Transitioning from Administrative to Market-Based Spectrum Management in Sri Lanka: A Critical Analysis

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ABSTRACT

Purpose: In Sri Lanka, the Radio Frequency Spectrum (RF spectrum) has traditionally been overseen managed and regulated by the government regulatory body(s), mainly accommodating the administrative RF spectrum management regime. This approach entails allocating and assigning RF spectrum to licensed operators solely through administrative means, with the regulatory authority having sole control and rights over it. However, in line with global trends, in recent years, many countries have begun to transition towards market-based approaches to RF spectrum management from legacy administrative regime, aiming to improve efficiency, promote innovation, and foster competition in the telecommunications sector. Currently, the regulatory landscape in Sri Lanka is also exploring the transition towards a market-oriented spectrum management regime. In this context, this legal research article critically analyses the viability and appropriateness of the transition from administrative RF spectrum management to market-based RF spectrum management in Sri Lanka in a regulatory context, highlighting various dimensions to be considered while migrating.

Design/methodology/approach: In this research paper, the authors have considered the regulatory aspects of the transition from an administrative to a marked-based approach for the RF spectrum in Sri Lanka. Hence, the authors shall be carrying out a legal research using the doctrinal research methodology, which is commonly used in legal research. This research article considers John A. Posner's law and economic theory and John Lock's property rights theory as the theoretical foundation. Further, this research paper uses qualitative research methodology. By using the said methodological approach, the authors analyse the current administrative RF spectrum management regime in Sri Lanka comparing it with global trends towards market-based approach and thereby evaluate the primary objectives behind the transition, the current RF spectrum framework, and the anticipated challenges that they would encounter with the transition.

Findings: The analysis revels that RF spectrum management in Sri Lanka under the administrative system is restrictive and hinders innovation and competition, compared to a more liberalized market-based approach. A market-based approach, characterized by auctions, in primary markets and spectrum sharing, trading, and leasing in secondary markets identified as a potential solution to these limitations. However, the study also highlights several challenges, including the need for regulatory reform, capacity

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building, and the development of a robust legal framework to support the transition.

Originality: This paper contributes to the existing body of knowledge by providing a detailed analysis of the potential shift in RF spectrum management practices within Sri Lanka, in the regulatory context, a subject area that has not been extensively explored in the local context. It offers a comparative perspective with international practices and provides actionable recommendations tailored to Sri Lankan conditions.

Implications: The findings suggest that transitioning to a market-based RF spectrum management regime could significantly improve the efficiency and dynamism of Sri Lanka's telecommunications sector. However, careful planning and implementation are crucial to address potential challenges and ensure that the transition supports long-term goals of innovation and competition. The recommendations aim to guide policymakers in developing a framework that balances market efficiency with regulatory oversight.

Introduction

This legal research paper offers a critical analysis of Sri Lanka's transition from administrative to market-based spectrum management, examining the objectives, challenges, and implications of this shift. RF Spectrum, as a finite and valuable resource, plays a crucial role in enabling wireless communication services essential for both socioeconomic development (Katz, 20009 and Cave et al., 2007). Traditionally, RF spectrum allocation and management have been predominantly administered by governments through administrative processes (official webpage of TRCSL, 2024). However, the exponential growth in wireless technologies and the increasing demand for RF spectrum have prompted many countries to explore market-based approaches to RF spectrum management (Jain & Dara, 2017; Weiss & Lehr, 2009). With the expansion of the wireless telecommunications industry and the rising need for RF spectrum, Sri Lanka is also suggesting a shift to a market-based approach.

Background

Sri Lanka, as many other countries, has witnessed a rapid growth in the telecommunications sector in the past few decades (Prasad, 2016; Abrahams et al., 2014). The telecommunications sector serves as the cornerstone of the modern digital economy, which has expanded to every facet of our lives, including business, education, entertainment, and social interaction (Rong, 2022). Furthermore, as technology continues to evolve and the convergence of technology and services becomes increasingly interrelated, the telecommunications sector evolves in a much more rapid space, necessitating to meet the demands of an ever-changing landscape in a much more efficient manner (Rong, 2022). To cater to the aforesaid demand, the RF spectrum, which is the core pivotal asset of the telecommunications industry and is also scarce, has to be managed more effectively and efficiently (Ryan, 2005). Furthermore, it is important to emphasize that the contemporary world heavily relies on the RF spectrum for the

accelerated progression of the digital economy, next-generation mobile communications, the Internet of Things (IoT), broadband communication, and cloud computing (GSMA, 2013). These advancements serve as pivotal drivers for the future economy in Sri Lanka, which results in the crucial responsibility placed upon regulatory bodies for the effective management of the RF spectrum to accommodate the demands in a timely manner.

