THE HASHEMITE KINGDOM OF JORDAN

TELECOMMUNICATIONS REGULATORY COMMISSION

Public Consultation:

Review of Mobile Markets in Jordan

Public version

July 2019

Contents

Executive Summary

The TRC undertakes reviews of the telecommunications markets in order to support conditions for effective competition through designing and implementing an effective system of regulation. The first round of reviews began in 2009. This Public Consultation document on the mobile markets is part of the second round of reviews, initiated in 2018. The reviews seek to define relevant markets, assess whether any operator or operators have Significant Market Power (SMP), and, where appropriate, define appropriate remedies to address competition problems. The TRC is publishing three parallel Public Consultations on the fixed markets; mobile markets; and the market for dedicated capacity.

Market context

There are three Mobile Network Operators (MNOs), all with their own infrastructure, and providing a full range of retail mobile services. Mobile penetration is around 98%, with over 90% of mobile customers using a pre-paid plan. There has been a shift in service usage over the last three years. The volume of call traffic has remained constant, while SMS use has increased, and mobile data volumes have significantly increased.

Measured by number of subscribers, Zain has a slightly higher market share than Umniah and Orange Mobile. Zain has higher traffic volumes and revenues than the other two MNOs, but the shares of each has remained fairly stable. Retail prices for mobile services are competitive.

Market definition

The TRC proposes to define the following retail and wholesale mobile markets:

- A retail market, consisting of a cluster of voice and data-related services, including pre-paid and post-paid services, and including residential and business customers;
- A wholesale market for mobile voice call termination, for calls terminated on each MNO network
- A wholesale market for mobile SMS termination on each MNO network
- A wholesale market for mobile access and call origination (MACO).

The TRC's preliminary assessment is that the retail market and the wholesale MACO market tend towards effective competition, and so are not susceptible to ex ante regulation, and that both the voice call termination market and the SMS termination market are susceptible to ex ante regulation.

Competition Assessment and preliminary SMP designation

The TRC has assessed both the mobile voice call termination market and the mobile SMS termination market in terms of existing competition; potential competition; and any countervailing buyer power. Its preliminary findings are that, as all operators that can terminate voice or SMS calls on their own network have 100% market share, Orange Mobile, Zain and Umniah should all be designated with SMP for the termination of mobile voice calls on their own networks, and for the termination of SMS on their own networks.

Proposed remedies

As each mobile operator holds bottleneck control over access to its customers there is a concern that, absent regulation, an SMP operator may refuse access or charge higher rates to other operators for termination than those charged to its own downstream arm.

The mobile market now comprises three established and active MNOs, and the TRC's view is that all remedies should apply to all MNOs. The TRC therefore proposes to impose the following obligations on all MNOs that terminate calls and SMS on their networks:

Access: access should be granted upon reasonable request. The SMP operator will be required to negotiate in good faith, and to consider and conclude access requests in a fair, reasonable and timely manner.

Non-discrimination: all SMP operators will be obliged not to discriminate, and to offer equivalent conditions, prices and quality in equivalent circumstances. All SMP operators will be required to demonstrate compliance by providing an annual Statement of Compliance to the TRC.

Transparency: Reference Offers should be kept up-to-date, and should contain at least a minimum set of criteria to be specified by the TRC. Key Performance Indicators (KPIs) will be required to demonstrate compliance with other obligations.

Accounting separation: all MNOs will be required to provide relevant accounting information as specified by the TRC

Cost accounting and price control: all SMP operators will be obliged to maintain a suitable forward-looking cost accounting system. The obligation to maintain cost-based prices will be retained, and termination rates for voice calls and for SMS will be determined by the TRC.

I. Introduction

1.1 OVERVIEW

Promoting competition is one of the major roles of the Telecommunications Regulatory Commission (“TRC”), whose primary aim is to ensure the provision of a variety of high quality telecommunications services at competitive prices. Since the liberalisation of the Jordanian telecommunications market in 1995, the TRC has sought to perform this role through its adoption of a combination of remedies which facilitate market entry, especially in the form of mandated network access and interconnection obligations.

In furtherance of its twin goals of creating a comprehensive strategy for creating conditions for effective competition and in achieving a more efficient and effective system of regulation, in 2009, the TRC undertook reviews of the telecommunications markets. These reviews sought to define relevant markets, assess whether any operator or operators had Significant Market Power (SMP), and, where appropriate, define appropriate remedies to address competition problems.

