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# Competition Dynamics in the Evolving Connectivity Ecosystem – Note by Chinese Taipei

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# *Chinese Taipei*

## 1. Development of the domestic telecommunications market in Chinese Taipei over the past decade

1. Driven by technological advances, changing demand and recent telecommunications regulatory reforms, the mobile communications industry in Chinese Taipei has gradually undergone transformation over the past ten years. As conventional telecommunications services have been reaching a mature phase, incumbent operators have continued to provide new-generation communications network services, while gradually moving beyond their traditional roles as telecommunications service providers. By diversifying their business portfolios and integrating cross-sector services, operators have expanded into e-commerce, online streaming and vertical domain applications, in response to the increasingly diverse needs of consumers and businesses for digital services. These developments have created competitive dynamics that differ from those of the traditional telecommunications sector.

2. With respect to technology, Chinese Taipei has promoted 4G network deployment and digital infrastructure since 2017, while progressively moving towards 5G. In 2019, the Executive Yuan approved 'the Taiwan 5G Action Plan', which was designed to support applications in the Internet of Things (IoT), artificial intelligence (AI), smart healthcare and smart factories. Communications networks have consequently evolved from infrastructure for conventional voice and data transmission into a foundation for digital services and industrial applications.

3. On the demand side, with the widespread adoption of mobile networks and the rise of over-the-top (OTT) services, consumer demand has increased for high-speed, reliable and diverse network services. Enterprises have likewise increased their demand for digital applications, including cloud services and IoT. As communications services become deeply integrated with digital services such as audiovisual content and online shopping, competitive factors have extended beyond prices to network quality, bundled offerings and value-added applications. Competition has therefore expanded from price to service competition.

4. On the regulatory front, the Telecommunications Management Act (TMA) entered into force in 2020. Drawing on the European Union electronic communications regulatory framework, the National Communications Commission (NCC) moved away from the service-specific regulatory regime under the former Telecommunications Act and adopted a conduct-based approach. The TMA replaced the franchise and licensing regime with a registration system to reduce regulatory barriers to entry. It also established principles for spectrum sharing, network sharing and joint construction, in response to the needs of new service models such as 5G private networks. However, regulatory reform only provided both new entrants and incumbent operators with opportunities for development and expansion. Market entry and market structure continue to be shaped by industry characteristics such as capital intensity, economies of scale and network-deployment requirements.

5. These developments were reflected in recent cases handled by the Chinese Taipei Fair Trade Commission (CTFTC). For example, a spectrum and network sharing arrangement notified by Far EasTone Telecommunications Co., Ltd. (FET) and Asia Pacific Telecom Co., Ltd. (APT) filed in 2021, illustrated a new model of business cooperation made permissible through deregulation. In 2023, the CTFTC reviewed two

separate mergers: one between FET and APT, and another between Taiwan Mobile Co., Ltd. and Taiwan Star Telecom Co., Ltd. After assessing market concentration, merger-specific efficiencies, innovation effects and the impact on competition and consumers, the CTFTC conditionally cleared both mergers. Following the completion of these mergers, the telecommunications market shifted from a structure of 'three large and two smaller operators' to one dominated by the 'big three'. This shift demonstrates how competition patterns and market structure have progressively evolved under the combined influence of technological development, changing demands and industry characteristics.

## 2. Merger review and remedies in the telecommunications sector

### 2.1. Assessment of anti-competitive effects and extension of market power

6. In the telecommunications sector, high capital intensity, economies of scale and scarce spectrum resources create significant barriers to entry. These barriers limit the number of viable competitors and make timely entry by potential operators less likely. Consequently, a reduction in the number of market participants can have a profound impact on market concentration. It may strengthen unilateral market power of the remaining operators, increasing the likelihood of higher prices, lower service quality or fewer promotional incentives. It may also increase the risk of concerted action among the remaining operators.

7. With the convergence of telecommunications, the internet and digital services, traditional telecom operators have expanded their business beyond voice and network-access services to cable television, audiovisual content, online shopping and other digital applications. This digital convergence has built close links of business models between services that formerly belonged to separate markets. Existing operators may enter adjacent markets through cross-sector mergers, service integration, bundling of service/products, or platform partnerships.