Throughout the history the assignment of RF spectrum in Sri Lanka has predominant made in accordance with the administrative approach of RF spectrum management, overseen solely by the Telecommunications Regulatory Commission of Sri Lanka (TRCSL) (Official webpage of TRCSL, 2024). However, the regulatory framework for RF spectrum management in many other jurisdictions have evolved from being purely administrative command-and-control approach to market-based approach as a result of the rapid advancements in wireless technology and their accelerated commercial adoption (Jain & Dara, 2017 and Weiss & Lehr, 2009). RF spectrum assignment under the administrative approach, the regulatory has sole control over of it including choosing which telecommunication operators are assigned RF and usage of it (GSMA, 2013). As such the telecommunication operators have limited rights of RF spectrum (Toshifumi, et al, 2017). This approach generally considered as limiting the optimal usage of RF spectrum, not efficient to meet the current spectrum demand and to accommodate the global trends in the telecommunication sector (Farquhar & Fitzgerald, 2003).

However, transitioning from an administrative to a market regime for RF spectrum management is a complex process as it involves intricate planning and foresight coupled with challenging legacy issues in implementation (International Telecommunication Union, 2007). Further, the market-based approach too has witnessed several drawbacks and has not been as successful as expected. To have a successful transition, it should ensure equitable realignment of all the stakeholders, including incumbent operators, new entrants, the government, and the general public. It is required to have collective engagement of all the stakeholders to navigate potential challenges and to have common consensus towards the adoption of a market-based approach for RF spectrum management. Furthermore, the regulatory framework should be robust with adequate enforcement mechanisms to ensure a level playing field for all the stakeholders and avoid anti-competitive practices.

Research Problem

The regulatory framework of Sri Lanka for RF spectrum management is carried out under the administrative approach, wherein regulatory authority has sole and exclusive control over RF spectrum. However, the more rigid administrative command control method has been challenged by the global trend toward shifting to a market-based approach. Further, many sophisticated jurisdictions have moved to a more liberalized, marked-based approach for RF spectrum management, which is considered an effective approach for RF spectrum management that favors enhancing the efficacy of RF spectrum by optimum utilization, innovation, and competitions through its key features of auction, allowing

secondary markets for RF spectrum. The question lies in assessing the viability and appropriateness of adopting a market-based approach for RF spectrum management in Sri Lanka, considering the regulatory landscape of Sri Lanka and challenges that may arise in such a transition.

Research Paper Outline

The article's first section, the Introduction, gives a clear overview of the research topic, including and outlining the research problem and the importance of the research area. The author's research methodology for the article is covered in the second section of the research article. This covers the theoretical framework, research methodology approach, and research methods that are employed in the article to evaluate the research area. The third section of the article discusses detailed literature reviews. The fourth section contains a detailed discussion and analysis of the research paper's topic matter. The recommendations that are based on the data examined in the fourth section are detailed in the final, fifth, and conclusion sections.

Methodology

In order to carry out a comprehensive analysis of the research subject, the authors will utilize a doctrinal research approach together with qualitative research methodology. This research approach shall ensure an in-depth examination of existing legal frameworks together, considering practical insights and perspectives.

Under the doctrinal research approach, the authors shall analyze and interpret existing legal rules, statutes, regulations, underlying principles, and doctrines related to RF spectrum management. This approach will ensure understanding the foundational principles and theoretical frameworks of the regulatory framework for RF spectrum management (Jasper,1981).

Under qualitative research methodology, data will be collected by using primary sources such as national and international statutes, regulations, and guidelines governing RF spectrum management. Secondary sources shall consist of books, journal articles, reports, and conference papers that provide critical analysis and interpretation of the primary legal sources. Data analysis to be carried out under the doctrinal approach shall also consider socio-economic and technological development that would gain through the transition to a market-based approach for RF spectrum management.