In 2018, the TRC initiated a second round of market reviews. This began by considering change since the time of the last reviews, including any changes in customers’ behavior, suppliers’ provision, and technology. A comprehensive data request was issued to all operators, and the TRC met with operators in order to take account of their experience in the market, and their future plans. A further data request was issued in January 2019, in order to update data and include any changes from 2017 to 2018. The TRC also analysed any lessons learned in implementing remedies put in place following the first round of reviews. The TRC thanks operators for their cooperation.

The second round of market reviews has considered all markets in parallel, and the TRC is now initiating three parallel public consultations on the fixed markets; mobile markets; and dedicated capacity.

This is the Public Consultation document for the mobile markets. The outcome of the previous round of reviews of the mobile markets is summarised in Exhibit I.1 below.

Group of markets	Markets	Susceptible to ex-ante regulation?	Dominant operator
Mobile market	A retail market for the provision of mobile services.	No	
	The wholesale markets for the provision of mobile voice call termination.	Yes	Zain, Orange Mobile, Xpress[1] and Umniah[2]
	A wholesale market for the provision of SMS termination	No	
	A wholesale market for the provision of mobile access and call origination	Yes	Zain

Exhibit I.1 Retail and wholesale mobile markets and dominant service providers identified in the last market review [Source: TRC]

1.2 LEGAL AND REGULATORY BACKGROUND

The legal and regulatory context for undertaking market reviews and publishing and implementing Decisions is set out in full in Annex 2. The specific methodological approach to market reviews, and the legal basis and timing of the market review process were set out in the TRC's *White Paper on Market Review Process* (the "**White Paper**")*.*[3]

The principles and guidelines established in the White Paper have been also followed in this second round of reviews.

1.3 OBJECTIVES AND SCOPE OF THE CONSULTATION

This Public Consultation document presents the TRC's preliminary findings on the review of mobile markets and provides its conclusions on whether any existing *ex ante* obligations on these markets should be maintained, revised or withdrawn, and/or whether new *ex ante* obligations should be introduced.

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1 Xpress is no longer active in the market.

2 The accounting separation obligation does not apply to Umniah.

3 TRC, White Paper on Market Review Process, released 14th May 2009.

The document first sets out the TRC's analysis of developments in the market since the time of the last reviews. Following the principles set out in the White Paper, the analysis defines relevant markets, and assesses their susceptibility to ex ante regulation. An examination of competition conditions is then undertaken in those markets deemed susceptible to ex ante regulation, in order to determine whether any operators are dominant, i.e., have Significant Market Power (SMP). Where there is an SMP finding, the TRC proposes appropriate remedies.

1.4 STRUCTURE OF THE CONSULTATION

The Public Consultation document on mobile markets is structured as follows:

Section 2 provides an overview of developments in mobile services. The overview considers the structure of the mobile market, and assesses key trends. The assessment includes a forward-looking view of likely developments over the next 2-3 years.

Section 3 sets out the TRC's preliminary views on the definition of retail and wholesale mobile markets. The methodology used in market definition is explained and applied.

Section 4 considers whether the defined relevant markets are susceptible to ex ante regulation. This section includes an explanation of the three criteria test.

Section 5 assesses conditions of competition in those markets found to be susceptible to ex ante regulation. Section 5 sets out the TRC's preliminary conclusions on operators with SMP.

Section 6 proposes remedies that should be applied in markets where there is an SMP operator. The discussion includes a consideration of competition problems, and how these may best be addressed.

Draft Decisions are appended to this Consultation.

1.5 RESPONSES TO PUBLIC CONSULTATION

Following the publication of this Public Consultation document, interested parties are invited to provide comments and observations to the TRC **within a period of 30 days from its date of publication**. During that period, the TRC will welcome written comments on any of the issues raised in the Public Consultation document.

Interested parties should note that it would facilitate the TRC's task of analysing responses if all comments refer to the relevant numbers of the Consultation Questions (see *Annex 1*). The TRC also appreciates that some of the issues raised in the Public

Consultation document might require that respondents provide confidential information in support of their comments. Respondents are therefore requested to clearly identify any such confidential material and, if possible, include it in a separate annex to their response. The TRC will treat such information as strictly confidential.

Following the deadline for receiving comments, the TRC will post the (non-confidential) comments of all parties on its web site. Interested parties will have an additional **10 days** in which to provide input on any issues raised in the comments of other parties.

The TRC will complete this Consultation process by publishing a Consultation Report, which will contain an evaluation of the responses of interested parties, the final conclusions drawn by the TRC regarding the outcome of the mobile market review in light of those responses, and the TRC's final conclusions regarding the maintenance, revision or withdrawal of existing *ex ante* obligations and/or the introduction of new *ex ante* obligations.

