it is said to be a government failure. Government failures are one source of ACMDs. A failed response to a market failure reduces welfare and will, therefore, change the market equilibrium, which is the definition of an ACMD. These ACMDs are difficult to identify because they require comparison of the outcome after the policy is implemented with some welfare-maximising, counterfactual state.

The easiest ACMDs to identify are government policies enacted for the express purpose of favouring some subset of players over another. For example, the long-standing and recently departed Indian policy of small-scale reservation in certain industries was enacted to protect small- and medium-scale businesses from large competitors. The economic wellbeing of the protected firms was ensured at the expense of large firms and consumers. Any possible cost savings from scale economies were lost in favour of preserving certain, often inefficient, firms.

Government failures are essentially unintentional ACMDs and policies favouring one group over another are explicit ACMDs. Between these two exist some of the most damaging ACMDs: policies that aim to provide a competitive advantage to one competitor over others, but do so under the guise of market failure correction. Powerful private entities vying for special privileges will push for this type of reform and politicians will be more comfortable supporting these policies because they can be justified publicly. If the policy

fails to correct the market failure to which it is allegedly directed, it will look like a government failure.

A common example of a policy used to provide a competitive advantage for one group over another that is disguised as a response to a market failure is a universal service obligation (USO). When the market fails to provide a key service to certain geographic regions, for example, a USO can mandate that private firms provide service to unserved areas. Such firms incur the cost of serving these areas in exchange for the right to operate in more profitable areas. When implemented correctly, the USO corrects the market failure of lack of access.

However, a USO can be structured in such a way that it becomes an ACMD. For example, if the universal service obligation (fund) is too large, it can be used by dominant regulated firms to anti-competitively cross-subsidise⁴⁰ their participation in competitive sectors with USO charges paid by customers in the regulated or “national monopoly” sector.⁴¹ Also, a USO can increase prices in a deregulated market by allowing the incumbent to maintain a monopoly in high-profit segments while promoting less efficient entry in low-profit segments because incumbents will compete less aggressively in these markets.⁴² Furthermore, when a USO protects a certain market from entry, the incumbent will be able to raise prices in the contested market and will not necessarily reduce price in the monopolised market.⁴³

Altering the competitive position of players in a market is inefficient relative to the competitive equilibrium. Singham, Rangan, and Bradley (2014) show the effect on welfare for domestic and foreign producers and consumers in a single product market when ACMDs are present.⁴⁴ Singham et al. reinterpret ACMDs in terms of the relative cost differences they generate between producers and show how artificial cost advantages or disadvantages change welfare for each group of players in a market. For example, a policy protecting small and medium businesses from competition

from large firms which prevents firms from scaling up and taking advantage of scale economies would put domestic producers at a cost disadvantage relative to foreign producers not restricted by such a policy. Overall, domestic producers would be harmed by this policy, foreign producers would benefit, and consumers would be harmed (because a more competitive group of producers would not exist and the level of competition overall would be lower). Any ACMD can be cast in terms of cost in a similar way and the welfare effects can be analysed.

The list of ACMDs in India is long. It includes a range of policies of different types with different damaging effects on welfare. Some are obvious to outside observers, such as the existence of the state-owned airlines, which have different incentives from private airlines and the financial support of the government. Some are more subtle, such as the fact that procurement power in railways is centralised, which allows vendors to form cartels to extract rents. In some instances, ACMDs work together to create a compound effect on welfare, such as the minimum support price for sugar-cane which reduces (and sometimes eliminates) margins for sugar producers (which do not have any price support). This policy combines with the policy preventing sugar producers from exiting the market unless someone is willing to take over their mill to put sugar producers in the unenviable position of being legally responsible for paying for sugar-cane at above market prices even when the sugar they produce sells for less than the cost of sugar-cane and then being forced to stay in the market and continuing to operate even when losses begin to mount. Also, the vast majority of revenue (85%) earned from sugar sales is required to go to farmers first before any employees or creditors are paid. So sugar producers have to operate while making losses, are not allowed to pay their employees from what little revenues they earn, cannot pay creditors either, and—if they cannot find employees to run the mill or creditors to finance their operation during down periods—can be arrested for not producing sugar.⁴⁵ The sugar-cane price support is an ACMD favouring farmers over downstream

producers and consumers, the policy preventing mills from closing is an ACMD favouring farmers over the mills, the restriction on where revenues can be used favours farmers over mill workers and creditors, and all of these ACMDs combine to drastically reduce welfare through the value chain. Additionally, the losses incurred by sugar mills are often financed by state-owned banks through loans which eventually turn into bad debts and undermine the efficiency of the banking system. These bad debts are managed through the recapitalisation of banks using funds from the exchequer. Thus the taxpayer eventually has to cover the losses created by the ACMDs in the sugar sector. The consumer gets hit twice, once as a consumer and once as a taxpayer.

5.2 APPENDIX B: THE PRODUCTIVITY SIMULATOR

The purpose of the Productivity Simulator is to model the economic gains that can be achieved as a result of solving the constraints that limit economic growth arising from adversity in three primary factors: lack of property rights protection, lack of competitive markets, and lack of an open trading environment. We have classified numerous factors into these three broad headings (the full list can be found in Appendix C).

The Productivity Simulator enables us to estimate how much economic activity will be created by a country depending on how many constraints are solved. It is an economic diagnostic tool that we have developed in the Enterprise Cities Project. It measures the economic activity unleashed by solving for regulatory constraints on growth across a number of sectors. By sorting the factors and calculating the appropriate weightings for each of them, the Productivity Simulator has arrived at much more accurate readings than all the existing indices and databases (such as WEF GCI, World Bank Doing Business, and others).

Any truly competitive environment requires efficient property rights protection. Without well-defined property rights, the incentives that influence the behaviour of individuals and firms and drive economic growth are lost. Therefore, the Productivity Simulator accounts for the fact that without property rights protection, removing ACMDs in domestic and/or international competition will have a small, transitory effect on growth and productivity.

Domestic and international competition each have underlying factors that influence their quality within a given country, so each type of competition receives a unique score. However, with respect to their impact on productivity, the domestic and international competitive environments are directly

connected. The Productivity Simulator therefore accounts for this fact in its regression analysis.

The Simulator considers three potential scenarios. The first scenario is Level 1 (L1), which applies the classic “ease-of-Doing Business” indicators (for example, World Bank Doing Business Indicators). The second scenario is Level 2 (L2), which applies these ease-of-Doing Business indicators, but also allows a modest opening to foreign investment such as water, or waste water, management, an improved insolvency law, and better enforcement of existing intellectual property laws. The third scenario is the fully realised Level 3 (L3) with all constraints removed. The economic activity in these scenarios is derived as a result of the application of the productivity gains in percentages to the existing GDP per capita of India so that the productivity gains can be applied to GDP per capita. We can therefore derive GDP gains as a result of different levels of constraint removal.