8. Whilst cross-sector operations may promote resource integration and service innovation, new competition concerns may arise from increased market concentration, leading to anti-competitive practices across markets. Expanding into adjacent markets through cross-sector mergers, service/product bundling or platform integration allows incumbent businesses to leverage their existing strengths such as networks, customer bases, data and platform advantages accumulated in their primary market. This may reduce their costs of entry into adjacent markets and extend their market power.

9. When assessing a merger in the telecommunications sector, the CTFTC considers whether cross-market integration is likely to strengthen merger parties' post-merger market power and thereby exclude or restrict competition. It assesses merger parties' market shares and market concentration in each relevant market; the degree of interrelationship between markets, the parties' ability and incentives to enter or expand, and barriers to entry.

### 2.2. Challenges in assessing dynamic efficiencies associated with investment and innovation

10. The shift toward 5G has further amplified the inherent industry characteristics of mobile communications such as capital-intensity, technological complexity and an extended payback period. Spectrum, cell sites, core networks and equipment require substantial investment. Network rollout also involves high fixed costs, significant economies of scale and high asset specificity. When reviewing a merger between telecom

operators, the CTFTC assesses not only potential post-merger anticompetitive impacts but also, under Article 13 of the Fair Trade Act (FTA), the overall economic benefits arising from investment, network deployment, service quality improvement and technological upgrades. By doing so, the CTFTC can conduct a thorough evaluation to ensure that the overall economic benefit of the merger outweighs the disadvantages resulting from competition restraint.

11. Overall economic benefits stem mainly from efficiency gains. They can be broadly divided into static and dynamic efficiencies. Static efficiencies generally relate to cost reductions and improved resource allocation through the integration of existing resources. For example, merger parties may achieve cost savings with the reduction of duplicated infrastructure and operating costs, such as cellular base stations, telecommunications rooms and network equipment, as well as improvements in spectrum-use efficiency and network capacity. These static efficiencies can often be observed and measured within a relatively short period after the consummation of a merger. Dynamic efficiencies, by contrast, concern future investment, technological advancement, service innovation and the development of new applications. As such efficiencies involve a longer span of time and greater uncertainty, they pose a challenge for the competition authority to assess and quantify with market indicators such as prices, costs or market shares at the time of merger review.

12. In practice, it is also common for merger parties to claim efficiency gains relevant to network deployment, technological advancement, service innovation and industry competitiveness. However, as essential information on investment costs, technical requirements, capacity utilization rates and future development is normally possessed by businesses themselves, and alleged benefits may only materialize after a period of time following the merger, such claims are normally characterized by information asymmetry and a forward-looking nature. In this regard, the CTFTC focuses on how to increase the specificity and verifiability when assessing dynamic efficiencies. Merger parties should provide tangible details regarding investment plans, technical feasibility, financing arrangements, implementation timetables and concrete performance indicators, as well as the causal relationship between efficiency claims and the merger. That said, the amount of investment or the scale of construction alone cannot be used to establish that a merger will necessarily generate corresponding overall economic benefits. As technological readiness levels, supply of equipment, market demand and the industry climate may change, investment and benefits claimed by merger parties may not materialize as originally planned.

13. In addition to timeliness and likelihood, the CTFTC examines whether these dynamic efficiency gains through investment and innovation are merger-specific. Where an investment is considered as part of a party's internal business plan, or can be achieved through a less anticompetitive route, its causal link to the merger will be assessed as weak. The CTFTC also evaluates whether investment and innovation can translate into better network quality, more service choices or improvements that may benefit consumers, rather than relying on an increase in investment expenditures or expansion of infrastructure construction. The focus of assessments on dynamic efficiencies is not merely to identify potential future benefits, but to turn uncertain forward-looking claims into concrete and verifiable elements.

14. Network sharing and joint investment may help reduce the cost of 5G rollout and shared risk in investment, as well as facilitate acceleration of network construction and technology upgrades. It is also worth noting that such cooperation or collaboration may increase communications and interdependence between businesses in the relevant market, which create risks of exchanging prices, customer information, marketing strategies and

other competition-sensitive information. For benefits associated with joint investment or network sharing, the CTFTC takes into account the following factors: their actual contribution to network deployment and service development; the level of joint activities necessary to generate those benefits, and whether this may further lessen the level of competition in retail markets.