Authors also conduct a comparative analysis to evaluate the transition of different jurisdictions to a market-based approach for RF spectrum management, offering valuable insights into the effectiveness of varying regulatory strategies. The authors expects that the findings gathered through aforesaid research methodology will provide a comprehensive insight as to the subject area of this research study.

Conceptual Framework

For the analysis of the transition from administrative to market-based RF spectrum management in Sri Lanka, the author shall utilize the theoretical framework based on John A. Posner's economic analysis of law and John Locke's theory on property rights. Based on the said theories, the authors expect a unique lens through which the implications and challenges of the transition to a market-based approach for RF spectrum management can be understood.

As per John A. Posner's economic analysis of law, the legal frameworks should ensure to maximize economic efficiency and promote optimal resource allocation, (Posner 1993). In the context of RF spectrum management, transitioning from an administrative to a market-based system involves re-evaluating how RF spectrum rights are allocated and traded under a market-based approach to maximize economic efficiency and promote optimal resource allocation. Also, as per his view, auctions can potentially lead to more efficient allocation of RF spectrum resources compared to administrative methods (Henry 2009). Based on the concept that market-based approaches create incentives for entities to utilize spectrum in ways that maximize its value, driven by the principles of supply and demand.

In applying Posner's theory, the authors would involve assessing whether the shift to a market-based spectrum management system could enhance economic efficiency, stimulate investment, and encourage technological advancements. The analysis would examine whether the new system aligns with Posner's principles of efficiency and whether it addresses any potential market failures or inefficiencies inherent in the previous administrative system.

John Locke's Theories on Property Rights are on the basis that property rights are derived through the labor invested in the resource and the mutual agreement of its value among parties. On the basis of Locke's theory, it can assist in analyzing the legitimacy of assigning spectrum rights and the role of market mechanisms in legitimizing these rights (Smith, 2015). Furthermore, entities might claim ownership of RF spectrum resources if they have made investments in their creation and usage, according to Locke's theory (Vaugn, 1980). Applying Locke's theory entails determining if the market-based strategy upholds property rights by offering distinct, transferable, and legally enforceable spectrum rights and will also evaluate whether the shift promotes a more equitable and effective distribution of spectrum resources.

Literature Review

Coase and Hazlett are of the view that the administrative regime of RF spectrum management for its failure to account for market demands and emerging technologies are both crucial factors in the telecommunications sector (Coase, 1959). Hazlett argues that the failure of the administrative approach shall result in inefficient assignments and allocations of RF spectrum (Hazlett, 2008). Supporting this view, Spiller and Cardilli

highlight that the administrative approach often empowers regulatory bodies with considerable discretionary authority, which Sukhtankar argues could lead to biased and potentially corrupt practices (Spiller & Cardilli, 1999, and Sukhtankar, 2015).

In contrast, a key objective of transitioning to market-based regimes has been to deregulate the assignment RF spectrum processes, thereby granting operators more flexibility to determine the use of RF spectrum and the technologies they deploy (Jain, 2014). Williams of the view that this shift also addresses concerns about potential market failures (Kwerel & William, 2022; Minervini, 2014). The deregulation includes introducing auctions in the primary market and facilitating RF spectrum trading, sharing, and leasing in the secondary market, which are considered as means to optimize spectrum usage according to evolving needs and technologies.

Bykowsky and Crocioni favor the market-based approach, highlighting its benefits in facilitating efficient spectrum usage across both primary and secondary markets (Bykowsky, 2003; Crocioni, 2009). Farquhar & Fitzgerald argue that such an approach not only enhances the capability to meet the growing demand for RF spectrum but also maintains technology neutrality and manages interference effectively (Farquhar & Fitzgerald, 2003). Cave and Pratt emphasize the flexibility of the secondary market, which allows spectrum management to adapt to market needs and technological advancements (Cave & Pratt, 2016). RF spectrum assignment under a market-based approach is auction, and Freyens is of the view that auctions aim to be assigned to operators who value it most and can utilize it most efficiently (Freyens, 2009).