The Simulator is built using an underlying dataset which does not depend on survey data, but instead relies on real figures which represent ACMDs within a country. This allows us to quantify the benefits from removing ACMDs in terms of productivity and GDP growth. Using this unique dataset of non-survey data, the Productivity Simulator predicts how per capita production will improve in a particular country. Productivity is measured in terms of GDP per capita. This works because GDP per capita is the average total productivity of each individual in an economy. We estimate a productivity function to determine the factors which affect productivity. These factors are themselves influenced by the scores for domestic competition, international competition, and property rights protection. Our productivity function is shown in Figure 1.

Figure 1: Productivity Function

$$\begin{aligned}
 \log \text{ of GDP per cap} & \\
 &= \beta_0 + \beta_1 \\
 & * \log \text{ of FDI stock} + \beta_2 * \text{Health expenditures per cap} + \beta_3 \\
 & * \text{Domestic credit stock} + \beta_4 * \text{School persistence} + \beta_5 * \text{Fuel exports} + \beta_6 \\
 & * \text{Ore and metal exports}
 \end{aligned}$$

The *log of FDI stock* variable is the logarithm of the stock of Foreign Direct Investment in a given country in a given year and represents the stock of foreign capital available in a given country in a given year.⁴⁶ The *Health expenditures per cap* variable is a dollar value per person spent on healthcare in a country in a given year and it captures the influence of overall health in a country. *Domestic credit stock* is measured as the value of credit provided in an economy by its own financial sector and is reported as a percentage of GDP. This captures the available credit in an economy from its own financial sector. *School persistence* measures the proportion of the population that reports to have completed primary school and/or advanced to secondary school. This controls for the human capital stock within a country. *Fuel exports* and *Ore and metal exports* are both reported as percentages of total merchandise exports and are both controls for differences in productivity that arise from the existence of natural resources within a country.⁴⁷

These scores are calculated by weighting subcategories within each of the three main areas, and these subcategories are themselves defined by a weighted average value of the underlying data from our original dataset. A statistical program is used to determine the precise weights to be applied to each data point and the subcategory to which the data points belong in order to generate scores for property rights protection, domestic competition, and international competition that represent the true quality of each of these areas in a particular country. Changes in the underlying data which would occur as a result of the reduction of distortions in these three dimensions generate improved values in the three main categories, which then—through regression analysis—predict changes in productivity. The regression analysis accounts for the fact that property rights protection is essential for meaningful economic growth and the fact that domestic and international competition are entirely interwoven.

The potential benefits to the country are calculated by determining the effects of policy changes on productivity under different possible scenarios. For reduction of distortion to generate productivity and growth, it must improve productivity. The scores for domestic competition, international competition, and property rights protection (the calculation of these indicators is described below) have an indirect effect on productivity. That is, changing a regulation does not make an economy more productive, but changing

a regulation will determine the rules that productive entities must follow and therefore effects the decisions those entities make. This then has an impact on productivity.

	log gdp per cap	
log fdi stock	0.362*** (0.0254)	
health expenditure	0.000258*** (0.0000274)	
domestic credit provided by financial sector	0.00197*** (0.000567)	
school persistence	0.0217*** (0.00230)	
fuel exports	0.00695*** (0.00119)	
ore and metal exports	-0.00537*** (0.00160)	
constant	3.592*** (0.143)	
N	383	
adj. R-sq	0.903	
Standard errors in parentheses		
* p<0.10	** p<0.05	*** p<0.01

Each variable is statistically significant at the 99% confidence level and the regression as a whole explains about 90% of the variance in GDP per capita between countries. This production function captures the determinant of productivity within a country at a given time with a high degree of accuracy. The mean absolute prediction error is about 4%, which means that the above regression is roughly 96% accurate when estimating GDP per capita when given the values for the independent variables. This level of accuracy is much higher than other comparable indicators, such as the World Economic Forum's Global Competitiveness Indicators which have an accuracy of about 19% when used to predict GDP per capita. That is, when using the WEF's own indicators in the regression structure they suggest, the regression has a mean absolute prediction error of about 19%. This is likely due to the fact that the WEF's GCI indicator is a single value which is meant to capture the overall competitiveness of a country and, therefore, the indicator generates a weighted average of very different types of variables (such as cost of terrorism and telephony, as one example). Also, the WEF indicator includes many variables which are actually the direct result of the competitive environment, as opposed to characteristics of a pro-competitive environment. Finally, the WEF suggests a very simple linear regression which directly estimates the

change in GDP per capita through the GCI score and GDP growth. This fails to capture the fact that changing policy does not increase GDP directly (that is, removing a distortion is only productivity enhancing because it allows participants in the market to optimize their behavior, not because the policy itself is productive).

Our model is much more streamlined and parsimonious than other models, and is different from other models because of the importance it ascribes to competition, which is partly why it is more accurate. Next, we evaluate the effect of improving a country's score in domestic competition, international competition, and/or property rights protection on the stock of FDI, the stock of domestic credit, and overall health in an economy. Our model counterintuitively shows that school persistence is largely uncorrelated with our policy indicators. This is likely because school persistence can simply be mandated or prohibited by a government regardless of the quality of domestic competition, international competition, or property rights protection. So, we instead use school persistence as a control in our productivity function—along with fuel exports and ore and metal exports—to control for differences in human capital stock. In reality, for a particular country it is likely that reduction of distortions in the education system may provide a new path to improve education where necessary. Because

Figure 2: Regressions used to show impact of the policy scores on productivity factors