15. As mentioned above, the CTFTC assesses both overall benefits and anticompetitive effects. It may impose conditions or remedies under the FTA with the aims of preserving efficiency gains while preventing merger parties from going beyond what is necessary to achieve those efficiency claims, thereby diminishing anticompetitive concerns and ensuring that the overall economic benefit of the merger outweighs the disadvantages resulting from competition restraint.

## 2.3. A dual-track framework for verifying economic benefits and addressing competition concerns in merger review

16. Article 46 of the FTA provides that 'The Act has precedence over other laws with regards to the governance of any enterprise's conduct in respect of competition. However, this stipulation shall not be applied to where other laws provide relevant provisions that do not conflict with the legislative purposes of this Act.' Paragraph 2 of Article 6 of the Act further provides that matters under the FTA which involve the functions of other ministries or commissions are to be handled by the CTFTC in consultation with those authorities. The CTFTC has adopted 'Operational Guidance on Coordination between the Fair Trade Commission and other administrative agencies' as a framework for inter-agency coordination and the allocation of responsibilities.

17. Given the uncertainty surrounding post-merger efficiencies derived from investment and innovation, when assessing a merger in the telecommunications sector, the CTFTC not only examines causal connections between benefits and the merger and its necessity, but also follows a dual-track framework with the NCC, an independent statutory agency responsible for regulating telecommunications and broadcasting industries. The CTFTC consults with the NCC and draws on its industry and technical expertise in terms of spectrum use, network deployment, technological development and service quality, to assess the technical feasibility of claimed investment- and innovation-related benefits. This makes it possible to develop a methodology to quantify claimed benefits into observable and verifiable elements, which serve both as a basis for evaluating overall economic benefits and subsequently verifying their realization.

18. With regard to merger conditions/remedies and post-merger monitoring, the CTFTC focuses on the effects of mergers on market structures and competitive conditions. Depending on circumstances specific to a merger, the CTFTC may impose conditions/remedies designed to monitor whether merger parties' claims on economic benefits are realized and whether potential competition concerns arise or become significant. As for the NCC, within its sectoral regulatory mandate, it oversees spectrum use, network deployment, service quality and related regulatory matters. Both agencies exercise their respective statutory authorities to monitor market competition and industry and technical development in the sector. This enables claimed benefits acknowledged in merger review to be further verified through actual implementation after the merger, and allows appropriate actions to be taken to address emerging competition concerns.

19. As telecommunications technology and market conditions have been changing rapidly, conditions/remedies in relation to future investment and innovation should be clear and verifiable, and their compliance should be monitored continuously, at least over a defined timeframe. When merger parties fail to comply with conditions/remedies, or are

unable to realize claimed benefits following actual investment, network rollout or service development, the CTFTC and the NCC may act under their respective statutory mandates and conduct enforcement activities under respective legislations. The dual-track framework serves to complement the assessment of forward-looking efficiencies conducted during merger review and turns those claimed investment- and innovation-related benefits into verifiable elements after the merger, in order to safeguard the realization of overall economic benefits and fair market competition.

## 2.4. Case studies

### *2.4.1. Spectrum and network sharing between Far EasTone Telecommunications Co., Ltd. (FET) and Asia Pacific Telecom Co., Ltd. (APT)*

20. In 2021, FET and APT notified the CTFTC of a spectrum- and network-sharing arrangement in the 3.5 GHz frequency band. The arrangement used a multi-operator core network (MOCN) model, where in proportion to its customer base, APT would share the award amount, capital expenditure for 5G radio access network equipment and its operating and maintenance costs in order to obtain the right to access and use specified proportion of FET's network capacity within the band. The proposed arrangement related to spectrum and the radio access network, while each party would continue to operate independently in terms of their core networks, 4G networks, pricing, marketing and customer management.