Upon completion of the Public Consultation process, a series of final regulatory Decisions of the TRC will be enacted with respect to the issues of market definition, the designation of dominance and the prescription of *ex ante* obligations, and will be duly published.

II. Developments in mobile telecommunications services

2.1 MARKET STRUCTURE

The mobile market in Jordan is currently served by three mobile operators:

- Orange Mobile;
- Zain; and
- Umniah.

All three operators have their own infrastructure and provide the full range of mobile services, i.e. voice, data and SMS, to their subscribers. They provide mostly bundles providing all voice, data and SMS services to the end users. At the time of consultation, there are no Mobile Virtual Network Operators (MVNOs). Since the last review, one MVNO entered and exited the market.

2.2 OVERALL TRENDS

In order to fully assess the evolution of the market, the TRC has examined trends in:

- Subscriber numbers;
- Overall revenues;
- Traffic volume; and
- Traffic revenue.

This means that the dependence on any one measure of market development is minimised, and that a more rounded view of the market can be put forward.

Subscriber numbers

The number of mobile subscribers has decreased during the period 2015 to 2018, falling from around 13.7 million to around 8.7 million. However, the TRC notes that a previous lack of consistency in classification was corrected by 2017, and therefore the TRC does not attach undue significance to the apparent decline in subscriptions. Based on a 2018 population of 10,289,110[4], mobile penetration rates are at around 85, suggesting that mobile subscription ownership is near ubiquitous.

As shown in Exhibit II.1 below, the majority of subscribers in Jordan are using pre-paid mobile services, with 85.3% of all mobile subscribers using a pre-paid plan in 2018.

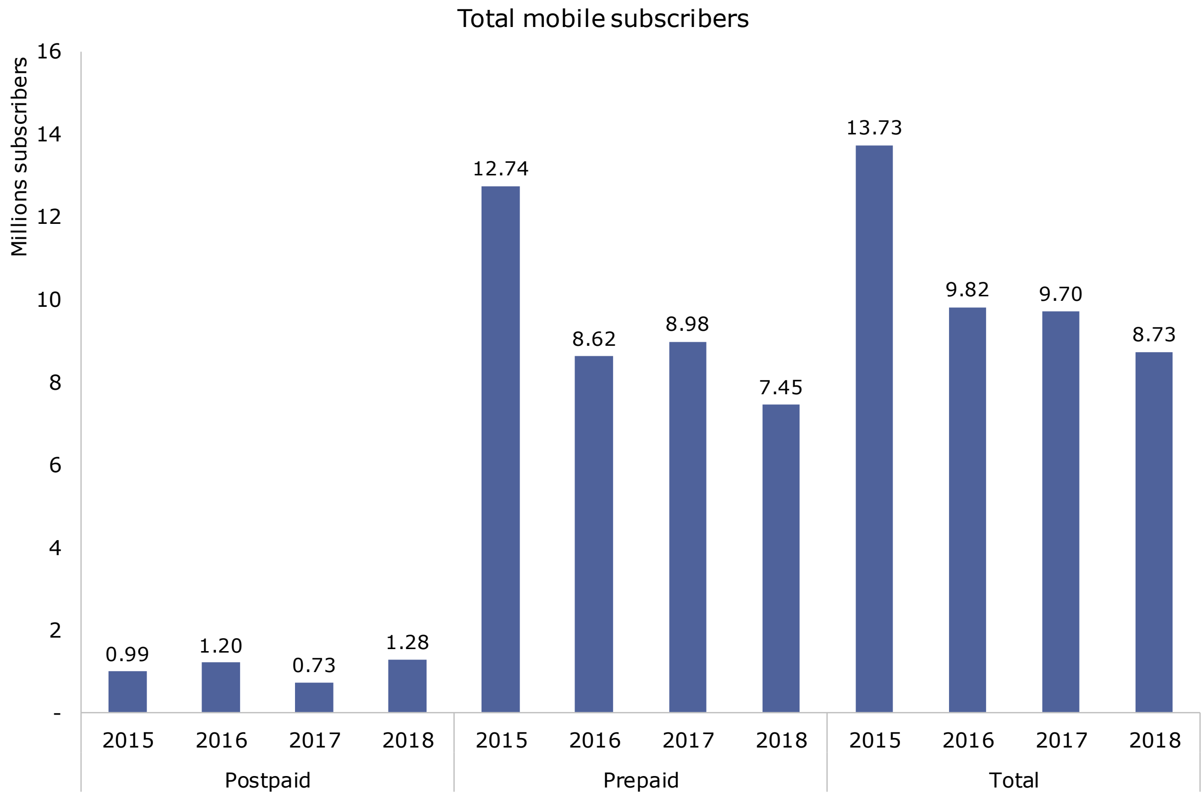

Exhibit II.1 Total mobile subscribers by prepaid and postpaid [Source: TRC]

Mobile data services (mobile broadband) comprise data services used by subscribers of mobile services with a handset (i.e. used as part of their bundle with voice and SMS services) as well as usage from dedicated data subscriptions for stand-alone services (i.e. a data only SIM, allowing access via a dongle or MiFi etc).