$$\begin{aligned}
 \log FDI \text{ stock} &= \alpha_{fdi0} + \alpha_{fdi1} * \text{Property rights} + \alpha_{fdi2} * \text{Domestic competition} + \alpha_{fdi3} \\
 &\quad * \text{International Competition} + \alpha_{fdi4} * (\text{Property rights} * \text{domestic comp}) + \alpha_{fdi5} \\
 &\quad * (\text{Property rights} * \text{international comp}) + \alpha_{fdi6} \\
 &\quad * (\text{domestic comp} * \text{international comp}) + \alpha_{fdi7} * (\text{Property rights} \\
 &\quad * \text{domestic competition} * \text{international competition}) \\
 \\
 \text{Health expenditure per cap} &= \alpha_{health0} + \alpha_{health1} * \text{Property rights} + \alpha_{health2} \\
 &\quad * \text{Domestic competition} + \alpha_{health3} * \text{International Competition} + \alpha_{health4} \\
 &\quad * (\text{Property rights} * \text{domestic comp}) + \alpha_{health5} \\
 &\quad * (\text{Property rights} * \text{international comp}) + \alpha_{health6} \\
 &\quad * (\text{domestic comp} * \text{international comp}) + \alpha_{health7} * (\text{Property rights} \\
 &\quad * \text{domestic competition} * \text{international competition}) \\
 \\
 \text{Domestic credit stock} &= \alpha_{dcs0} + \alpha_{dcs1} * \text{Property rights} + \alpha_{dcs2} * \text{Domestic competition} + \alpha_{dcs3} \\
 &\quad * \text{International Competition} + \alpha_{dcs4} * (\text{Property rights} * \text{domestic comp}) + \alpha_{dcs5} \\
 &\quad * (\text{Property rights} * \text{international comp}) + \alpha_{dcs6} \\
 &\quad * (\text{domestic comp} * \text{international comp}) + \alpha_{dcs7} * (\text{Property rights} \\
 &\quad * \text{domestic competition} * \text{international competition})
 \end{aligned}$$

the pattern across all countries is ambiguous, we treat school persistence as a control. However it should be noted that the reduction in distortion may lead to better education outcomes, greater productivity, and therefore the numbers that the model shows are likely to be underestimates.

Each factor influencing GDP is itself influenced by policy and these policies determine the scores a country receives for domestic competition, international competition, and property rights protection. Therefore, we estimate the impact of the three policy scores on the productivity factors using the following regressions shown in Figure 2.

In each function, the only variables entering are the score for the three policy areas. These scores enter the equations alone and multiplied with other scores. The multiplication represents the interaction effects from changing each score included in the interaction. Because the variables are continuous, the coefficients on the scores by themselves represent the change in the dependent variable when that particular score changes and the other scores equal zero. For the interactions, the coefficient represents the effect on the dependent variable of changing at least one score while the other score or scores remains constant—and greater than zero—or of changing all scores in the interaction. If none of the scores for a country equals zero, then the effect of changing one score on the dependent variable will be the total of the individual effect plus all of the interaction effects containing the score that is changing. Changing the score for any of the policy categories will impact each dependent variable through the total effect of the interactions and the solo effect. The result of the OLS regressions above are:

	log FDI stock	Health expenditures	Domestic credit stock
Property Rights	-0.652	-3463.2***	-169.5***
	(0.980)	(1059.5)	(39.85)
International Competition	-3.011***	-15.02	-133.5***
	(0.708)	(611.6)	(22.51)
Domestic Competition	-4.845***	-1498.4**	-129.8***
	(0.739)	(631.3)	(20.82)
Property Rights * Domestic Competition	0.475**	792.0***	39.13***
	(0.240)	(280.0)	(9.084)
Property Rights * International Competition	0.374*	496.5**	52.55***
	(0.210)	(245.7)	(9.641)
Property Rights * domestic * International	-0.111**	-59.81	-9.895***
	(0.0459)	(58.74)	(1.893)
Domestic * International	1.020***	-115.1	28.68***
	(0.163)	(147.8)	(4.910)
constant	19.17***	6186.5***	535.6***
	(2.627)	(2194.0)	(78.99)
N	807	803	774
adj. R-sq	0.634	0.623	0.493
Standard errors in parentheses			
=** p<0.10	** p<0.05	*** p<0.01"	

It is important to remember that the effects of changing a score in one policy are equal to the total effect from each component of the regression. So, a negative coefficient should not be seen as a negative impact on the dependent variable from improving a score, but should be seen as reducing the positive impact of the effect from the change somewhere else in the regression.

To determine the impact of improving a score in one or more policy areas on GDP per capita we find the impact of changing that score on each of the three policy areas above and then calculate the impact of that change in each of the three areas above on GDP per capita. For example, if property rights protection increases by 1, domestic competition equals 4, and international competition equals 3, then log of FDI stock will increase by 1.038, health expenditures will increase by 476.58, and domestic credit stock will increase by 25.93. These increases will then increase log of GDP per capita by 0.55, which is equivalent to a 70% increase in productivity.

We discounted an approach that would estimate the equations for FDI stock, domestic credit stock, and health expenditures and using the fitted values from these estimates as the values in the regression on the log of GDP per capita, because to do so effectively would require estimating models for FDI stock, domestic credit stock, and health expenditures which were accurate overall, which would likely have meant

not using our policy values and instead using more traditional independent variables for each. However, the goal for this process is to find the impact of changing the policy area scores on GDP per capita. Since this is not a direct effect, we need a production function which would accurately estimate log of GDP per capita using independent variables which are influenced by the policy area scores. We then estimate functions for FDI stock, domestic credit stock, and health expenditures that were functions of the policy area scores and where the policy areas were statistically significantly influential and where the function as a whole was statistically significant. The functions did not need pin-point accuracy, but the coefficients on each policy area and the interactions needed to be accurate. This we have accomplished.

There has not been a good way of determining the impact of legal, economic, and regulatory changes on a country's economic activity until now. The value of the simulator that we use is that, for the first time, we are able to look at the barriers that hold up economic activity in a country, and determine the impact on productivity that resolving these barriers would actually have. While it is relatively easy to simulate the gains from tariff reductions, it has not proved easy to simulate the gains from a reduction of ACMDs in a country.

5.3 APPENDIX C: ACMD INDEX

The specific factors which we use are from the following sources:

GCI = Global Competitiveness Index (WEF's 12 pillars)

DB = Ease of Doing Business (World Bank)

STRI = Services Trade Restrictiveness Index (OECD)

EFW = Economic Freedom of the World (Fraser Institute)

Property Rights:

- » Intellectual Property Protection—25%
- » Enforcing Contracts—15%
 - Enforcing Contracts—Time (days)—15%
 - Enforcing Contracts—Cost (% of claim)—60%
 - Registering Property—Time (days)—5%
 - Registering Property—Cost (% of property value)—20%
- » Efficiency of the Judicial System—30%
 - Efficiency of the legal framework in settling disputes—20%
 - Efficiency of the legal framework in challenging regulations—80%
- » Integrity of the Legal System—17%
 - Judicial Independence—15%
 - Legal rights index (financial)—32%
 - Strength of Investor Protection—53%
- » Resolving Insolvency—13%
 - Time (years)—17%
 - Cost (% of estate)—14%
 - Outcome (0 as piecemeal sale and 1 as going concern)—59%
 - Recovery rate (cents on the dollar)—10%

Domestic Competition:

- » Efficiency of Infrastructure—20%
 - Transportation—15%
 - Quality of roads—30%
 - Quality of railroads—20%

