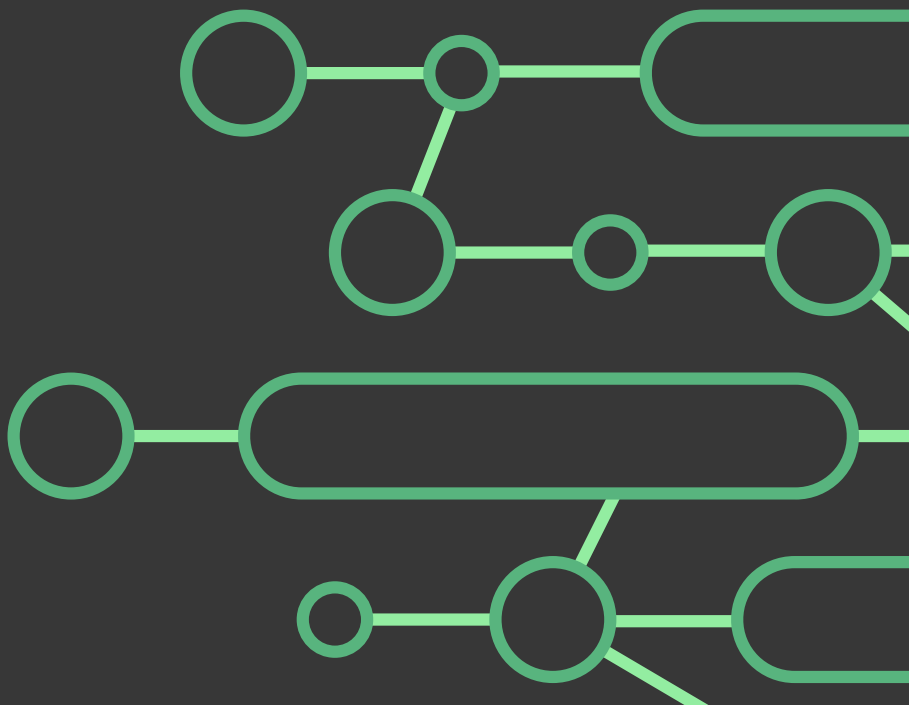
CENTRE FOR COMPETITION LAW AND ECONOMICS

SMART GOVERNANCE FOR SMART MACHINES

Designing a Regulatory Governance Framework for GenAI in India



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I. Abstract

Generative Artificial Intelligence (GenAI) is an advanced AI technology that has the ability to create new forms of content. The large language AI models that power this technology generate incredible volumes of synthetic content, that seems like it was composed by humans. Due to its wide applicability in numerous industries, GenAI has the potential to completely transform the way businesses operate and interact with people. As with any technology, this also means that there is going to be a period of uncertainty about how best it can be leveraged.

The objective of this research is to navigate the uncertainties and design a principle-based regulatory governance framework to govern the AI industry. The core argument of this report is that regulatory governance frameworks for GenAI should address the complexities and uncertainties inherent in AI systems. By understanding and monitoring these complexities, regulators can better assess and mitigate systemic risks associated with high-risk technologies. This will help India balance between its goals of competitiveness, innovation, and normative values. There are added layers of complexities emerging from international relations and politics that would affect the development of this technology.

This report offers a conceptual framework that is conducive to developing a regulatory governance structure for AI. In pursuit of this, the report looks at models of regulatory governance (Section 1), its relationship with competition policy, regulations implemented in other countries to regulate AI and GenAI (Section 2), their experiences, the lessons that can be learnt, the role of AI in India's economic story (Section 3), and the imperative and proposed framework to regulate this technology (Section 4). Most importantly, the report emphasises the criticality of values and ethics that must be used in developing India's AI regulatory structure. As a democratic nation with diversity abounds, there is an imperative for the Indian government to ensure the use of technology is inclusive, innovative, and empowering.

II. Understanding the Policy Implications of this Topic?

The objective of this research is designing a principle-based regulatory governance framework to govern the burgeoning GenAI industry. The core argument of this report is that regulatory governance frameworks for GenAI should address the complexities and uncertainties inherent in AI systems. By understanding, monitoring, and mitigating these complexities, regulators can better assess and control systemic risks associated with high-risk technologies. This will help India balance between its goals of competitiveness, innovation, and normative values. The timing of this report is crucial.

Generative Artificial Intelligence, or GenAI, is an advanced AI technology that has the ability to create new forms of content (text, image, music, video, etc.) (University of Michigan). GenAI is trained on diverse and vast datasets, using which, it generates this content. The large language AI models that power this technology generate incredible volumes of synthetic content, that not only seem like it was composed by humans, but also make it difficult to distinguish between real and fake information (Hacker, Engel, & Mauer, 2023). Due to its wide applicability in numerous industries, ability to generate responses within a matter of seconds, personalise its content, and assist in various tasks, GenAI has the potential to completely transform the way businesses operate and people create, consume, and share information. As with any technology, this also means that there is going to be a period of uncertainty about how best it can be leveraged. This requires stakeholders to understand the components of this technology, grasp its complexities, identify risks and benefits, and the effects of decisions that would affect people using such a technology. Simultaneously, as seen above, there are added layers of complexities emerging from international relations and politics that would affect the production and use of such a technology. The questions that thus emerge are:

- How can we understand this emerging technology, its risks, and its benefits?
- Who is the best judge when it comes to decisions that affect the production and use of such a technology?
- What are the likely effects of such decisions?
- What are the tools that can be used to answer such questions?

Such questions are central to any policy proposal, especially one that affects numerous other industries. In such a scenario, this report does not claim to have all the answers, but instead, offers a conceptual framework that is conducive to developing a regulatory governance structure for a technology as fluid, flexible, complex, and unpredictable as AI. Most importantly, the report does not undervalue the criticality of values and ethics that must be used in developing India's regulatory structure viz. GenAI. As a democratic nation with diversity abounds, there is an imperative for the Government of India to ensure the use of technology is inclusive, innovative, and empowering.

This requires relevant regulatory stakeholders to understand the dynamics of the technology that powers GenAI, its applications, complex models, and the market dynamics. In pursuit of this, the report looks at models of regulatory governance (Section 1), its relationship with competition policy, regulations implemented in other countries to regulate AI and GenAI (Section 2), their experiences, the lessons that can be learnt, the role of AI in India's economic story (Section 3), and the imperative and proposed framework to regulate this technology (Section 4).

1. Setting the Theoretical Foundation

Regulatory governance refers to methods of intervention in an industry or sector of the economy, politics, or social life, that use binding rules to affect the behaviour of stakeholders to achieve specific outcomes (ECPR, 2018). What is unique to this method of governance is that there is a level of flexibility that is accorded to institutions with legal power. Instead of relying on direct intervention, as seen in the period between 1970-1980 in India, or the Government withdrawing from interventions in the economy, as seen in the US between 1980-1990, the Government permits identified stakeholders to manage their own affairs. This presents us with two important concepts in building the theoretical foundation:

a) There are stakeholders with legal power to intervene in the affairs of an industry, such as competition regulators, financial market regulators, consumer protection authorities, etc (Das & Quintyn, 2002). These are regulatory institutions (World Bank, 2010)
b) There are stakeholders who are part of an industry or sector, comprise its internal workings, and need to engage in practices that conform to the standards set by the law and other regulatory mechanisms

The Government merely maintains a regulatory role, rather than an interventional, and enables a set-up where stakeholders are encouraged to collaborate and conduct their affairs. The focus is not for the Government in such a set-up to modify the behaviour of stakeholders, but to provide policies, such that the stakeholders can conduct their affairs in line with the objectives of such policies (Lobel, 2012). Regulatory policies are thus those overarching objectives set by a regulatory institution covering how it is going to exercise its legal powers, principles according to which industry participants must conduct their affairs, and legal enforcement mechanisms for such principles (World Bank, 2010).

As a concept, regulatory governance emerged from the changing role of the government from sole provider of goods and services to facilitator and supervisor by relinquishing such tasks to private players. However, the constitutional role of the Government, as a guarantor of economic and social equality and justice mandates that private interests do not overpower the public interest. In such a context, the Government designed an architecture where its proxies; regulatory institutions, built frameworks for private players to adhere to. Thus, the regulatory state became a phenomenon in

numerous economies (Levi-Faur & Gilad, Review: The Rise of the British Regulatory State: Transcending the Privatization Debate, 2004).