Countries such as the United Kingdom, the United States of America, Canada, Germany, France, and India have fully adopted auctions to assign in the primary market and RF spectrum sharing and trading in the secondary market under a market regime. In the 1990s, the United States of America began transitioning to market-based mechanisms by facilitating RF spectrum auctions in its regulatory framework. Furthermore, the United States of America. has developed several frameworks to facilitate spectrum sharing and has a well-established secondary market for spectrum leasing and trading. The United Kingdom RF spectrum management was primarily administrative, with spectrum allocation determined by the government and the Office of Communications overseeing the process. However, the United Kingdom adopted market-based approaches such as RF spectrum auctions and liberalization; notably, the auction of 3G spectrum licenses in 2000 and the 4G spectrum auction in 2013 exemplify this shift. RF Spectrum management in Australia was initially characterized by an administrative allocation system, where the Australian Communications and Media Authority controlled spectrum distribution through licensing. However, Australia moved to market-based methods, including spectrum auctions and trading. The auction of the 700 MHz spectrum in 2013-2014 marked a significant shift towards a market-driven approach. The Australian Communications and Media Authority also supports spectrum leasing, enabling licensees to lease their spectrum to other parties, thereby enhancing flexibility and market

efficiency. RF spectrum management in the EU was traditionally handled through a centralized administrative process, with individual member states having considerable control over spectrum allocation. However, the EU has moved towards market-based mechanisms through various initiatives, such as the European Commission encouraging spectrum auctions for mobile services, and the EU has supported the development of secondary trading markets to enhance spectrum efficiency. The EU has encouraged spectrum sharing through policies and regulations that promote efficient use of spectrum. The EU Radio Spectrum Policy Programme includes initiatives for dynamic spectrum access and sharing, particularly in the context of 5G networks. India too moved to a market-based approach. Canada has implemented market-based mechanisms, including spectrum auctions. Canada has also introduced policies to facilitate spectrum sharing and leasing, enhancing market efficiency. The 2010 auction for 3G spectrum and the 2016 auctions for RF spectrum. However, the success of such adoption has varying degrees in each aforesaid county. However, market regime has enabled more dynamic spectrum management, accommodating changes in technology and market demand (Prasad, 2014; Cave & Webb, 2014).

On the contrary, Peha argues that, though the market regime delivers benefits, it is not without challenges, including market failures such as coordination failures, information asymmetry, risk aversion, and interference (Peha, 2007). Further, Peha argues that the auction method for RF spectrum assignment is very complicated, and if it is not properly designed, it would be an entire failure, which brings unreversible negative consequences. In designing auctions, key factors such as base prices, auction method, spectrum caps, and block sizes— require careful planning to ensure they effectively meet policy objectives and suit operator strategies (Bichler et al., 2014). Similarly, spectrum sharing and spectrum trading in the secondary market should also be implemented within a robust regulatory framework to ensure that it shall not lead to anti-competitive practices, discourage investors, or harm incumbent operators (Prasad & Kathuria, 2014). Careful consideration should be made to the amount of spectrum available, license duration, and eligibility of buyers, all of which vary significantly across different countries (Crocioni, 2009; Farquhar & Fitzgerald, 2003).

However, it is important to emphasize the fact that most of the literature often treated administrative and market regimes as a dichotomy and has discussed the merits of migrating to a market-based approach from the administrative command control approach but has not analyzed the path for transition. However, Freyons and Mirvony have analyzed the path of transition. Frameworks used by Minervini and Freyens provide a theoretical basis for analyzing the transition from command control method to administrative method.

Leo Fulvio has examined both the gradual reforms for the transition and the big bang reforms. According to his extensive explanation, the majority of other countries have followed a gradual strategy to transformation, while Central America has chosen the Big

Bang approach (Leo Fulvio, 2014). He is of the view that that experience in both learning from mistakes and making necessary corrections has helped in the execution of gradual legislative reform. Due to the widespread usage of spectrum in European and Anglo-Saxon nations, modifications to spectrum policies necessitate a great deal of technical knowledge and close examination in order to address a range of technological, economic, and legal concerns, including harmful interference, anti-competitive behavior, and windfall gains and losses (Leo Fulvio, 2014). He argues that, in general, a phased approach to spectrum management modernization is more appropriate the more available spectrum is used. A gradual approach is better if it provides opportunities to act in ways that better manage uncertainty.