- Quality of ports—25%
- Quality of air—25%
- Information Technology—10%
 - Fixed telephone lines—30%
 - Mobile telephone subscriptions—40%
 - Individuals using the internet—30%
- Energy—30%
 - Quality of electricity supply—10%
 - Getting electricity—Time (days)—12%
 - Getting electricity—Cost (% of income per capita)—78%
- Financial Markets—45%
 - Availability of financial services—10%
 - Affordability of financial services—22%
 - Financing through local equity market—7%
 - Ease of access to loans—6%
 - Venture capital availability—4%
 - Soundness of banks—10%
 - Regulation of securities exchanges—17%
 - Getting Credit—Depth of credit information—9%
 - Ownership of banks—8%
 - Number of banks (per 1,000 people)—7%
- » Industrial Organisation Regulation—17%
 - Effectiveness of anti-monopoly policy—22%
 - Agricultural policy costs—5%
 - Starting a Business—Cost (% of income per capita)—29%
 - Starting a Business—Paid-in min. capital (% of income per capita)—33%
 - Dealing with Construction Permits—Time (days)—11%
- » Regulatory Promulgation Process—23%
 - Favouritism in decisions of government officials—15%
 - Transparency of government policymaking—85%
- » Labour Regulation—40%
 - Flexibility of Deployment—35%

- Fixed-term contracts prohibited for permanent tasks?—55%
- Maximum length of a single fixed-term contract (months)—17%
- 50-hour workweek allowed for 2 months a year in case of a seasonal increase in production?—14%
- Flexibility of wage determination—14%
- Ease of Recruitment and Letting Go—65%
 - Hiring and firing practices—18%
 - Redundancy costs, weeks of salary—22%
 - Dismissal due to redundancy allowed by law?—60%

International Competition:

- » Procedural Burden—52%
 - Burden of customs procedures—17%
 - Time to export (days)—11%
 - Cost to export (deflated US\$ per container)—31%
 - Time to import (days)—13%
 - Cost to import (deflated US\$ per container)—28%
- » Tariffs and Non-Tariff Barriers—35%
 - Prevalence of trade barriers—28%
 - Trade tariffs, % duty—17%
 - Standard deviation of tariff rates—10%
 - Non-tariff trade barriers—45%
- » Financial Restrictions—5%
 - Freedom to own foreign currency—79%
 - Capital controls (international)—21%
- » Freedom of Foreigners to Visit—8%

5.4 APPENDIX D: BARRIERS TO INTELLECTUAL PROPERTY AND INDUSTRIES AFFECTED⁴⁸

5.4.1 Table: IP Barriers and industries affected

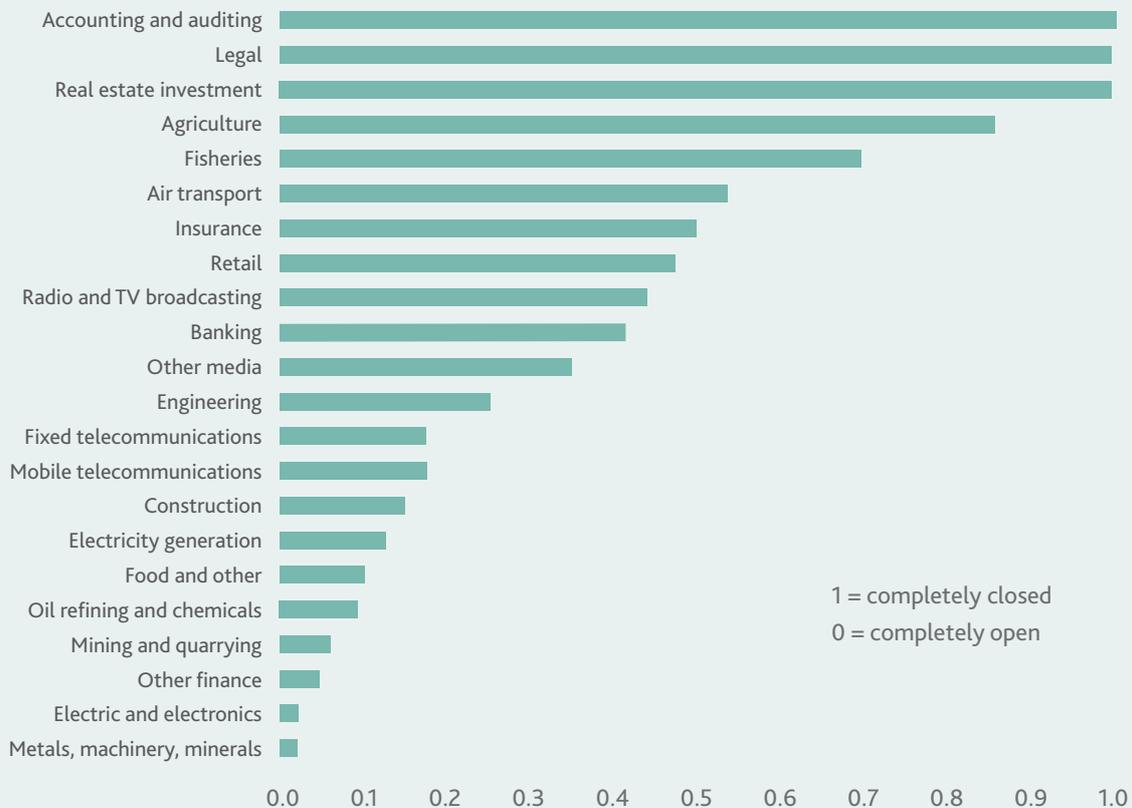
IP POLICY BARRIER	DESCRIPTION	US INDUSTRIES MOST AFFECTED
No trade secret law	India does not have a statute that prohibits trade secret misappropriation or theft.	Most companies in the ICT (information and communications technology), financial services, content and media, natural resources, chemicals and textiles, and retail and wholesale industry sectors active in India consider trade secret protection very important.
No law that protects regulatory test data	Valuable test data submitted by innovator companies to regulatory authorities can be used by companies producing generics as a basis for the approval of their products.	Companies in the pharmaceutical, biotechnology and crop protection subsectors.
Limits on patents for incremental innovations	Patents for incremental innovations, particularly those related to pharmaceutical and biotechnology inventions, are only available in limited circumstances.	Companies in the pharmaceutical and biotechnology subsectors.
Expansive compulsory license provisions	The Indian government can require companies to make their patented technologies available to competitors under a wide range of circumstances.	Companies in the pharmaceutical and biotechnology subsectors; producers of "green" technologies may also be affected.
Procedural and substantive enforcement issues related to patents and trade secrets	Administrative officials and courts are overburdened leading to long delays. US industry representatives also report a recent trend of limiting foreign companies' patent rights.	Companies in the pharmaceutical and biotechnology subsectors are particularly affected. Most companies in the other manufacturing and ICT sectors in India also consider patent protection very important.
High rates of counterfeiting and piracy	Substantial infringement of copyrights and trademarks of both physical and digital goods.	Companies in the content and media sector, and those that produce luxury goods, electronics, pharmaceuticals, automobile components, packaged food and alcohol, and tobacco, are particularly affected. Most companies in the financial services, other manufacturing, and retail and wholesale trade sectors in India also consider copyright or trademark protection very important.
Procedural and substantive enforcement issues related to copyrights and trademarks	Clogged dockets and procedural issues reportedly prevent effective enforcement. Local politics and protectionism may also play a role.	Companies in the content and media sector, and those that produce luxury goods, electronics, pharmaceuticals, automobile components, packaged food and alcohol, and tobacco, are particularly affected. Most companies in the financial services, other manufacturing, and retail and wholesale trade sectors in India also consider copyright or trademark protection very important.