21. The proposed arrangement also involved FET's NT$ 5 billion investments in APT to acquire 11.58% of APT's total shares and a single seat on the board of directors. As the private placement was one of the prerequisites for spectrum and network sharing, the CTFTC took it into consideration in the process of reviewing the merger. At the time the merger was notified to the CTFTC, APT played an important role as a maverick in price competition in the domestic mobile broadband services market. FET's acquisition of shares and board participation could affect APT's prices and promotional decisions, reducing its incentives to compete on prices. In line with the Common Position on Mobile Infrastructure Sharing published in June 2019 by Body of European Regulators for Electronic Communications (BEREC), the CTFTC held a view that spectrum and network sharing inevitably involved information exchange to facilitate network deployment and cost sharing, which may enhance the probability for the parties to access each other's business and operational information. In addition to this, as the proposed arrangement required the acquisition of shares and a board seat, it was particularly important to prevent information exchange for technical cooperation from extending to competition-sensitive matters such as prices and promotions.

22. On the other hand, network sharing and joint investment could reduce duplicated investment and operating costs for 5G infrastructure, improve spectral efficiency and support the construction of cellular base stations, network coverage and the development of 5G applications. In its review of the spectrum- and network-sharing arrangement, the NCC required the parties to maintain independent control over the shared network, establish a dedicated team to manage network and monitor cybersecurity, and build additional base stations. These measures enabled the benefits of network sharing to remain subject to ongoing sectoral oversight.

23. The CTFTC conditionally cleared the merger. It did not prohibit the technical cooperation and cost sharing necessary for spectrum and network sharing between the parties, but imposed the following conditions under the FTA:

1. The parties were prohibited from jointly operating business, conducting cooperation or exchanging information on mobile plans, device subsidies,

promotions, customer base and billing data through their spectrum- and network-sharing arrangement, FET' s shareholding and their board seat in APT.

2. The parties were required to submit records and documents regarding the structure, membership and meeting minutes of the dedicated supervisory team, as well as APT's shareholder-meeting and board-meeting records for five consecutive years.

24. Through the NCC's oversight of network deployment and technical operations and the CTFTC's monitoring of exchange of competition-sensitive information and corporate governance, the parties could preserve efficiencies from spectrum and network sharing whilst continuing to independently compete with each other at the service level.

### *2.4.2. Merger between Taiwan Mobile Co., Ltd. (TWM) and Taiwan Star Telecom Co., Ltd. (T Star)*

25. In 2023, TWM notified the CTFTC of its proposed acquisition of T Star. At that time, following FET's consolidation with APT, there were four operators in the domestic mobile broadband services market: Chunghwa Telecom Co., Ltd., FET, TWM and T Star. Based on either revenue or subscriber numbers, the change in the Herfindahl-Hirschman Index (Δ HHI) exceeded 200. This indicated that the proposed merger would further increase market concentration. The CTFTC also employed several other methods including GUPPI, CMCR and merger simulation analysis, to assess competitive effects. The results revealed potential unilateral effects and upward pressure on prices. Additionally, T Star had played a critical role in competing through more attractive mobile plans. The exit of T Star from the market would lessen price competition. The CTFTC found that the proposed merger would increase the likelihood of parallel or concerted action among the remaining operators in the context of market homogeneity, transparent mobile plans and high barriers to entry.

26. In addition to assessing potential anticompetitive effects, the CTFTC examined whether T Star could have continued to operate as an effective competitor had the merger not occurred. By the end of 2022, T Star incurred accumulated losses of NT$ 40 billion and continued to face financing pressure and heavy 5G capital expenditures. Although its operating revenue could cover its fixed costs to some degree, it might not be sufficient to conclude that T Star would certainly exit the market. Nevertheless, 5G rollout would require substantial capital expenditure and service-promotion costs. If its shareholders, external investors and financial institutions could not continue to provide funding, T Star faced a significant risk of being forced to exit the market due to insufficient operating capital. Its ability to continue investing in 5G networks and equipment was highly uncertain.

27. Regarding benefits resulting from the merger, the NCC's evaluation on network integration indicated that the integration of spectrum, cellular base stations and radio-frequency modules could improve spectral efficiency and network capacity. Its estimates of 4G and 5G speeds after the integration of specified frequency bands were deemed reasonable. Overall, the merger could promote the development of applications related to 5G mobile broadband services, for example private enterprise networks. In its decision, the NCC imposed conditions corresponding to these benefits to require the parties to provide better network performance and higher service quality during and after network integration, and to continue developing the 5G ecosystem and vertical applications, in order to realize the benefits of network deployment and 5G applications after the consummation of the merger.