Roland is of the view that big-bang reforms may be the best course of action when there is a sufficient combination of the following, according to theoretical research: "...(a) a large and positive outcome expected from a big-bang strategy; (b) no learning from partial reforms or no option value of early reversal of a negative outcome; or (c) too costly partial reforms" (Minervini, 2013).

Literature Gap

The literature on RF spectrum management highlights a significant gap in transitioning from administrative to market-based regimes. While there is extensive discussion on the benefits and challenges of each approach, most studies focus on their theoretical merits rather than the practicalities of transitioning between them. Existing research often treats administrative and market regimes as dichotomous without deeply exploring the transition process itself. Minervini's work is notable for addressing this gap by analysing the transition path, including deregulation of assignment and allocation. Additionally, while gradual and big-bang reform strategies have been discussed, there is limited analysis on the effectiveness of these approaches in different contexts, particularly regarding how they manage technological and market uncertainties.

Furthermore, in the Sri Lankan context, there is a clear and notable research gap concerning RF spectrum management from a regulatory perspective. There is a clear lack of academic scholarly work in this research area, which shall analyze and evaluate the appropriateness of still adopting an administrative approach for RF spectrum management and identify its drawbacks, loopholes, and defects. Furthermore, no critical evaluation in academic context has been carried out in transition towards a market-based approach.

Challenges and Issues of Transitioning to a Market-Based Approach from an Administrative Approach in RF Spectrum Management

The key feature of a market-based approach is that the government authority shall assign RF spectrum to operators via auction. Under the administrative command and control method, RF spectrum is mainly assigned via administrative and beauty context methods. As per the Telecommunication Act (Amendment) No. 39 of 2024, the government for RF

spectrum auction as well as per Section 17 of the Telecommunication Act (Amendment) No. 39 of 2024, RF spectrum sharing has been facilitated, which are key features of the market-based approach. However, there are several aspects that need to be regularized and policies developed to be effective implementation. Furthermore, this transition would encounter several legacy issues for all the stakeholders.

One of the key challenges that the government would face is the determining base price for RF spectrum in auctioning under market-based approach. If the base price is not decided correctly, it would lead to adverse consequences for the industry as a whole. Furthermore, setting appropriate base price that reflects the true market value of the spectrum while considering the financial implications for operators will be complex and may require negotiation and regulatory oversight (Noam, 1998 and Burguet, & McAfee, 2009). High market valuations of spectrum can lead to an inflated tariffs for consumers as operators seek to recover their investments (Carlo, & Nicola, 2017). This can potentially result in decreased affordability and accessibility of telecommunications services, particularly in markets with limited competition. If the base price is set too low, it would result in low revenue generation for the government (Nozdrin, 2021 and GSMA, 2019). As such, finding the optimal balance requires careful analysis, negotiation, and regulatory oversight. It is essential to ensure that the base price facilitates competitive bidding while maintaining the financial sustainability of operators and affordability for consumers.

During the transition, the coexistence of varying fee structures under administrative and market-based approaches will introduce complexities (Caicedo & Weiss, 2007). Such varying fee structures may lead to confusion, administrative burdens, and potential discrepancies in cost recovery mechanisms (Caicedo & Weiss, 2007). As such, transitioning from administrative allocations to market-based allocations necessitates careful consideration of the financial implications for both regulators and operators. Regulators must develop clear and coherent fee structures that align with market dynamics, promote efficient spectrum utilization, and facilitate equitable access to spectrum resources.

Another challenge under market-based approach is that the introduction of market mechanisms for spectrum assignment may result in increased spectrum valuation and spectrum hoarding (Haan, & Toolsema, 2011). With greater competition and demand for spectrum resources, operators may be willing to pay higher prices to secure access to desirable frequency bands (GSMA, 2017). This could have implications for affordability, investment, and the overall financial sustainability of operators, particularly smaller players (Kuroda, et al, 2017). As such regulator must strike a balance between maximizing RF spectrum value and ensuring fair and equitable access for all market participants to prevent excessive concentration of spectrum resources among a few dominant players.