This phenomenon however carries with it numerous ambiguities. In a command-and-control economy, the Government is the driving force of all activities. In a liberal economy, private players have the ability to compete over public goods. Whereas, in a welfare economy, the Government seeks to re-appropriate a level of surplus in the economy for marginalised sections to create equitable outcomes. In such forms of governance, the scope and role of the Government can be clearly defined and measured. However, in a scenario where the government withdraws from activities and creates a regulatory framework as described above, the role of the stakeholders remains uncertain. Additionally, governments, whether in democratic or authoritarian states, frame laws and regulatory policies best situated to their ideological proclivities adding another layer of complexity. This adds further to the uncertainty. At last, one cannot ignore the role of bureaucracy in this complex system which through the power of subordinate legislation make their versions of regulatory policies and prevailing norms (Cook, Kirkpatrick, Minogue, & Parker, Competition, regulation and regulatory governance: an overview, 2015). Thus, in a regulatory governance framework, there are competing interests from within and outside the government, from its own agents and industry participants, and from the uncertainties that emerge from specific markets that are sought to be regulated. These complexities are the burden of any Government that seeks to create a regulatory framework for an industry. Added to such complexities, are the challenges that come with regulating technologies such as AI and GenAI.

1.1. Exploring some Models of Regulatory Governance

Before building a conceptual framework, it is important to study the pre-existing work in the field. In the context of regulatory governance, which lies at the intersection of political science, economics, law, and public policy, the models that have been developed over the past few decades need to be explored.

S. No.	Model of Governance	Description
a)	Hierarchical Governance Model	A top-down, command-and-control format of governance where the government uses enforceable mechanisms of "… law, regulation, instruction, intervention, and close supervision…" (Yu, 2022). While such a model may provide direction, it can stifle competition and innovation in various industries. This is because this model prioritises control over flexibility. This control is exercised by centralising authority within a bureaucracy or institution, and creating incentives and monitoring

		methods for such institutions to exercise such authority (Spekle, 2001). E.g. The Ministry of Health and Family Welfare maintains a tight vigil on the pharmaceuticals industry, and monitors every aspect from production to marketing to sales of medicines in India.
b)	Network Governance Model	Network governance can be thought of as the interdependent functionalities of structures that comprise multiple actors, to solve problems, and achieve objectives that a singular entity cannot accomplish by themselves (Wang & Ran, 2021). Such a model in the context of governance can be seen with a variety of government and regulatory institutions working in a similar domain with diverse actors, to achieve specific policy outcomes. It is important to understand that many real-life examples of such a model rely on social institutions and structures, since not every entity in this model is comprised of bureaucracies or formal contractual relationships (Jones, Hesterley, & Porgatti, 1997). E.g. The Ministry of Rural Development (MoRD) works closely with the Panchayati Raj and Rural Development ministries of all states to provide timely employment and wages to workers in MGNREGS.

c)	Market Governance Model	Market governance refers to the presence of a rational buyer and seller, in the form of a citizen and a government, respectively, who engage in the trade of government services (Donahue & Nye, 2002). The more efficiently the services are provided by a government, the more favoured it becomes to be voted back into power by the rational citizen. The citizen becomes the *homo economicus*, where it rationally assesses the viability of a government, and the state becomes the *homo penalis*, which punishes its agents for failure of providing these services (Mathur, 2015). Thus, competitive market dynamics are at the bedrock of the governance framework. E.g. Public-private partnerships (PPPs) in India are an example of market governance models. Governments can delegate the task of building national-scale infrastructure for public consumption. The timely construction and inauguration of such infrastructure presents the Government with electoral points.
d)	Collaborative Governance Model	Collaborative governance and network governance share many of the same traits. In collaborative governance, a range of institutions and structures work together in a collaborative set-up to achieve mutually agreed-upon goals. This requires the sharing of "… information, resources, and capabilities…" among all actors in a system (Wang & Ran, 2021)
e)	Multilevel Governance Model	The "multilevel" nomenclature emerged in the context of the increasing role international entities have come to play in global affairs. It thus refers to the capability of numerous local, national, and international institutions to work collectively to achieve common goals. Within this model, there are components that look at incorporating civil society organisations and local leaders (Saito-Jensen, 2015).

Table 1: Models of Regulatory Governance, built on theoretical principles of Political Science, Public Administration, Economics, and Law

Table 1 facilitates a comparative analysis of diverse governance paradigms, and discusses the implications of each model, such as their impact on competition, innovation, and stakeholder collaboration.

The table has also been designed in a manner to showcase a temporal shift in how governance issues should be addressed. From the command-and-control, hierarchical model, to the multilevel governance model, one can see a shift in the narrative, where there are an increasing number of actors involved in designing and implementing a regulatory framework. Additionally, one can also see the interdisciplinary nature of regulation, where relevant applications of economics, public policy, public administration, law, political science, etc., are explored. It is thus a multi-stakeholder and interdisciplinary approach that makes regulatory governance an important method of regulating an industry or sector. "Regulation is understood as interdisciplinary problem-solving. Government agencies encourage transparency, participatory dialogue between industry actors, and inclusive decision-making processes" (Lobel, 2012).

The most upfront challenge that emerges from such a framework and its inherent bureaucracy, is the principal-agent problem. The government and its regulators must play a balancing role in furthering the interests of industry participants and stakeholders. This is an especially costly and uncertain endeavour, since such institutions are in a regulatory capacity, and are not directly supervising such actors. Due to this, the incentives of actors, and the institutions themselves, may not be in resonance, causing problems in implementation and monitoring. Thus, even if the intended outcome is to generate equitable results, the eventual outcome deviates from this.

One of the most important risks emerging from such a situation is how private actors in an industry use market power.

1.2. Market Power and Dominant Position: India's Perspective

Market power may be defined as the degree to which an individual entity or firm in a market can affect the prevailing market prices, and thus, outcomes that deviate from the spirit of perfectly competitive markets (Besanko & Braeutigam, Market Power, 2014). When seen in the context of antitrust regulations, this refers to the degree to which a firm or a group of firms have consolidated market power, the ability to control prices, increase barriers to entry and/or exit, etc.

Each jurisdiction views such technicalities through its own lens, including the Competition Commission of India (CCI). The exercise of market power comes with a dominant position, and that requires the presence of a significant share of the market and other structural flaws that lead to lesser competition. To understand India's stance on these, below are the relevant sections from the *Competition Act, 2002*, India's primary statute targeting anti-competitive behaviour (Competition Commission of India):

Section	Explanation
S(4): Defining the scope of abuse of *dominant position*	Prohibits an enterprise from abusing its dominant position in a market, which would restrict competition and adversely affect consumers. S(4) highlights practices

	such as imposing unfair or discriminatory conditions, predatory pricing, limiting production or technical development, and leveraging market dominance in other markets, as examples of abuse of dominant position
S(19)(4): Outlines the factors CCI considers when determining if an enterprise holds a dominant position under section 4	Outlines the circumstances under which CCI can initiate inquiries into anti-competitive practices such as anti-competitive agreements, and abuse of dominant position, as defined under S(4)

Table 2: Defining the scope of dominance in Indian competition law

In a note published as part of its *Advocacy Series*[1], CCI defines the dominant position as (Competition Commission of India):

> A position of strength enjoyed by an enterprise, in the relevant market in India, which enables it to:
> - operate independently of the competitive forces prevailing in the relevant market; or
> - affect its competitors or consumers or the relevant market in its favour.

In the same guide, CCI writes:

> Dominance is not considered bad per se but its abuse is. Abuse is stated to occur when an enterprise or a group of enterprises uses its dominant position in the relevant market in an exclusionary or/ and an exploitative manner

Therefore, the CCI does not regard the presence of market power or a dominant position with an industrial entity as anti-competitive behaviour, but the exercise of such power or position. A positive takeaway from this is that since the CCI places incredible reliance on economic data and practices to form its decisions, there is due-process followed and the onus is on the parties involved to prove anti-competitive actions. The negative effect of such an approach is that CCI, or relevant regulators respond too little and too late in a genuinely anti-competitive situation.

1.3. Examining the Relationship between Regulatory Governance and Competition Policy

Competition policy is a critical tool for the state to address the consolidation of market power with one or several entities in an industry. In the absence of such policies, one or more entities in an industry may leverage their dominant position, such that it will accrue harm to consumers (Cook, Kirkpatrick, Minogue, & David, Competition, regulation and regulatory governance: an overview, 2004). In the context of technology, this harm may extend to one person, a group, or a society at large. In the context

[1] It must be noted that the CCI makes it clear in the 'Disclaimer' to this guide, that the contents do not represent the official views of the CCI. For legal advice and analysis, the CCI urges the study of relevant statutes and their amendments

of advanced technologies such as artificial intelligence (AI), this may extend to a nation's competitive advantage, industrial policies, national security, and law and order.