28. Based on the NCC's evaluation, the CTFTC concluded that the integration of relevant resources would improve network coverage and service quality and reduce

duplicated deployment of base stations and telecommunications rooms. Moreover, the CTFTC also considered a scenario in which, as a result of insufficient funding, T Star could not continue investing in 5G networks and equipment to remain competitive, or could not even maintain normal business operations, thereby affecting existing subscribers. The CTFTC therefore did not prohibit the merger.

29. The CTFTC cleared the merger conditionally. The following conditions were imposed given potential concerns about market concentration, reduced price competition and increased barriers to entry:

1. Assuming effective contracts of T Star's existing subscribers and maintaining their mobile plans for a specified period.
2. In cooperation with other telecommunications operators or mobile virtual network operators (MVNOs), without justification, TWM not refusing to provide or discontinue wholesale services, imposing unreasonable or discriminatory terms and conditions, or entering into exclusive dealing agreements.
3. For five years after the merger, submitting regular reports on mobile plans, the MOMO Coin cooperation program, mobile broadband network integration and optimization, and the implementation of overall economic benefits. These reports would enable the CTFTC to monitor the realization of merger-specific benefits and re-assess concerns about the extension of market power where needed.

## 3. Conclusions

30. The 5G mobile communications industry is highly capital-intensive, involving significant upfront fixed costs and a long payback period. Businesses in the industry may engage in mergers and acquisitions, network sharing and joint investment to reduce duplicated deployment costs, improve the efficiency of spectrum utlilization and networks, and promote network upgrades and new service models. In addition to anticompetitive concerns around market concentration, price increases and a reduction in the number of market participants, such consolidation and partnerships during the merger review process should therefore be evaluated to determine whether any tangible benefits arise from investment, technological advancement and service innovation. As 5G competition extends beyond price to network quality, coverage, the integration of fixed and mobile services and value-added applications, non-price effects such as service quality and innovation should be also taken into consideration.

31. The above-mentioned benefits arising from investment and innovation are normally future-oriented and uncertain. The volume of investments or the scale of construction projects proposed by merger parties does not necessarily amount to overall economic benefit. Merger parties' efficiency/benefit claims must be supported by concrete documentation, which may include specific technical details, construction plans, implementation methods and expected outcomes, enabling the CTFTC to assess their feasibility and likelihood of realization. Where an investment is part of an existing internal business plans, or the benefits can be achieved through a less anticompetitive alternative, for example network sharing or joint investment, such benefits may have a limited connection to the proposed merger. Moreover, the claimed benefits should be passed on to consumers, enabling them to enjoy better choices on network coverage, service quality, prices and service options.

32. Given that dynamic efficiencies related to investment, technological upgrades and service innovation lack clear and observable indicators, the challenges faced by the CTFTC

are how to measure them during a merger review and to monitor them after the consummation of the merger. In this regard, the CTFTC, through consultation and coordination with the NCC, draws on the sector regulator's industry and technical expertise on network deployment, technological feasibility and service quality, thereby developing more tangible, observable and verifiable proxy indicators to evaluate such efficiency claims. These indicators can support the competition assessment of overall economic benefits when reviewing a merger. The CTFTC can also impose conditions to require submission of periodic reports on implementation results about network integration and optimization, service quality and overall economic benefits. Competition concerns can also be addressed through behavioral remedies, for example maintaining existing phone plans, promoting participation of MVNOs and prohibiting exchange of competition-sensitive information. These remedies are supplemented by the NCC's sectoral regulatory measures to follow up on changes in competition dynamics in the relevant market.

33. While network sharing and joint investment may reduce 5G deployment costs, they may enhance opportunities for competitors to exchange business or operational information and thus increase the risk of coordinated behavior among competitors. Technical collaboration that is necessary to achieve network efficiencies may be permitted within an appropriate level. Competition concerns should nevertheless be addressed by behavioral remedies, for example limiting the scope of business collaboration and prohibiting the exchange of competition-sensitive information as well as other behavioral remedies, to maintain competition and independence on price setting, marketing and customer base management.