Another key challenge that the government shall encounter is the regulatory complexity that would arise with the transition, mainly due to the existence of RF spectrum licenses

already assigned to incumbent operators under the command-and-control method and RF spectrum licenses for new RF spectrum assignments (Shadikhodjaev, 2021). Further, this could also have the challenge of managing and addressing overlapping rights and obligations on spectrum license conditions, including managing this mix involves navigating differing terms, conditions, and rights associated with various license types (Jain & Dara, 2017). As such, regulatory authorities must develop comprehensive transition plans, clear guidelines, and phased implementation strategies to mitigate potential conflicts and ensure regulatory coherence throughout the process.

One of the key features of de-regularization under the transition towards a market-based approach is making RF spectrum assignments on a technology-neutral basis. However, incumbent operators having efficient or premium spectrum may already have a competitive advantage due to their early access or historical allocations (Jain & Dara, 2017). This can create level playing field issues, disadvantaging new market entrants or smaller operators who may not have access to similarly advantageous spectrum bands. Hence, regulatory authorities should take the same into account.

Also, another key challenge under the transition towards a market-based approach is the increase of interference. Under the deregulation, spectrum sharing and leasing are allowed. The consequences of its interference issues could increase unless necessary advancement is introduced in a timely manner to curtail such issues. As such, ensuring smooth coordination between operators and implementing effective interference mitigation strategies is essential to maintaining the quality and reliability of telecommunications services during the transition period.

The shift towards a market-based spectrum regime may engender regulatory uncertainty, particularly concerning the enforcement of new rules and obligations. Implementing a market-oriented spectrum regime necessitates the development of sophisticated technical infrastructure to support spectrum trading, spectrum sharing, and management activities (Mochon & Saez, 2016). This includes the establishment of systems for RF spectrum monitoring, interference detection, and enforcement of regulatory provisions. Moreover, ensuring interoperability and compatibility between disparate technical platforms is essential to facilitate seamless operation within secondary spectrum markets and prevent disruptions to existing services.

The opening of secondary markets for RF spectrum may lead to consolidation within the telecommunications industry. Operators may strategically seek to exit or merge with competitors to optimize their RF spectrum holdings or market positions. This consolidation could potentially create monopolies, reduce competition, limit consumer choice, and impact market dynamics. As such, regulators must anticipate and proactively address these outcomes through appropriate competition policies and merger regulations to maintain a healthy and competitive marketplace.

Non-contiguous RF spectrum assignment under administrative approach will lead to high cost for RF spectrum trading in the secondary market. As such, fragmented spectrum holdings may reduce the attractiveness of spectrum assets to potential buyers and increase transaction complexity. Regulatory reform should ensure that it strikes a balance between fostering investment incentives for operators and safeguarding consumer interests. Effective regulatory oversight is essential to prevent price gouging, promote transparency, and ensure that consumers benefit from fair and competitive pricing in the telecommunications market. Concerns regarding equity and fairness in market access must be carefully addressed throughout the transition process. The existing stakeholders, particularly incumbent operators and holders of legacy licenses, may possess significant advantages in terms of spectrum holdings or market influence.

In order to address aforesaid legacy issues, it is required to comprehensively analyze and plan in consultation with all stakeholder groups, including experts, prior to the implementation of such a transition. A failure in such a transition would cause irreparable damage to the entire telecommunications industry as a whole in terms of socioeconomics in the short term as well as the long term. The government must strike a balance between the interests of all stakeholder groups when implementing the transition from an administrative approach to a market-based approach. Should ensure that it facilitates required revenue generation by promoting competition, investment, and consumer welfare. Furthermore, it should be executed under a robust regulatory framework that has transparent decision-making processes; this shall be essential to facilitating the transition to a market-based spectrum allocation system.

Further during the transition, regulators must remain vigilant in monitoring market developments, assessing the impact of policy interventions, and adapting regulatory measures as necessary to address emerging challenges and safeguard the public interest in an evolving telecommunications ecosystem.