There are four major perspectives when assessing the market dynamics of an industry, to understand the impact of such dynamics on its competitiveness. First, is the focus on the rivalry between the actors in the market who seek to use price changes to either respond to, or to change market conditions (Cook, Kirkpatrick, Minogue, & David, 2004). Some insight may be gained from how scholars have understood oligopolistic markets. In a perfectly competitive market, firms are small in scale and size and cannot set prices, while in a monopoly market, one firm sets the quantity as well as prices to maximise its profits. A distinct feature of oligopolistic markets is that there are multiple, interdependent firms with market power, i.e., with the ability to affect prices per their control of the market (Besanko & Braeutigam, 2014). There are three models used to assess such a market (Besanko & Braeutigam, 2014):

i. **Cournot Model –** In an oligopolistic market with homogenous products, firms charge the same price for the same products. These firms have no knowledge of each other's plans, designs, and intentions in the market, and thus, fix their output simultaneously and non-co-operatively. It is this combined output that determines the market price, and consumers purchase this output.
ii. **Bertrand Model –** Joseph Bertrand criticised Antoine Cournot's model, where firms are price takers in a market. His argument was that firms first set a price, and fix their production accordingly to meet this price. In a homogenous goods market where firms produce the same goods, they would want to capture as much of the market as possible. This would require them to set the lowest price at which consumers would purchase their products, and thus, firms may engage in aggressively lowering their prices until they capture a larger market of consumers.
iii. **Stackelberg Model –** If we think of quantity setting as "production capacity" in an industry, there are some firms that would have a higher capacity to produce greater quantities of goods than others. In such a scenario, these firms become "quantity leaders", fixing a production target, and other firms follow suit. This model is thus a "sequential game", where one firm selects an initial target, and produces, and other firms set their production targets accordingly.

These models can thus be viewed in terms of "capacity competition" (Besanko & Braeutigam, Oligopoly with Homogenous Products, 2014). They thus first fix their capacities, i.e., how much to produce, and then compete in the market for the profit-maximising price.

The second method to assess market dynamics is to focus on market structure, as pioneered by the classical and neo-classical schools of economics. While looking at how firms set prices is taking a behavioural perspective to understand the market, looking at market structure is a systemic perspective.

Here, we look at factors such as number of firms in the market, which firms have market power, which firms have market concentration, i.e., large market share, and how this impacts the overall functioning of the market (Besanko & Braeutigam, 2014). With this, we shift our focus away from just looking at prices to affect the produce and consumer surplus, and look at the overarching structure of a market that affects the behaviour of the firms (Cook, Kirkpatrick, Minogue, & David, 2004).

The third method is referred to as the **Chicago School of Antitrust**. Pioneers of this method criticise merely looking at market power, since such a method considers the markets as static, with a constant state of equilibrium. Instead of assuming such a constant state of equilibrium, they recommend looking at "… conditions of entry in the long run" (Cook, Kirkpatrick, Minogue, & David, 2004). Therefore, competition policy should focus on reducing barriers to entry in a market, such that no one firm enjoys concentration and power. In contrast to the Chicago School is the **Harvard School of Antitrust**, which looks at the behavioural incentives of monopolists to act with profit-seeking methods. This is the leverage theory, which holds that a seller who has a monopoly over a product, would monopolise its components as well, such that they could gain additional monopoly profits (Posner, 1979).

The fourth method is derived from the evolutionary school of economics, pioneered by stalwarts such as Joseph Schumpeter. This perspective looks at profits and equilibrium as a short-term condition of the markets that are likely to change. What should matter the most is that the market or the industry should not lag in terms of innovation (Cook, Kirkpatrick, Minogue, & David, 2004). Thus, monopolistic or collusive practices must be prevented by regulators to ensure that productivity and innovation in an industry do not wither. The focus should therefore be on creating the right incentives such that the innovative potential is not hampered by firms.

It is visible from the above description that scholars increased their focus from just the interactions among firms in the market to the systemic changes such interactions depend on, to change the system itself, and finally, to preserve the innovative and productive potential that exists in an industry. The recognition of the role of technology and innovation in the functioning of an industry is a critical leap in thinking about regulation and competition, since it permits regulators to look at the impacts of their policy interventions in a more holistic manner.

These holistic and systemic changes must be incorporated into the regulatory governance framework, owing to features of 21st century globalisation and economics. Interconnectedness among nations has increased in terms of international trade, flexible capital flows, and relaxed immigration procedures. While this has enabled nations to more easily import talent and technologies to increase their competitiveness and productivity, it has also increased risks emanating from spillover effects. This refers to the risks emerging from events in one nation or one region of the world, affecting other regions or the world as a whole (Kenton, 2020). In the context of technological innovation, global spillover effects can occur at any stage of their development and deployment.

When seen in the domain of competition policy and regulatory governance, how one nation seeks to regulate a technology can impact similar decisions made by other nations. For example, how the United States of America (USA) seeks to regulate investment decisions by Big Tech companies into GenAI start-ups, can influence nations to develop their own approaches to managing the intersection of technology, competition, and innovation (Federal Trade Commission, 2024). Similarly, the regulatory regime developed by the People's Republic of China (PRC), a forerunner in the regulatory governance of advanced technologies, has a ripple effect on its entire start-up ecosystem, and thus, how other nations respond to it in pursuing their own economic and geopolitical interests. Technology regulation thus, needs to factor in effects on domestic and global stakeholders, as well as the impact on other industries.

At this juncture, we can shift our focus to understanding how regulatory governance has been practised in the domain of technology, and the evolving approaches when considered in the context of advanced technologies.

1.4. What is the Application of Regulatory Governance in Advanced Technologies?

The history of regulatory governance shows that Governments attempt to intervene in specific industries and markets to achieve particular outcomes. While the past few decades have seen increasing privatisation, Governments have delegated the task to various proxies, i.e., state agencies to use regulatory influence and instruments to exert control over firms in various fields (World Bank, 2010). Since such institutions have a degree of autonomy from the political inclinations of the Government itself, they have a certain credibility, which makes an industry's business environment more conducive for domestic and international participants (Levi-Faur & Gilad, Review: The Rise of the British Regulatory State: Transcending the Privatization Debate, 2004).

Interventions in an industry can be direct, as seen when the Government provides subsidies to set-up factories, or indirect, when the Government creates regulatory institutions as described above. In the case of the technology industry, Governments have used both methods (Yu, 2022). It can be seen in the context of telecom, defence, scientific research, and now, in the context of advanced technologies such as semiconductors and artificial intelligence. Technology governance may be defined as, "… as the process of exercising political, economic, and administrative authority in the development, diffusion and operation of technology in societies…" (OECD, 2023).

The focus here is on understanding the challenges that emerge from regulating such technologies. The most important challenge emerges from the risks such technologies pose, owing to their complexities and pace of innovation (Section 5.3.). Due to this, there is a significant "regulatory lag" that emerges. This refers to the temporal gap between the implementation of a technology, its effects, understanding of harmful effects, if any, and then the regulatory framework addressing such effects (Taeihagh, Ramesh, & Howlett, 2021). Regulatory lag is a consequence of the following (Taeihagh, Ramesh, & Howlett, 2021) (Eggers, Turley, & Kishnani) (Almgren & Skobelev, 2020) (Merchant & Wallach):

a) **Pacing problem** – Reverse to the slow pace of changes in regulations with the transformation of socio-economic and technological circumstances. This is especially troubling in the context of advanced technologies which have shorter life cycles, and are upgraded at a much faster pace
b) **Information asymmetry** – Emerging, advanced, and, disruptive technologies pose challenges in terms of their dissemination and control, due to a limited understanding of the mechanics of such technologies. Such asymmetries are further exacerbated owing to the "black-box" problem, which is the inability to observe the internal mechanics of any technology. Relevant to our topic, is the construction of the algorithms, datasets that they are trained on, and the absence of any public scrutiny for such closely held trade secrets. Due to this, policymakers may lack relevant and updated knowledge, leading to uninformed decisions. Such information gaps advantage some actors, posing problems not only in terms of production and consumption but also competition among industry actors
c) **Uncertainty in policy formulation and implementation** – Policy design and regulatory actions in the context of emerging disruptive technology sectors occur amidst great uncertainty. Within normal policymaking processes, there are several uncertainties about their implementation. These are exacerbated in the field of emerging technologies due to their inherent complexities. Additionally, as discussed earlier, regulators must balance competing interests between different institutions and stakeholders, which requires making trade-offs
d) **Market structure, concentration, and power –** Since there are trade-offs that need to be made, technological disruptions and the consequent regulations have a bearing on societal disparities. Such issues benefit some while disadvantaging others. Without understanding the dynamics of an industry or a sector, the structure of the market, where pricing power is concentrated, and who enjoys the benefits of networking effects, etc., regulations can inadvertently compromise the efficiency, innovation, and equity parameters that are critical to modern economic growth
e) **Lack of Coordination among Stakeholders –** Lack of stakeholder coordination complicates governance of advanced technologies and hinders effective regulation. Diverse and competing interests and agendas among stakeholders, including policymakers, industry participants, and civil society groups, create complexity in decision-making and implementation. Without efficient communication, addressing such divergent views and ensuring the responsible deployment of advanced technologies becomes a challenging endeavour

While the above provides a glimpse into the many challenges that emerge from regulating any advanced technology, it is now important to discuss the aspects of regulations targeted at GenAI.