5.4.2 Table: Indian local-content restrictions and the US industries most affected

POLICY	DESCRIPTION OF THE BARRIER	US INDUSTRIES MOST AFFECTED
Telecommunications license amendments	Would require testing of imported equipment in Indian laboratories; would require vendors to allow inspection of manufacturing facilities; and would impose liability when vendor has taken "inadequate" precautionary security measures.	ICT
Preferential Market Access (PMA)	Requires that ICT products deemed to have security implications include a specified share of local content when procured by government entities.	ICT
Jawaharlal Nehru National Solar Mission (JNNSM)	Requires that certain projects use a specified share of local products.	Solar energy

Source: Compiled by USITC

5.4.3 Graph: OECD FDI Restrictiveness Index for India, by sector, 2013



Source: OECD. FDI Regulatory Restrictiveness Index (Accessed 15 May 2014). Note: Forestry, transport equipment, electricity distribution, wholesale, surface and maritime transport, hotels and restaurants, and architecture are listed as open to FDI, with scores of 0 on the Index.

5.4.4 Table: Strategic changes by US companies in response to regulatory impediments in India from 2007 to present

ALL COMPANIES ENGAGE IN INDIA						
STRATEGY	EXPORTERS TO INDIA	INVESTORS IN INDIAN AFFILIATES	IP-INTENSIVE COMPANIES	LARGE	SMES	ALL COMPANIES
MADE NO CHANGES	36.6	52.0	39.0	31.5	43.3	38.7
MADE CHANGES	63.4	48.0	61.0	68.5	56.7	61.3
Directed less attention of fewer resources to the Indian export market	33.1	8.9	27.3	21.1	35.7	30.0
Halted or slowed plans for affiliate expansion	11.6	17.0	13.5	18.8	8.5*	12.6
Directed less attention or fewer resources to affiliates in India	7.3	11.1	8.6	10.6	5.6	7.6
Increased investment in affiliates in India to comply with LCRs or other regulations	7.5	13.6	8.2	14.0	3.1*	7.4
Changed Indian partners	6.5	4.8	6.9	6.2	7.3	6.9
Halted all exports to and or affiliate activity in India (exited Indian market)	3.7	3.7	4.2	4.0	3.9*	3.9
Shifted business operations from one product or business line within India to another	2.6*	5.4*	3.0*	2.7	3.4*	3.1
Shifted business operations from one state to another	3.0	2.8	3.2	3.7	2.3*	2.8
Reduced or limited the scope of work done in R&D facilities in India	1.8	4.1	2.4	3.2	1.4	2.1

Source: USITC calculations of weighted responses to the Commission questionnaire (question 6.5)

* Low-precision estimate, with an RSE above 50%

5.4.5 Table: Selected SPS (sanitary and phytosanitary) measures and international standards

PRODUCT	MEASURE	STANDARD
Fresh meat of poultry and pork	Ban due to the presence of low-pathogenicity avian influenza (AI)	Poultry: OIE Terrestrial Animal Health Code Article 10.4.19. No restriction for imports from a country free from infection with high-pathogenicity AI.
Pork: No restrictions due to AI.		
Bovine germplasm	Guidelines for export/import of bovine germplasm (revised 2013) includes dairy production requirements for imports of semen and embryos	Dairy production of progeny or donor animals has no bearing on human or animal health and safety.
Wheat	Zero tolerance for weed seeds	Most countries allow some sort of cleaning or mitigation.*
Barley, corn, wheat	Zero tolerance for ergot	Most countries allow some sort of cleaning or mitigation.*

Sectors which retain FDI caps :

- » Petroleum refining by Public Sector Undertaking (49%).
- » Teleports (setting up of up-linking HUBs/Teleports), direct-to-home (DTH), cable networks (multi-system operators (MSOs) operating at national, state, or district level and undertaking upgrade of networks towards digitalisation and addressability), mobile TV and Headend-in-the-Sky (HITS) broadcasting service—(74%).
- » Cable networks (49%).
- » Broadcasting content services—FM radio (26%), uplinking of news and current affairs TV channels (26%).
- » Print media dealing with news and current affairs (26%).
- » Air transport services—scheduled air transport (49%), non-scheduled air transport (74%).
- » Ground handling services—civil aviation (74%).
- » Satellites—establishment and operation (74%).
- » Private security agencies (49%).
- » Private-sector banking—except branches or wholly owned subsidiaries (74%).
- » Public-sector banking (20%).

- » Commodity exchanges (49%).
- » Credit information companies (74%).
- » Infrastructure companies in securities market (49%).
- » Insurance and sub-activities (49%).
- » Power exchanges (49%).
- » Defence (49% subject to Cabinet Committee on Security approval for over 49%).

Sectors which require government approval for FDI:

- » Tea sector, including plantations—100%.
- » Mining and mineral separation of titanium-bearing minerals and ores, its value addition and integrated activities –100%.
- » FDI in enterprise manufacturing items reserved for small-scale sector—100%.
- » Defence—up to 49% under Foreign Investment Promotion Board/Cabinet Committee on Economic Affairs approval, beyond—49% under Cabinet Committee on Security approval (on a case-to-case basis, wherever it is likely to result in access to modern and state-of-the-art technology in the country).