Addressing these issues requires a holistic approach to RF spectrum policy and regulation that balances the objectives of promoting competition, incentivizing investment, and ensuring fair and efficient spectrum management. By adopting transparent and predictable regulatory frameworks, regulators can enhance regulatory certainty, encourage investment, and promote innovation in the telecommunications sector and adopt evidence-based regulatory approaches that balance the interests of operators, consumers, and the broader society. By fostering a competitive and dynamic telecommunications market while safeguarding consumer welfare, regulators can support innovation, investment, and sustainable growth in the digital economy.

Furthermore, another factor to be considered is the rights of the smaller players in terms of access to the RF spectrum. It is imperative to provide equal access to all the operators in a competitive and effective telecommunication environment. Due to market dominance and investment capacity, dominant players could create barriers to the access of RF spectrum smaller players by placing higher bids in auctions under a market-based

approach. However, this will not take place in the administrative approach. Hence, smaller operators would suggest assigning existing RF spectrum under an administrative approach and any additional RF spectrum under a market-based approach.

Conclusion

To accommodate the growing demand for RF spectrum, it is required to find means of optimizing the RF spectrum usage in Sri Lanka. Due to the scarcity of RF spectrum and the fact that demand has almost exceeded supply, the government has a burning issue to address. As in many other countries, a transition towards a market-based approach would be an important solution for the aforesaid issue, as a market-based approach for RF spectrum assignment and management would facilitate liberalization of RF spectrum management and thereby provide more usage rights to the operators. However, transitioning to a market-based approach in RF spectrum management presents numerous challenges, as discussed above. The said challenges and issues should be addressed through careful strategic planning, transparent regulatory oversight, and stakeholder engagement to have a successful and smoother transition. Further, we should implement the necessary legislative and regulatory framework to accommodate a market-based approach. Also, we should invest in capacity building and training for industry stakeholders to manage and operate within a market-based RF spectrum regime. Should also engage a broader range of stakeholders, including telecommunication operators and experts in the industry, for regulatory and policy developments to analyze and evaluate all related concerns related to the transition towards a market-based approach and relevant regulatory policy development. Furthermore, it is essential to implement a robust monitoring and evaluation process to access the progress of the transitions and also be prepared to adopt and implement policies based on ongoing evaluations and emerging trends. The regulator should ensure that a market-based approach fosters innovation and promotes competition, thereby creating a level playing field for all the stakeholders. If the government fails to adopt such a process, the transition will result in adverse consequences for industry as a whole.

Recommendations

Based on the challenges identified in transitioning to a market-based RF spectrum management system, several recommendations can be made for Sri Lanka:

Establishing Base Prices: The government should carefully determine the base price for RF spectrum auctions to balance revenue generation with operator affordability. This requires thorough market analysis, regulatory oversight, and negotiation to set prices that reflect the true market value while avoiding excessive costs for consumers and ensuring financial viability for operators.

Managing Fee Structures: To avoid complexities arising from differing fee structures between administrative and market-based systems, regulators should develop clear,

coherent fee structures that align with market dynamics. This includes ensuring that new and existing fee structures facilitate efficient spectrum utilization and equitable access.

Addressing Spectrum Hoarding and Valuation: Regulators must prevent excessive spectrum hoarding and ensure fair access by implementing measures to avoid concentration of spectrum among a few dominant players. This involves creating Legal Policies that promote competition and prevent market distortions.

Handling Regulatory Complexity: During the transition, regulators should create comprehensive plans and clear guidelines to manage overlapping rights and obligations of existing and new spectrum licenses. Phased implementation strategies will help mitigate conflicts and ensure regulatory coherence.

Mitigating Interference and Ensuring Fair Access: Effective interference management strategies should be implemented as spectrum sharing and leasing are introduced. Additionally, regulators should ensure that the transition does not disadvantage smaller operators or new entrants by providing them with fair access to RF spectrum, potentially through a mixed approach where existing spectrum remains under administrative control and new spectrum is allocated via market mechanisms.

Enabling technology neutrality: that would surely enhance the RF spectrum efficacy and optimal utilization.

By addressing these issues with a holistic and transparent Legal approach, Sri Lanka can transition to a market-based spectrum regime while promoting competition, investment, and consumer welfare.

Conflict of Interest

The authors declared no conflict of interest.

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