1.5. The Challenges of Regulating GenAI

Commenting in 2000 about PRC's efforts to regulate internet services and consumption, US President Bill Clinton quipped that, "… crack[ing] down on the Internet… [is] like trying to nail Jell-O to the wall" (The New York Times, 2000).

The same can be said about the rapidly evolving nature of GenAI, which is built on layers of foundation models (FMs). FMs are an AI technology "… trained on vast mountains of data that can be adapted to a wide range of tasks and operations" (Competition & Markets Authority, 2023). These data sets are composed of text, and are trained on advanced machine learning techniques such as "deep learning", to learn and understand patterns and structures of language (Gillis, 2023). In fact, large-language models (LLMs), which are at the core of most text-based interfaces, are just one among many types of FMs (Competition & Markets Authority, 2023). Some other types of FMs include generative adversarial networks (GANs), variational auto-encoders (VAEs), and multimodal models, etc. (Buhl, 2023).

(Bandi, Adapa, & Kuchi, 2023) have provided a step-by-step breakdown of the "Implementation phases of generative AI":

S. No.	Implementation phase	Description
a)	Problem definition	Objective and constraints of the problem that the software seeks to solve
b)	Data collection and processing	Preparing datasets for training the software
c)	Model selection	Selecting an appropriate model that can be used
d)	Model training	Using datasets to train the AI model to identify patterns and distributions
e)	Model evaluation	Assessment of the performance of the model using tailored evaluation metrics
f)	Model fine-tuning	Improving and fine-tuning the model
g)	Deployment	Releasing the software to relevant markets
h)	Monitoring and maintenance	Monitoring and continuously updating the performance of the software

Table 3: Implementation phases of GenAI

The above table shows that there are a variety of models used in generative AI technology development, which can be broken down on the basis of their inputs and outputs. Thus, having a regulation that tries to have a blanket approach for such a vast field will not be comprehensive. This requires regulators to look at the rigour that goes into engineering of the models. This will help in creating evaluation metrics, to understand the impact these models are having on their intended sectors/use-cases/audience.

One can gauge the dynamic nature of this technology with the speed with which the largest and most widely used GenAI software, ChatGPT, has transformed its services. In November 2022, OpenAI launched ChatGPT, providing access to the text-based interface called GPT 3.5 LLM. Within 5-days, the platform garnered 1 million users (Malik E. , 2023). By January 2023, it had over 100 million users on its platform, setting the record for the "… fastest-growing consumer application in history…" (Hu, 2023). In September 2023, it launched DALL-E 3, which is an image generator, i.e., converts text prompts into images. Image generation FMs are trained on a combination of image and text (Competition & Markets Authority, 2023). In February 2024, OpenAI launched Sora, a text-to-video generator "that can create realistic and imaginative scenes from text instructions" (OpenAI, 2024). In a span of less than one-and-a-half years, OpenAI developed the databases, FMs, and the requisite technologies, to go from a text-based interface to a text-to-video generator. It is important to note that OpenAI is just one among many international start-ups that have built such a wide range of tools. In India, various start-ups across health, insurance, education, etc., have also been experimenting with GenAI tools to enhance the experiences of their users.

GenAI thus not only has wide applications, but also has a diverse range of FMs, which are constantly evolving, to suit the requirements of specific sectors, products, and consumers. Therefore, regulations have to be designed considering the continuous advancement in technology which is going on at an exponential rate (Ferrari, Dijck, & Bosch, 2023) showcasing the importance of identifying and delineating what should be regulated and what should not. What must be regulated is a regulatory object. Taking the example of the financial services industry, they write:

"A case in point is the governance of high-frequency trading algorithms that are used in financial markets to execute transactions. Seyfert (2021: 6) demonstrates in his analysis of the German High Frequency Trading Act that "the demarcation of a manipulative trading algorithm is only a derivative second step after objectifying the algorithm as a distinct object." In this case, the trading algorithm needs to be meticulously distinguished from both the trading platform and the trading firm. Although these three governance entities are inherently interconnected, it is pivotal to differentiate them analytically. Without a clear specification of what constitutes the regulatory object (and how it can be defined), it is impossible for regulators to observe it over time. As Seyfert (2021: 12) explains, "trading firms were obliged to redraw the demarcations of algorithmic objects within their socio-technical systems, strictly separate algorithmic and human activities." In this case, clear-cut analytical separations made the operations of quickly changing and secretive trading algorithms observable to regulators."

Understanding such technical details requires regulators to have an understanding of the components of GenAI systems, to reduce the risks as discussed previously. This is especially true since advanced technologies have a vast influence over a nation's social set-up. As seen above, the rate of adoption of such technologies is phenomenal. Thus, regulators cannot exist within a vacuum, by merely understanding market dynamics. A report by *FTI Consulting* shows the harm that can be accrued if such factors are not accounted for (FTI Consulting, 2023):

"... the cost of poorly implemented AI systems with inadequate governance principles could also be significant, even if it doesn't result in litigation. For example, in November 2021, an American online real estate marketplace leader had to tell shareholders that they had to close part of their operations and cut 25% of the company's workforce due to the error rate in the machine learning ("ML") algorithm it used to predict home prices."

In this section we have taken a glimpse of the many complex and uncertainties emerging from the regulation of GenAI. A 2023 study by Stanford University analysed the ten most commonly used GenAI applications, to check if they complied with the European Union's recently passed Artificial Intelligence (EU AI) Act. Their research showed that none of the models had complied with the Act (Burt, 2023).

We can now switch to understanding efforts in different jurisdictions to regulate AI and GenAI.

2. Surveying the Global Experience with Regulating GenAI

Some of the most important regulations regarding AI have been developed in countries across the world, including USA, Mexico, the United Kingdom (UK), Germany, South Africa, Ethiopia, Algeria, Malaysia, Australia, New Zealand, China, Japan, South Korea, and many more (EY, 2024). India is expected to release a comprehensive regulations regime for AI within the Digital India Act, and also amend the Information Technology (IT) Rules of 2021 (Aryan, 2024). Countries that have pioneered AI regulations include China, the USA, and the EU.

The People's Republic of China (PRC) has created comprehensive regulations targeting how algorithms are structured, and how technology companies need to create specific applications using AI (O'Shaughnessy & Sheehan, 2023). There is a structure underlying China's regulations regarding AI (Sheehan, 2023) (Ferrari, Dijck, & Bosch, 2023):

a) **Algorithms as the starting-point of regulations –** The focus is on using the AI supply chain as the domain of regulation, which includes regulating training data, algorithms, and computing power. The *Interim Administrative Measures for Generative AI*, released in March 2023 in China, provides for "oversight instruments", to achieve specific compliance requirements. This includes the algorithm registry, where understanding the engineering and coding behind the specific algorithms used in every product are to be maintained and monitored on a database. GenAI companies, classified as "service providers" would thus file their algorithms for security assessments. This also includes disclosure obligations regarding training datasets used for models, and designing applications, and integrating technical details to assign mandatory watermarks for AI-generated content

b) **Building a regulatory nomenclature –** Initially, the complex algorithms behind the FMs were a challenge for regulators. To understand these and build a suitable regulatory framework, it became necessary to engage with AI companies and service providers, and design specific terminologies. Thus, the regulators have focused on stakeholders as the source of information and exploring specific tools to regulate the products. Interestingly, there is a clear expectation that AI and GenAI services would adhere to "Socialist Core Values"

c) **Vertical and iterative regulatory approach –** China has still not implemented a comprehensive AI law, akin to the EU AI Act. However, it has built a model that is vertical, i.e., targets specific applications of AI services, and is iterative, i.e., addresses flaws arising out of algorithms and related regulations

The European Union (EU), which with the *EU AI Act* has taken a risk-based systemic approach, intended to create an umbrella-like governance structure to regulate all components of AI technology (European Union, 2023). Focusing on the FMs that go behind designing any AI software, are data governance measures to mitigate a variety of AI risks, such as bias in the software, cybersecurity, etc.

In pursuit of this, a variety of corporate governance frameworks are supposed to be implemented by all companies launching GenAI services, that need to be present throughout the life-cycle of these software (Hacker, Engel, & Mauer, 2023). While this is on the corporate governance side, there is also a classification system that has been implemented, that effectively treats all foundational models at some level of risk (Unacceptable risk, High-risk, Limited risk). Focusing on GenAI models, the legislation mandates compliance with transparency requirements such as disclosing AI-generated content, preventing the generation of illegal content, and "… publishing summaries of copyrighted data used for training" (PwC, 2023). While the EU AI Act provides such binding authority, it is up to the "standardisation agencies" of the countries and the EU to implement them (O'Shaughnessy & Sheehan, 2023).