- » Teleports (setting up of up-linking HUBs/Teleports), direct-to-home (DTH), cable networks (multi-system operators operating at national, state, or district level and undertaking upgrade of networks towards digitalisation and addressability), mobile TV and Headend-in-the Sky (HITS) broadcasting service—beyond 49% and up to 74%.
- » Broadcasting content services: uplinking of news and current affairs channels—26%, uplinking of non-news and current affairs TV channels—100%.
- » Publishing/printing of scientific and technical magazines/specialty journals/periodicals—100%.
- » Print media: publishing of newspaper and periodicals dealing with news and current affairs—26%, publication of Indian editions of foreign magazines dealing with news and current affairs—26%.
- » Terrestrial broadcasting FM (FM radio)—26%.
- » Publication of facsimile edition of foreign newspaper—100%.
- » Airports—brownfield—beyond 74%.
- » Non-scheduled air transport service—beyond 49% and up to 74%.
- » Ground handling services—beyond 49% and up to 74%.
- » Satellites—74%.
- » Private securities agencies—49%.
- » Telecom—beyond 49%.
- » Single-brand retail—beyond 49%.
- » Asset reconstruction company—beyond 49% and up to 100%.
- » Banking private sector (other than WOS/branches)—beyond 49% and up to 74%, public sector—20%.
- » Pharmaceuticals—brownfield—100%.

Federal and local incentive policies:

Central Government Incentives:

- » Investment allowance (additional depreciation) at the rate of 15% to manufacturing companies that invest more than INR 1 billion in plant and machinery available till March 31, 2015.
- » Incentives available to unit's set-up in Special Economic Zones, National Investment Manufacturing Zone etc. and Export Oriented Units.
- » Export incentives such as duty drawback, duty exemption/remission schemes, focus products and market schemes, etc.
- » Area-based incentives such as unit set-up in north-east region, Jammu and Kashmir, Himachal Pradesh, Uttarakhand.
- » Sector-specific incentives such as Modified Special Incentive Package Scheme (MSIPS) in electronics.

State Government Incentives:

- » Each state government has its own incentive policy, which offers various types of incentives based on the amount of investments, project location, employment generation, etc. The incentives differ from state to state and are generally laid down in each state's industrial policy.
- » The broad categories of state incentives include: stamp duty exemption for land acquisition, refund or exemption of value added tax, exemption from payment of electricity duty, etc.

Exceptions

Special Dispensation

Special dispensations have been envisaged for NRI investments in the following:

- » Construction development.
- » Ground handling and air transport services.
- » NRI investing on non-repatriable basis.
- » FDI from Nepal and Bhutan is allowed in Indian rupees.

5.5 APPENDIX E: LEVEL 1, LEVEL 2, AND LEVEL 3 CALCULATIONS

5.5.1 Level 1

The calculations for determining the increase in productivity for Level 1 were done as follows:

Increasing the domestic competition score to 3.99 will change the log of FDI through the following function:

$$\begin{aligned} \text{Change in log of FDI stock from change in domestic score} \\ = - 4.85 * \Delta \text{Domestic competition} + 0.48 \\ * (\text{Property rights} * \Delta \text{domestic comp}) + 1.02 \\ * (\Delta \text{domestic comp} * \text{international comp}) - 0.11 \\ * (\text{Property rights} * \Delta \text{domestic competition} * \text{international competition}) \\ = - 0.14 \end{aligned}$$

Increasing the domestic competition score to 3.99 will change the health expenditures value as follows:

$$\begin{aligned} \text{Change in Health expenditure per cap} = - 1498.4 * \Delta \text{Domestic competition} + 792 \\ * (\text{Property rights} * \Delta \text{domestic comp}) = 539.8 \end{aligned}$$

Where we use only the statistically significant factors in this model.

Increasing the domestic competition score to 3.99 will change the domestic credit stock value as follows:

$$\begin{aligned} \text{Change in Domestic credit stock from a change in domestic} \\ \text{competition score} = - 129.8 * \\ \Delta \text{Domestic competition} + 39.1 * (\text{Property rights} * \Delta \text{domestic comp}) - 9.9 * \\ (\Delta \text{domestic comp} * \text{international comp}) + 28.7 * \\ (\text{Property rights} * \Delta \text{domestic competition} * \text{international competition}) = \\ - 3.73 = \end{aligned}$$

These changes to the log of FDI stock, health expenditures, and domestic credit stock in turn change GDP per capita, which is a measure of productivity. GDP per capita is impacted by a change in the domestic competition score from improving the Doing Business indicators in the following way:

$$\begin{aligned} \text{Change in log of GDP per capita} = 0.362_ \\ * \Delta \text{log of FDI stock} + 0.0003 * \Delta \text{Health expenditures per cap} + 0.002 \\ * \Delta \text{Domestic credit stock} = 0.104 \end{aligned}$$

Where $\Delta \text{log of FDI stock} = - 0.14$, $\Delta \text{Health expenditures per cap} = 539.8$, and $\Delta \text{Domestic credit stock} = - 3.73$ as shown above.

5.5.2 Level 2

The calculations for determining the increase in productivity for Level 2 were done as follows:

The values for the inputs in each of the three models which are functions of property rights protection, domestic competition, and international competition: $\Delta \text{Domestic competition} = 0.89$, $\Delta \text{Property rights} = 1.44$, $\Delta \text{International competition} = 0.3$, $\Delta (\text{Property rights} * \text{Domestic comp}) = 9.4$, $\Delta (\text{Property rights} * \text{International comp}) = 7.2$, $\Delta (\text{Domestic comp} * \text{International comp}) = 5.03$, and $\Delta (\text{Property rights} * \text{Domestic competition} * \text{International competition}) = 44.6$

The calculations for determining the increase in productivity were done as follows:

The change in log of FDI stock was calculated as

$$\begin{aligned} \text{Change in log FDI stock} \\ = - 0.652 * \Delta \text{Property rights} - 4.85 * \Delta \text{Domestic competition} - 3.01 \\ * \Delta \text{International comp} + 0.48 * \Delta (\text{Property rights} * \text{Domestic comp}) \\ + 0.37 * \Delta (\text{Property rights} * \text{International comp}) + 1.02 \\ * \Delta (\text{Domestic comp} * \text{International comp}) - 0.11 \\ * \Delta (\text{Property rights} * \text{Domestic competition} * \text{International competition}) \\ = 1.19 \end{aligned}$$

Change in health expenditure per capita:

$$\begin{aligned} \text{Change in health expenditure per cap} = - 3463.2 * \Delta \text{Property rights} - 1498.4 \\ * \Delta \text{Domestic competition} - 15.02 * \Delta \text{International competition} + 792 \\ * \Delta (\text{Property rights} * \text{Domestic comp}) + 496.5 \\ * \Delta (\text{Property rights} * \text{International comp}) + 115.1 \\ * \Delta (\text{Domestic comp} * \text{International comp}) - 59.81 \\ * (\text{Property rights} * \text{Domestic competition} * \text{International competition}) \\ = 1450.7 \end{aligned}$$