Actions in the **USA** with regards to GenAI need to be seen from the efforts of specific entities. This is because the United States has not yet legislated any central AI regulations. The White House has provided a normative impetus by focusing on a systemic and rights-based approach to governing the technology. The *Blueprint for an AI Bill of Rights* provides a value-orientation to how AI technologies need to account for online safety, algorithmic discrimination protection, data privacy, feedback mechanisms, and fail-safe procedures (The White House, 2023). Using these principles, companies are expected to "… design, use, and deploy automated systems to protect the rights of the American public…" (Luckett, 2023). It should also be noted that the USA is drafting specific legislation targeting use-cases of AI, such as how it is used in governance mechanisms, facial recognition, etc. As part of *Actions to Promote Responsible AI Innovation that Protects Americans' Rights and Safety*, the White House and its constituent elements are also spearheading (The White House, 2023):

a) **Public Evaluation of AI Models with Stakeholder Participation** – The White House has formed a committee including Anthropic, Google, Hugging Face, Microsoft, NVIDIA, OpenAI, and Stability AI, to undertake a public evaluation of AI systems, and check their consistency with disclosure principles. The aim of this endeavour is to involve community partners and AI experts to understand whether the current method of building models is consistent with the principles as laid down under the AI Bill of Rights. Similarly, the President's Council of Advisors on Science and Technology (PCAST), was tasked with inviting comments from the general public on the risks emanating from AI, and how they should be managed such that equitable and responsible technologies are developed (PCAST, 2023).
b) **Mitigating Risks Emanating from AI** – The Office of Management and Budget (OMB) was tasked, and in November 2023, released a "guidance policy" on how government agencies in USA should responsibly integrate and use AI in their functions. The document provides a detailed description of the likely governance standards, inter-agency cooperation, strategies for innovating with and implementing AI in their systems, and standards of responsible integration of AI into their functions, such as, infrastructure, data, cybersecurity, and workforce (Office of

Management and Budget, 2023). An important component of this is GenAI, where there is special emphasis put on exploring "… beneficial use cases… and establish adequate safeguards and oversight mechanisms… to be used in the agency without posing undue risk." The OMB also recommends

c) **Investments for AI Research & Development** – Creating institutions that would specialise on how best AI technologies can be integrated in specific industries such as climate, agriculture, energy, public health, education, and cybersecurity

While the White House continues with these initiatives, **the Federal Trade Commission (FTC)**, has launched an inquiry into the investments and partnerships by five Big Tech companies in GenAI and cloud service providers (Federal Trade Commission, 2024). The purpose of this inquiry is to understand how investments made by specific players into this dynamic and strategically important technology are going to impact the competitive landscape. As part of the inquiry, the FTC is asking specific information pertaining to (Federal Trade Commission, 2024):

a) Specific investments or partnerships, including agreements and strategic rationale
b) Practical implications in terms of decision-making around product releases, governance, etc., from such investments or partnerships
c) Impact of such transactions on market share, competition, competitors, markets, sales, and expansion
d) Competition for inputs and resources needed to build GenAI products and services
e) Information regarding such transactions provided to other governments, including foreign governments, or any of their entities

The timing of this inquiry is especially important since a few companies have increasingly emerged at the center of the investment landscape for this technology. This includes companies such as Microsoft, Google, and OpenAI. While Google has invested in building its own GenAI software, Microsoft has also been investing in several companies. In 2019, Microsoft invested in OpenAI, which as was explained earlier, is the most widely used GenAI software (Novet, 2023). In 2024, Microsoft invested in a French GenAI startup, Mistral, which is also OpenAI's competitor (Malik & Hu, 2024). The fact that Microsoft, a Big Tech company, which has its own AI services operating on its search engine, and recently launched an AI assistant for personal computers, has invested in competitors in the AI industry, certainly poses questions about the risks to competitiveness in the industry.

It is also important to note that while specific entities in the USA are undertaking comprehensive policy efforts to design their approach to AI and GenAI adoption, there is an increasing inter-agency coordination. This includes the Consumer Financial Protection Bureau (CFPB), Department of Justice (DoJ), Equal Employment Opportunity Commission (EEOC), and Federal Trade Commission (FTC). Each of these entities specialises in specific aspects of regulation, such as consumer rights enforcement,

law enforcement, civil rights enforcement, and competition regulation. The aim of this inter-agency cooperation is to identify flaws in data and datasets, models (foundation models), and the design and use of automated systems, that may lead to a violation of federal law, and contribute to unlawful discrimination (CFPB; DoJ; EEOC; Lina Khan, 2023). This effort by these entities is an acknowledgement that the tools, data, and models, that regulators use, will not only be interdependent, but also biased. Addressing such complexities in the regulatory system arising not only from the system, but also from the technologies used, is critical.

It can be seen from the above that each jurisdiction has taken its own approach to regulating GenAI. While the PRC has taken a granular approach, looking at each of the components that go into making AI and GenAI software, the EU has taken an umbrella-structure approach, providing firms with laws and regulations that need to be adhered to when designing the life-cycle of AI and GenAI tools. The USA has not only provided a normative impetus in the form of the *AI Bill of Rights*, but has also witnessed increasing stakeholder and inter-agency cooperation, a key component of regulatory governance, to design safe GenAI solutions. Relevant authorities in **the United Kingdom (UK)** have invested their resources in understanding the complexities of GenAI first, and then building a regulatory framework. The aim is to ensure that the competitive advantage, and technological and business innovation that comes with AI and GenAI is not lost.

In September 2023, UK's **Competition and Market Authority** (CMA) published a comprehensive report titled *AI Foundation Models: Initial Report*, delving into the intricate details of what goes into making FMs, their use cases, and how the method with which companies develop and distribute such technologies impacts the competitiveness of different industries. An interesting finding in this report is the one focusing on how "… network effects and switching barriers can lead to consolidation, weak competition, and a 'winner- takes-most' outcome…", in the early-stages of market development (Competition & Markets Authority, 2023). This is an important area of research, since the GenAI industry is still in the initial stages of its development. As seen earlier, this industry is also increasingly being centred around the same actors, who are involved not only in its investments and technological innovations, but also their role in government policymaking. To conduct such an assessment, CMA looked at the following components at the core of any modern technology industry (Competition & Markets Authority, 2023):

a) Data
b) Computation
c) Technical expertise
d) Access to funding
e) Open-source models
f) Uncertainties around the development of FMs and impact on competitiveness thereof
g) Licensing agreements

Some of the important observations that emerged were that the more consolidated the markets for such factors become, the more monopolised the GenAI industry becomes. We can take the market for proprietary data as a sample of this argument. New training methods and model architectures are focal points for GenAI service providers, whose aim is to enhance the efficiency and performance of FMs. However, there are several uncertainties regarding the pace and extent of these innovations. For this purpose, firms need access to vast training data, with potential reliance on web indexes for data acquisition. Therefore, a critical determinant to the competitiveness of such firms becomes accessibility to such data sources. This could either foster a dynamic market of data providers or create barriers to entry, favouring established GenAI service providers, and potentially, stifling competition (Competition & Markets Authority, 2023). Addressing such concerns requires firms to have access to data tools that are publicly available. The report notes how open-source methods of software development can help create a more even business environment in the GenAI industry. Microsoft, an investor in OpenAI, uses the GenAI technology in its search engine Bing. Gemini, which is Google's LLM, is also integrated into its search engine. The underlying models of their technologies are closed-source, i.e., inaccessible to the public. Two risks arise from these circumstances:

a) Google has a thorough dominance in the ad-search, online search, and mobile applications markets. Google has massive datasets at its disposal to train its FMs with. This dominance is already under scrutiny in multiple jurisdictions
b) As a Big Tech company with a large market capitalisation, dominance in the office software market, and an investor and designer of AI and GenAI technologies, Microsoft has access to capital, human resources, and data sets, that raise important questions regarding competitiveness

However, the CMA report also notes that it is uncertain if the market power of large technology companies offers them any competitive advantage in the GenAI market. It notes, "Factors such as innovation, community collaboration, and emerging technologies could potentially disrupt the existing dynamics, making the future competitive landscape less predictable" (Competition & Markets Authority, 2023).

As is visible in the case of USA and UK, regulators have been proactively assessing the markets for AI and GenAI. The USA and the UK are also among the top-three recipients of investments in AI companies and technologies (India ranks fifth) (Ahaskar, 2023). The flows of investments and business activity make it imperative for the competition and markets regulators to constantly monitor the industry and its offshoots, to ensure there is no consolidation of market power and abuse of dominance. This also applies to India.

3. Efforts at Regulating AI and GenAI in India

3.1. Contextualising the AI Boom in India

Figure 1: Investments in India's AI Sector

Sources: *(Ravi & Nagaraj, 2018)*, *(Arnold Z. , 2020)*, *(NASSCOM)*, *(Amrita, 2023)*

As seen in Figure 1, investments in India's AI sector increased exponentially between 2018 and 2022, since the NITI Aayog's *National AI Strategy* was published. This investment boom enabled India to become the fifth largest recipient of funding in its AI sector in 2023 (Ahaskar, 2023). Such funding is critical to create a robust AI start-up ecosystem that would increase India's productivity, innovation, and competitiveness in this sector.

Similar investment data can be seen with the trends in the GenAI sector. There are over 100 start-ups operating in the GenAI sector in India, and with the diverse applicability of this technology, it has encouraged 70% of start-ups to embed AI within their technology systems (NASSCOM, 2023). It is encouraging to note that in the GenAI sector, there are over 70 native start-ups, of which 58% were founded in or after 2021. Cumulatively, these start-ups have raised over $440 million in funding since 2019 (Inc42, 2023). This data shows that the GenAI sector in India is receiving increasing support in the form of investments, and that the adoption of AI is also hinging on the success of this sector. Thus, the market is certainly showing optimism for the applications of such technologies.

However, as discussed previously, an unregulated market can be detrimental to the competitiveness of the economy as well as normative values set when designing such technologies. Additionally, there are several markets within the AI and GenAI sectors, that need to be understood in greater detail. Here, Indian regulators can grasp lessons from UK's CMA, that has investigated the market for proprietary data, licensing agreements, etc., to understand their impact on the overall GenAI market (Competition & Markets Authority, 2023).

3.2. Equity, Equality, and Innovation: A Balancing Act in the Indian Context

The Government of India has certainly taken cognisance of the risks emanating from AI technologies. In the domain of advanced technologies, India has designed several industrial policies targeting their manufacturing and distribution. However, a specific regulatory regime for AI is yet to be implemented.

In 2018, India's leading public policy and Government endorsed think-tank, NITI Aayog, provided some guidance on a strategy for AI development in India. The document clearly gave normative impetus to India's AI strategy being predicated upon principles of inclusivity and development for all (NITI Aayog, 2018). Captioned #AIforAll, the strategy document focuses on how India can use its talent pool in the technology sector, invest greater resources to build capacity for AI and other advanced technologies, and create an investment regime that makes India a lucrative destination for such technologies. From a purely commercial lens, one can gauge the success of this strategy from the following data.

3.3. Unpacking MeitY's March 2024 Advisory to Data Intermediaries

Regulations in India operate in a highly legalistic manner. The two primary legislations governing digital companies are:

a) The Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021, also referred to as *IT Rules 2021*
b) The Digital Personal Data Protection Act, 2023, also referred to as *DPDP 2023*

The IT Rules 2021 focuses on content regulation by digital companies on their respective platforms, such as content removal, grievance redressal, content restrictions and due diligence while onboarding customers (Ministry of Electronics and Information Technology, 2023). DPDP 2023 focuses on how the personal data of all Indian citizens must be handled by companies, while keeping in tact principles of consent, privacy, and innovation (Ministry of Electronics and Information Technology, 2023).

While the IT Rules refer to digital companies providing digital services as *intermediaries*, DPDP refers to such companies as *data fiduciaries*. The distinction between the two is important since both statutes refer to two different aspects of digital technologies: Content distribution, moderation, and consumption, as governed by the IT Rules, and content generation, as governed by DPDP. Companies offering Gen AI-based services are to be abided by these two statutes and their relevant provisions dealing with different aspects of the AI ecosystem. This is because GenAI solutions not only consume immense amounts of data in their training, and the content they generate, but also since consumers re-purpose this in a variety of ways and further use on different digital platforms.

On 01st March 2024, India's Ministry of Electronics and Information Technology published an advisory on the subject: Due diligence by Intermediaries / Platforms under IT Rules 2021. This advisory was

specifically for companies using AI models such as LLMs, which is just one among many FMs, as discussed earlier. The Ministry prescribed the following compliance procedures for digital intermediaries (Ministry of Electronics and Information Technology, 2024):

a) Companies using AI models must not violate rules of content creation, storage, and distribution that violates Rule 3(1)(b) of IT Rules 2021
b) Platforms must prevent algorithmic bias and process threats to election processes emerging from the use of AI models
c) In case of AI models that are "under-tested" or "unreliable", citizens must be informed of such a circumstance using methods such as pop-ups and disclaimers. However, the public release of services built on such models must be done after gaining "explicit permission" from the Government of India
d) Users must be clearly informed of the terms and conditions of using services built on AI technologies, and the consequences of using unlawful information

The advisory further mandated that computer generated content is labelled as such, and that non-compliance with the any of the above would result in prosecution by the Government of India.

As can be seen, there are several challenges that emerge from the above, which can be deemed as excessively bureaucratic and punitive. Some of these challenges are:

a) What are the testing standards to deem an AI model ready to be deployed for public consumption?
b) Which are the nodal agencies for certifying such models?
c) While aiming to instruct compliance requirements, there are several ambiguities, such as "under-tested", or "unreliable" AI models, requiring "explicit permission" from the Ministry. Is MeitY working on a database akin to the algorithm registry in China? If not, what are the procedures required to gain this permission?
d) Are the Ministry's instructions too punitive, especially considering there is unclear enunciation of the rationale, procedures, and standards that it seeks to address in AI models?

This is in complete contrast to the more collaborative and granular approach taken by regulators, such as the Information Commissioner's Office (ICO), the UK's independent public information authority. In January 2024, the ICO started a three months long public consultation with technology companies, to understand their perspectives on how regulations should be shaped to address GenAI risks. The ICO, like the CMA, started by understanding the methods of training GenAI models, and how lawful methods may be developed (Information Commissioner Officer, 2024). This process allows for the identification of specific issues related to GenAI, enabling the ICO to tailor regulations to address specific concerns effectively. This helps in ensuring that regulatory measures are well-informed and responsive to the

complexities of GenAI technology, while also keeping stakeholders onboard, and thus, reducing risks of disruptions to the ecosystem's innovation and productivity.

The above analysis of MeitY's advisory reveals the absence of a conceptual framework in regulating AI in India. It contradicts the otherwise strong grasp of the technologies that underlie, and the Government's understanding of the strategic value of this industry. In the absence of a conceptual framework, and identifying the right tools such that it can balance its commitments to multiple stakeholders, such advisories would defeat the purpose of coherent and sustainable policies.

Post-release of this advisory, a lot of start-ups came forward in opposition to it majorly for the reasons stated above. Later, the MeitY released a new advisory that superseded the previous one, by removing certain mandatory clauses like "explicit permission" from the government.

The next section seeks to propose a conceptual framework for the regulation of AI in India.

4. A Conceptual Framework for Regulatory Governance of GenAI in India

As explained in the previous section, what India lacks is a conceptual framework for regulating GenAI. While the Government of India has invested significant resources in many components of the technologies that are required to build a robust AI industry in India, and is still in the process of building regulatory architecture around data governance and content moderation, GenAI presents its unique challenges which are needed to be addressed at policy levels. This section briefly presents the steps in creating such a framework.

4.1. Regulation? Governance? Both?

How a state chooses to address its priorities, challenges, and opportunities can be seen in the way it formulates and implements its policies, allocates resources, engages stakeholders, and balances competing interests. Drawing on principles of political science, management sciences, and economics, governance provides an abstract framework that covers "… institutional arrangements by which the coordination, regulation, and control of social systems and subsystems are enabled and facilitated… " (Schneider, 2004). Thus, how decisions are made, who makes those decisions, what is the scope of these decisions, who are within the purview of such decisions, and the accountability mechanisms to ensure such decisions are lawful. Over the past few decades, as free market principles increasingly played a role in policymaking, a new method of governance emerged in multicultural and multinational entities such as the European Union (EU). This method of governance is "the Third Way", where various societal interests, such as labour unions, business associations, and other stakeholders, are involved in decision-making processes alongside government authorities. This is a corporatist governance method, where diversity and "semi-voluntary" coordination among industry participants are encouraged, such that the collaboration yields desired policy outcomes (Arnold & Pennings, 2004).

Regulations are specific processes, rules, laws, standards, and directives by an authority to modify the behaviour of industry participants (Levi-Faur, 2010). Adhering to such mechanisms involves significant *regulatory costs* on the *regulated entities*, that are imposed by *regulatory institutions*, to ensure specific outcomes are achieved. Regulators have "soft and hard laws" at their disposal to enforce such mechanisms upon entities. The most important difference between these laws is that soft laws incorporate "social norms… in the governance of societies and economies" (Levi-Faur, 2010). In essence, any mechanism that seeks to bring about behavioural changes among members of a group, either in a society or economy, whether such mechanisms incorporate social norms or not, is a regulation.

What emerges from this discussion of regulation and governance, as well as the theoretical foundation set earlier, is the importance of avoiding a one-size-fits-all approach when it comes to regulating technology. While governance is a more abstract framework, since regulations are specific to industries, it is important for them to incorporate the pluralist entities and their views. The union of these two

entities reveals the concept of regulatory governance, where the state sets broad objectives, principles, and incentives to act in a certain way, but industry stakeholders manage their own affairs such that innovation and productivity are not hampered. "… regulation is the promulgation of prescriptive rules as well as the monitoring and enforcement of these rules by social, business, and political actors on other social, business, and political actors… " (Levi-Faur, 2010).