Change in domestic credit stock:

$$\begin{aligned} \text{Change in domestic credit stock} &= -169.5 * \Delta \text{Property rights} - 129.8 \\ &* \Delta \text{Domestic competition} - 133.5 * \Delta \text{International competition} + 39.13 \\ &* \Delta (\text{Property rights} * \text{Domestic comp}) + 52.55 \\ &* \Delta (\text{Property rights} * \text{International comp}) + 28.68 \\ &* \Delta (\text{Domestic comp} * \text{International comp}) - 9.9 \\ &* (\text{Property rights} * \text{Domestic competition} * \text{International competition}) \\ &= 50.22 \end{aligned}$$

These changes to the log of FDI stock, health expenditures, and domestic credit stock in turn change GDP per capita, which is a measure of productivity. GDP per capita is impacted by a change in the domestic competition score from improving the Doing Business indicators in the following way:

$$\begin{aligned} \text{Change in log of GDP per capita} &= 0.362 \square \\ &* \Delta \text{log of FDI stock} + 0.0003 * \Delta \text{Health expenditures per cap} + 0.002 \\ &* \Delta \text{Domestic credit stock} = 0.91 \end{aligned}$$

Where $\Delta \text{log of FDI stock} = 1.19$, $\Delta \text{Health expenditures per cap} =$, and $\Delta \text{Domestic credit stock} = -3.73$ as shown above.

5.5.3 Level 3

The calculations for determining the increase in productivity for Level 3 were done as follows:

The values for the inputs in each of the three models which are functions of property rights protection, domestic competition, and international competition: $\Delta \text{Domestic competition} = 2.23$, $\Delta \text{Property rights} = 2.98$, $\Delta \text{International competition} = 1.92$, $\Delta (\text{Property rights} * \text{Domestic comp}) = 24.6$, $\Delta (\text{Property rights} * \text{International comp}) = 23.7$, $\Delta (\text{Domestic comp} * \text{International comp}) = 20.6$, and $\Delta (\text{Property rights} * \text{Domestic competition} * \text{International competition}) = 169.5$

The calculations for determining the increase in productivity were done as follows:

The change in log of FDI stock was calculated as

$$\begin{aligned} \text{Change in log FDI stock} &= -0.652 * \Delta \text{Property rights} - 4.85 * \Delta \text{Domestic competition} - 3.01 \\ &* \Delta \text{International com} + 0.48 * \Delta (\text{Property rights} * \text{Domestic comp}) + 0.37 \\ &* \Delta (\text{Property rights} * \text{International comp}) + 1.02 \\ &* \Delta (\text{Domestic comp} * \text{International comp}) - 0.11 \\ &* \Delta (\text{Property rights} * \text{Domestic competition} * \text{International competition}) \\ &= 4.24 \end{aligned}$$

Change in health expenditure per capita:

$$\begin{aligned} \text{Change in health expenditure per cap} &= 3463.2 * \Delta \text{Property rights} - 1498.4 \\ &* \Delta \text{Domestic competition} - 15.02 * \Delta \text{International competition} + 792 \\ &* \Delta (\text{Property rights} * \text{Domestic comp}) + 496.5 \\ &* \Delta (\text{Property rights} * \text{International comp}) + 115.1 \\ &* \Delta (\text{Domestic comp} * \text{International comp}) - 59.81 \\ &* (\text{Property rights} * \text{Domestic competition} * \text{International competition}) \\ &= 5046.7 \end{aligned}$$

Change in domestic credit stock:

$$\begin{aligned} \text{Change in domestic credit stock} &= -169.5 * \Delta \text{Property rights} - 129.8 \\ &* \Delta \text{Domestic competition} - 133.5 * \Delta \text{International competition} + 39.13 \\ &* \Delta (\text{Property rights} * \text{Domestic comp}) + 52.55 \\ &* \Delta (\text{Property rights} * \text{International comp}) + 28.68 \\ &* \Delta (\text{Domestic comp} * \text{International comp}) - 9.9 \\ &* (\text{Property rights} * \text{Domestic competition} * \text{International competition}) \\ &= 70.25 \end{aligned}$$

These changes to the log of FDI stock, health expenditures, and domestic credit stock in turn change GDP per capita, which is a measure of productivity. GDP per capita is impacted by a change in the domestic competition score from improving the Doing Business indicators in the following way:

$$\begin{aligned} \text{Change in log of GDP per capita} &= 0.362 \square \\ &* \Delta \text{log of FDI stock} + 0.0003 * \Delta \text{Health expenditures per cap} + 0.002 \\ &* \Delta \text{Domestic credit stock} = 3.189 \end{aligned}$$

Where $\Delta \text{log of FDI stock} = 4.24$, $\Delta \text{Health expenditures per cap} = 5046.7$, and $\Delta \text{Domestic credit stock} = 70.25$ as shown above.

5.6 APPENDIX F: POTENTIAL EMPLOYMENT GENERATION CALCULATIONS

To arrive at the potential employment generation through reforms, we used employment elasticities. Employment elasticities can be used to determine the number of jobs which will be created by a certain amount of economic growth. The table below summarises the percentage gain in long-term employment generated by a percentage gain in GDP for different regions and income groups.⁴⁹

Long-Term Employment Elasticities, by Region, Income Level, and Economic Sector

	TOTAL ¹	TOTAL ²	AGRICULTURE ²	INDUSTRY ²	SERVICES ²
BY REGION					
A. East Asia and Pacific	0.27	0.26	0.35	0.27	0.25
B. Western Europe	0.64	0.64	0.55	0.62	0.65
C. Eastern Europe and Central Asia	0.23	0.29	0.29	0.34	0.29
D. Latin America and the Caribbean	0.16	0.17	0.15	0.19	0.17
E. Middle East and North Africa	0.08	0.25	0.36	0.30	0.20
Oil exporters	0.09	0.25	0.34	0.39	0.24
Oil importers	0.09	0.39	0.41	0.32	0.14
F. South Asia	0.99	0.97	1.01	1.04	0.92
G. Sub-Saharan Africa	-0.02	0.36	0.47	0.30	0.34
H. North America	0.81	0.87	1.01	0.85	0.77
I. Australia and New Zealand	0.80	0.80	0.69	0.74	0.83
BY INCOME					
J. Low-income economies (\$1,005 or less)	0.02	0.19	0.33	0.18	0.23
K. Lower-middle income economies (\$1,006 to \$3,975)	0.10	0.24	0.26	0.25	0.24
L. Upper-middle income economies (\$3,976 to \$12,275)	0.18	0.25	0.24	0.26	0.23
M. High-income economies	0.46	0.49	0.48	0.50	0.49

¹ Estimates based on full sample.