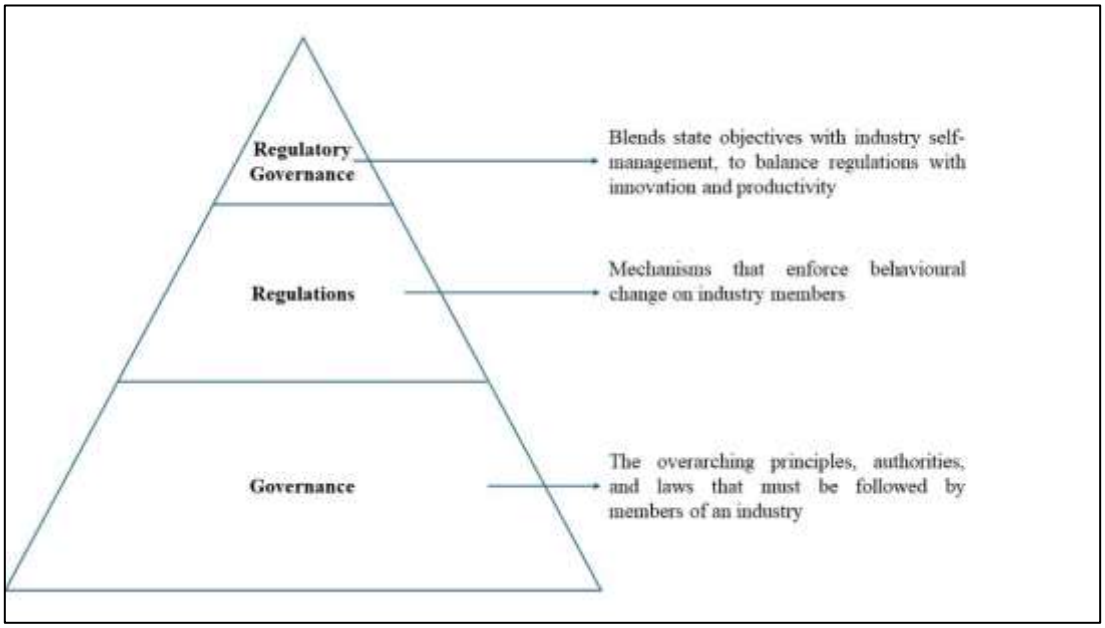

Figure 2: Visualising the Regulatory Pyramid

From Figure 2 we can imagine how a regulatory framework for GenAI may work:

a) **Governance –** The Government clearly outlines the responsibilities of GenAI service providers regarding user privacy, user consent, content moderation, and principles of competitive economics to ensure the industry does not violate Indian laws. The IT Rules, DPDP Act, and the upcoming Digital India Act would form the core of statutes that all entities in the AI and GenAI industries would have to adhere to.

b) **Regulations –** How regulators choose to communicate with stakeholders, on what frequency, and for what reasons, are critical components of specific mechanisms to modify behaviour. The earlier MeitY advisory discussed in the previous section reveals an ad hoc approach which would not necessarily benefit industry participants since it contains several ambiguities. Regulators such as MeitY, CCI, RBI, and others who are providing regulatory guidance to AI and GenAI service providers need to have a more coherent and coordinated approach so that it should not lead to ambiguities and higher compliance costs for members. As seen previously, many GenAI service providers are start-ups that may not have the revenue to cover expensive compliance costs. This requires the regulators to provide a clear and consistent framework for regulatory communication, ensuring transparency, minimising compliance burdens, and thus, supporting the start-up ecosystem.

c) **Regulatory Governance –** The Government sets clear guidelines on a coordinated approach where industry stakeholders, including regulators, service providers, research think tanks, universities, and civil society groups, work in tandem to achieve specific policy objectives. This way, the Government uses governance methods, and the regulatory architecture, to ensure desired results are achieved.

The term "policy objectives" has been mentioned multiple times previously. While the above framework can help in imagining how regulatory governance might work for GenAI in India, it is critical for the Government to clearly establish objectives, such that, there is a clear roadmap that can be built by industry stakeholders.

4.2. Grasping the Complexities of Regulating GenAI

Policymaking is an intricate process, requiring the clear enunciation of goals and solutions for problems. (Knill & Tosun, 2008). It is for this reason that the first stage of policymaking is *agenda setting*. There are two kinds of agendas that policymakers need to distinguish between (Knill & Tosun, 2008):

a) **Systemic agenda –** The set of all problems faced by a particular society that need to be addressed by entities
b) **Institutional agenda –** The set of all problems that can be seriously considered for solving by policymakers

The challenge with GenAI emerges from how dynamic and unpredictable its technologies, markets, and impact are. This adds on to the problem-formulation of policymaking, which is in any case plagued by limited data, plurality of views, uncertainties, and complexities. These terms, uncertainties and complexities are important when discussing any technology, especially one that functions autonomously as GenAI. Complexities in policymaking refers to a system that, "… contains so many variables, feedback loops and interactions that it is difficult to project the consequences of a policy change", while uncertainties are the, "… incomplete knowledge about alternatives that do not yet physically exist, for a future world that is unknown and largely unknowable" (Walker, 2000).

The need of the hour for the Indian government is to recognise the impact of such complexities and uncertainties of regulating such a technology and its market, and develop a regulatory framework such that it balances competitiveness, innovation, and normative goals. In this regard, the Economic Advisory Council to the Prime Minister (EAC), in December 2023 published a report on the myriad complexities, and the unpredictable nature of AI systems, that make it a high-risk technology (Sanyal, Sharma, & Dudani, 2023). The report highlights the importance of understanding AI as a system of complex, interdependent systems that "… interact and evolve in unpredictable ways." Such complexities and unpredictability can lead to "butterfly effects," where even seemingly insignificant changes can lead to consequential events.

In *Normal Accidents: Living with High-Risk Technologies*, Charles Perrow delves into the internal and external organisation of entities exercising control over technologies contributes to accidents. He explains the concept of "normal accidents" as the consequences of "highly complex" and "tightly coupled" systems (Perrow, 1984). Coupling and complexity may be seen as the "interconnectedness" between different networks, as well as their constituents, and how the failures in these entities contributes to an accident or a systemic failure. The effort of a regulatory policy must be to address such interconnectedness and reduce them, such that the systemic risk emerging from high-risk technologies can be more efficiently assessed, regulated, and controlled. Such interconnectedness may arise out of market consolidation which requires the intervention of competition regulators, ambiguous and vague policymaking requiring the intervention of specific Government departments, and lack of coordination among regulatory bodies requiring the establishment of cross-agency collaboration. Addressing such complexities arising not only from the technology, but regulations, requires that solutions are not "unrealistic" in their formulation and "informational requirements" (Mueller, 2019). This requires the Government to comprehensively monitor the sector, yet, not control every aspect of its system, such that it is mired in bureaucratic costs and overwhelming the innovative potential of the sector.

4.3. Studying some Tools to Regulate GenAI

There are four types of policy instruments (Bengtsson, Hotta, Hayashi, & Akenji, 2010):

Policy Instrument	Description
Compliance through regulation	Regulatory tools that mandate specific behavioural change by imposing restrictions. While effective in yielding immediate results, these instruments face challenges such as resistance from industries due to uniform regulations, which can stifle business development and economic growth.
Market-based incentives	Utilise market-based incentives to modify behaviour, such that societal goals can be achieved. Such instruments encompass taxes, subsidies, tradable permits, etc., to affect changes in the life cycles of products. These instruments enable tailored responses, thus reducing the disruption to innovation and productivity. However, effective implementation requires robust institutions, sophisticated monitoring, and accurate pricing to avoid free-riding.
Informational instruments	Leverage information collection and distribution to empower stakeholders with informed choices. They encompass government-provided information such as mandatory disclosures, to guide consumers and investors towards suitable options. However, their effectiveness hinges on stakeholders' awareness of the market and its components. Such instruments have been effective in enhancing resource efficiency and pollution reduction through industry disclosures and energy efficiency labelling. However, their success relies on aligning economic incentives with equitable goals to modify behaviour of participants.
Voluntary instruments	Non-binding commitments by firms to enhance performance through voluntary action. Such commitments can be unilateral and private, announced voluntarily by entities, or negotiated with authorities to set specific performance standards. While such instruments afford incredible flexibility to industry participants, they lack the effectiveness and enforceability needed to address serious issues. From a competitive point of view, such instruments may benefit market leaders disproportionately, since they provide them with opportunities to shape regulations in ways that suit their interests, potentially creating barriers to entry for smaller competitors. Additionally, the voluntary nature of

	these agreements may result in limited participation, particularly among entities unwilling to bear the costs associated with voluntary compliance.