² Estimates based on a restricted sample for which observations for employment in each economic sector (agriculture, industry, and services) are available

For the employment gains we calculated, we used the first column of the “by income” panel. This is because “by region” groups countries by factors that are potentially distantly related to determinants of employment, while grouping by GDP per capita places countries with similar productivity levels in the same group, which is probably very closely related to employment determinants. Furthermore, the elasticities reported relate employment changes with GDP changes, so it makes sense that the different effects would be more well-defined across productivity differences. We used the first column because it estimates elasticities countrywide for GDP gains across the full sample and generates more modest employment elasticities. This keeps our results relatively conservative compared to column 2.

The elasticities here are estimated using a panel dataset of 167 countries over the period 1991 to 2009. The equation estimated is:

$$\ln(e_{it}) = \alpha + \rho_1 \ln(e_{it-1}) + \rho_2 D_k \ln(e_{it-1}) + \beta_1 \ln(y_{it}) + \beta_2 D_k \ln(y_{it}) + \omega_{it}$$

Where e_{it} is the employment level in country i at time t , e_{it-1} is the employment level in country i at time $t-1$, D_k is a dummy for income level k , y_{it} is GDP in country i at time t , and ω_{it} is the error term. The elasticity of employment with respect to GDP is equal to $\beta / (1-\rho)$.

To determine the number of jobs created in L3, we begin by examining the percentage growth in GDP generated in L3 and comparing this growth to the income levels shown in the table above. India’s current GDP per capita is \$1,500, which places it in the lower-middle-income category in the table. For every 1% growth in GDP for a lower-middle-income country, there is a 0.1% growth in long-term employment. Once India’s GDP per capita grows to \$3,975, it will move up to the upper-middle-income category. For every 1% growth in GDP per capita for an upper-middle-income country, there is a 0.18% growth in long-term employment. We assume that the employment elasticity of an upper-middle-income country holds for India for every percentage point it grows beyond the \$3,975 mark. This is because the productivity gains we estimate represent the potential gains for India as it currently stands, not assuming it changes to become a high-income country in every respect. We are taking a snapshot of India today and imagining what it would look like at this moment if all ACMDs no longer existed.

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- Note that these authors also highlight the fact that trade openness does not always lead to increased GDP and that the theory does not predict an increase in GDP from openness. The theory does, however, predict greater welfare from openness. There are many sources which find a positive relationship between openness and GDP. A few examples include (as cited in Bajona et al., *op. cit.*):
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7. Though no emphasis was given to the competitive environment within a country except for a stress on privatisation. Originally conceived in John Williamson, "What Washington Means by Policy Reform", in John Williamson (ed.), *Latin American Adjustment: How Much Has Happened?*, April 1990. iie.com/publications/papers/paper.cfm?ResearchID=486. See also www.who.int/trade/glossary/story094/en; www.economicshelp.org/blog/7387/economics/washington-consensus-definition-and-criticism; www.piie.com/publications/chapters_preview/6628/02iie6628.pdf.
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 10. Entrepreneurialism because it is the best choice for work, as opposed to opportunity-based entrepreneurialism which refers to entrepreneurs who are taking advantage of a business opportunity or leave a job seeking a better opportunity. Source: S. Singer, J. E. Amoros, and D. M. Arreola, *Global Entrepreneurship Monitor 2014: Global Report*, London: Global Entrepreneurship Research Association.
 11. The value of 10% is meant to represent India's capture rate relative to other countries. Countries with greater human capital will have much higher capture rates in L1, but they will not be 100% because no country is entirely closed from the global economy. India's value should be very small relative to these other countries, hence the 10% value.
 12. The value of 25% is meant to represent India's capture rate relative to other countries. Countries with greater human capital will have much higher capture rates in L1, but they will not be 100% because no country is entirely closed from the global economy.
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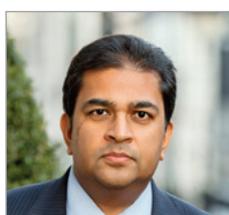
14. Particularly when distortions are solved for as we have imagined in this figure. The horizontal axis represents the proximity to the ideal scenario where all distortions are solved for, and where some of the simpler distortions are solved for, the further from the ideal scenario you are.
15. Labour Force Participation, Total. World Development Indicators, World Bank.
16. India unemployment rate, Index Mundi. www.indexmundi.com/india/unemployment_rate.html.
17. One caveat is appropriate here. Given that the majority of India's population reside in rural areas and the low levels of skill development among rural people, it is likely that many are employed in low or even negative productivity jobs. When economic growth picks up after elimination of ACMDs, this situation is likely to change. Here a reference to the Lewis model may be appropriate: W. Arthur Lewis, "Economic Development with Unlimited Supplies of Labour", *The Manchester School*, 22 (1954), 139–91.
18. $0.000005 * 439 \text{ million} = 0.002195 \text{ million}$ (see section 5.6 for job growth calculations methodology).
19. $0.37 * 0.1 = .148$.
20. $.148 * 439 \text{ million} = 1.6 \text{ million}$.
21. We also assume population size remains the same. This is a strong assumption meant only to illustrate the potential gains in the number of jobs. In reality population will grow, so if labour force participation and unemployment remain steady, then the estimates here are conservative.
22. $(3975 - 1053) / 1053 = 1.64$.
23. $1.64 * 0.1 = .164$.
24. $(11335 - 3975) / 3975 = 1.85$.
25. $1.85 * 0.18 = .333$.
26. $0.164 * 439 \text{ million} = 71.996 \text{ million}$.
27. $.333 * 511 \text{ million} = 170 \text{ million}$.
28. Poverty headcount ratio at \$2 a day (PPP) (% of population). World Development Indicators, World Bank. data.worldbank.org/indicator/SI.POV.2DAY/countries/IN?display=graph.
29. Poverty headcount ratio at \$1.25 a day (PPP) (% of population). World Development Indicators, World Bank. data.worldbank.org/indicator/SI.POV.2DAY/countries/IN?display=graph.
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33. $1.3 \text{ billion} * (23.6 - 4.5) = 248 \text{ million}$.
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39. Clifford Winston, *Government Failure Versus Market Failure: Microeconomics Policy Research and Government Performance*, Washington, DC: AEI-Brookings Joint Center for Regulatory Studies, 2006.
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characterise it as a policy response to a market failure. The intention of the policy is promotion of a particular group's interests. For this to be merely a policy response, the loss in welfare from the lack of access to telecoms for remote consumers would have to be greater than the net loss in welfare generated by the policy itself.

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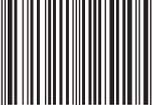
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