Table 4: Four Primary Policy Instruments

Due to the dynamic nature of most policies, and the fact that policies address multiple stakeholders, it is important that the efficacy of the above instruments is tested in a hybrid fashion, i.e., by combining the strengths of each and designing a comprehensive framework (Raab & Hert, 2007).

4.4. Regulatory Impact Assessment

An important policy instrument that has been developed in the context of regulating AI, is regulatory impact assessment (RIA). (Ladegaard, Lundkvist, & Kamkhaji, 2018) define an RIA as:

'… a flexible tool that helps governments make better regulatory… decisions based on information and empirical analysis about the potential consequences of government action…'. The aim of RIA is to ensure that better policy options are chosen by establishing a systematic and consistent framework, including stakeholder consultation, for assessing the potential impacts of government action. A systematic application of RIA, when embedded in the policy process, trains decision-makers to ask and answer targeted questions, at the beginning of the policy cycle, about the need for and goals of regulation, and the possible consequences of government action. The many methods used in RIA – including benefit-cost, cost-effectiveness, and least-cost tests, and partial tests such as administrative burden and small-business tests – are means of giving order to complex qualitative and quantitative information about the potential effects of regulatory measures.

Impact assessment as evaluation rather than research, emphasises practical and actionable insights for improving interventions. This approach assesses effectiveness and generates information for decision-making. It is contrasted with the broader goal of generating knowledge via research. The focus is thus on the real-world implications of policies (Mackay & Horton, 2003). There are three types of impact assessments in the context of interventions (Maredia, 2009):

a) Macro-level, which looks at aggregates or systemic-level changes
b) Micro-level, which looks at changes in the position of beneficiaries
c) Miro-level *ex-post* analysis, which retrospectively looks at changes in benefits received by beneficiaries

4.5. Institutionalising the Regulation for GenAI in India

No One Size Fits All Regulation Approach: India critically needs a nuanced and adaptable approach that acknowledges diverse applications and industries that depend on GenAI and vice-versa. Like any technology industry, GenAI spans various domains each presenting unique challenges and ethical

considerations. A rigid, one-size-fits-all regulatory framework would fail to address the complex interconnectedness between technology, industry and market dynamics, and societal needs. Instead, a flexible regulatory approach is imperative to accommodate the rapidly evolving nature of GenAI technologies and their applications.

Regulators Handling Industries and GenAI Usage: The Securities and Exchange Bureau of India (SEBI) is most adept at regulating the market for derivative securities in India. The Reserve Bank of India (RBI) is most adept at regulating the banking and financial services sector, including the fintech ecosystem in India. The Pension Fund Regulatory and Development Authority (PFRDA) and the Insurance Regulatory and Development Authority (IRDA) are most adept at regulating the pension and insurance industries in India. Similarly, national and state ministries and authorities focusing on medical health infrastructure, communications, education, employment, etc., are most adept at understanding the impact of GenAI on their specific industries.

Avoiding a one-size-fits-all approach also requires that each regulator is permitted to adapt their oversight mechanisms to monitor how GenAI products are utilised within specific industries. This entails understanding the potential benefits and risks associated with GenAI adoption in various sectors. Regulators must develop expertise in evaluating the impact of GenAI on market dynamics, consumer behaviour, and industry practices. Collaborative efforts between regulators and industry stakeholders are crucial to ensuring the responsible deployment and usage of GenAI technologies.

International Cooperation: As seen in this report, the flows of technologies, talent, and data, are fluid in today's world. This requires international cooperation in regulating GenAI. Collaboration among nations, especially among their regulators enables the exchange of best practices, facilitating the development of common frameworks and standards. Through this, countries can work together to mitigate risks, promote ethical AI development, and ensure that regulatory efforts are effective across borders. As a pioneer in several technological systems such as the digital public infrastructure (DPI), India has a tremendous opportunity to take the lead in fostering such cooperation.

5. Conclusion

This report has delved into the many intricacies needed to design a regulatory governance framework for GenAI in India. Through a meticulous examination of existing models, frameworks, and theoretical foundations, the report has presented a range of perspectives that need to be adopted to design such a framework. It has also presented the complexities, arising out of the technology and existing regulations that need to be addressed, as well as the tools and institutional considerations that should be explored to design this framework.

Across the world, nations and multinational entities are adopting diverse strategies to address the opportunities and risks emerging from AI and GenAI. Noteworthy regulatory frameworks have emerged from countries like the USA, China, and the EU, each tailored to their specific contexts. China's meticulous approach focuses on algorithmic structures and regulatory nomenclature, while the EU embraces a risk-based systemic approach under the EU AI Act. Despite lacking centralised AI legislation, the USA underscores stakeholder collaboration and norms like the AI Bill of Rights. Coordinated efforts among agencies within the US ensure a comprehensive approach to AI regulation. Meanwhile, the UK's proactive stance involves thorough assessments of GenAI market dynamics to avert monopolisation. As these jurisdictions navigate the challenges of regulating GenAI, continuous international cooperation and monitoring remain pivotal for fostering ethical, innovative, and competitive AI ecosystems worldwide.

In India, the absence of a defined conceptual framework for GenAI must be tackled, and this was addressed by the report. Despite a booming AI sector, incredible adoption of the technology, and significant investments, as well as an evolving legal architecture around data governance and content moderation, GenAI presents unique complexities that must be grasped at the first level.

Most importantly, the report draws on various disciplines and perspectives to argue that there is a distinction between governance, regulation, and regulatory governance. While regulations entail specific rules and directives enforced by authorities, governance provides a broader framework encompassing institutional arrangements and stakeholder engagement. The convergence of these two elements forms the essence of regulatory governance. Here, the state sets objectives and incentives, while allowing industry stakeholders to manage their affairs within legal boundaries. In pursuit of this, the report highlights three important principles that regulators must imbibe to institutionalise such a framework. Recognising the dynamic and unpredictable nature of GenAI, the report emphasised the need for flexibility in policymaking. Policymakers must navigate complexities and uncertainties inherent in regulating high-risk technologies, leveraging regulatory impact assessments (RIA), and hybrid policy instruments to enhance effectiveness.

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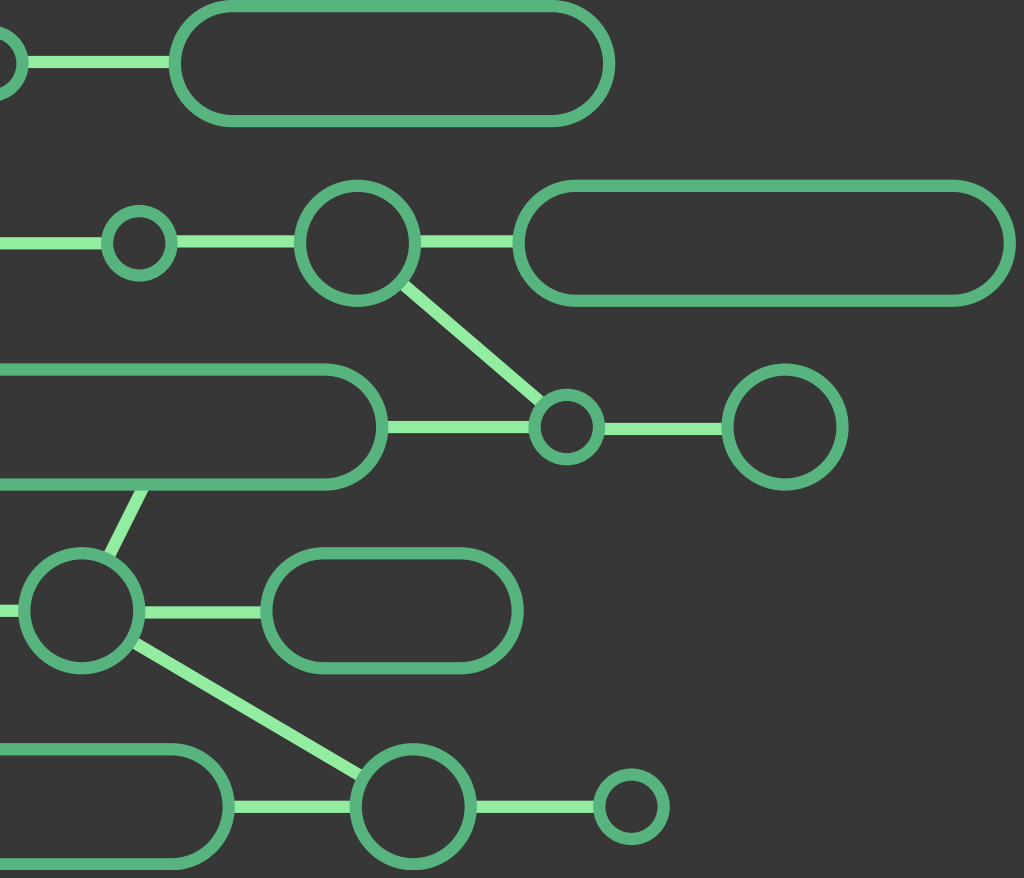

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