4 TRC

The total number of users in the market is increasing, as shown in Exhibit II.2 below. The figures from 2015 to 2018 show that there is a decreasing adoption rate in terms of subscribers that use standalone data services, and this is particularly marked in 2018.

	2015	2016	2017	2018
Actual usage of standard mobile broadband subscriptions	4,830,560	7,777,379	7,109,140	7,543,789
Dedicated data subscriptions for stand-alone services[5]	2,736,334	2,041,067	2,594,147	1,187,971
Total	**7,566,894**	**9,818,446**[6]	**9,703,287**	**8,731,760**

Exhibit II.2 Total mobile broadband subscribers [Source: Responses to data request]

Overall revenues

Overall mobile revenues include revenues from the provision of access, domestic and international calls, domestic and international SMS and data usage.

The overall mobile revenues for the mobile market fell by around 5% from 2015 to 2017, but there has been a strong recovery with 18.1% increase in 2018. Decline from 2015 to 2017 is driven by a decline in prepaid revenues (a fall of around 6%), while the post-paid revenues remain broadly stable from 2015 to 2017. However, all prepaid and postpaid revenues have performed double digit growth in 2018.

Prepaid makes up the larger share of total revenues, with a share of 73.1% as of 2018 as shown in Exhibit II.3 below.

5 Zain's value for 2015 estimated from the 2016 traffic by using total mobile data growth rate from 2015 to 2016. Umniah figures are estimated to be equal to the total data traffic for all the years.

6 Note that for 2016 and 2017, total broadband subscribers were equal to the total mobile subscribers in the market, meaning that all subscribers were providing bundled voice+data services.

	2015	2016	2017	2018
Postpaid	78,093,211 (21.0%)	76,883,683 (21.5%)	78,494,439 (22.1%)	116,794,972 (26.9%)
Prepaid	294,253,695 (79.0%)	280,400,797 (78.5%)	276,704,267 (77.9%)	316,816,063 (73.1%)
Total	**372,346,906**	**357,284,481**	**355,198,705**	**433,611,035**

Exhibit II.3 Mobile user revenues[7] (in JD) [Source: Responses to data request]

Traffic volume

Despite the data showing a declining number of subscribers and revenues, the total volume of calls (minutes originated) has remained relatively constant from 2015 to 2017, but has increased by 10.6% between 2017 and 2018. As shown in Exhibit II.4 below, pre-paid minutes contribute a much larger share of total mobile originated minutes, which is in line with their share in overall subscriber base.

Post-paid subscriber share in voice minutes is higher than their share in subscriber base which implies a higher voice minute consumption per subscriber compared to prepaid subscribers:

	2015	2016	2017	2018
Postpaid	2,847,249,969 (8%)	3,294,245,979 (10%)	3,626,440,801 (11%)	3,948,102,082 (11%)
Prepaid	30,701,412,284 (92%)	29,871,997,261 (90%)	30,394,018,477 (89%)	33,166,318,900 (89%)
Total	**33,548,662,254**	**33,166,243,240**	**34,020,459,278**	**37,114,420,982**

Exhibit II.4 Postpaid and prepaid minutes as a proportion of total mobile originated minutes [Source: Responses to data request]

[7] Zain revenue figures are the aggregate of the revenues corresponding to voice, Data and SMS services. Umniah revenue figures are the aggregate of the revenues corresponding to voice, Data and SMS services. M2M revenues are considered as postpaid. For the sake of consistency, total revenues for Orange Mobile are calculated following the same approach.

As shown in Exhibit II.5 and Exhibit II.6 below, the large majority of calls are domestic on-net mobile originated minutes, in 2018 making up around 80.7% of total minutes compared with 16.3% domestic off-net mobile minutes, 1.3% off-net fixed and 1.6% international.

Although the share of on-net has decreased in recent years (and the share of off-net increased), voice minute consumption is still dominated by on-net calls with a share of 80.7% in total.

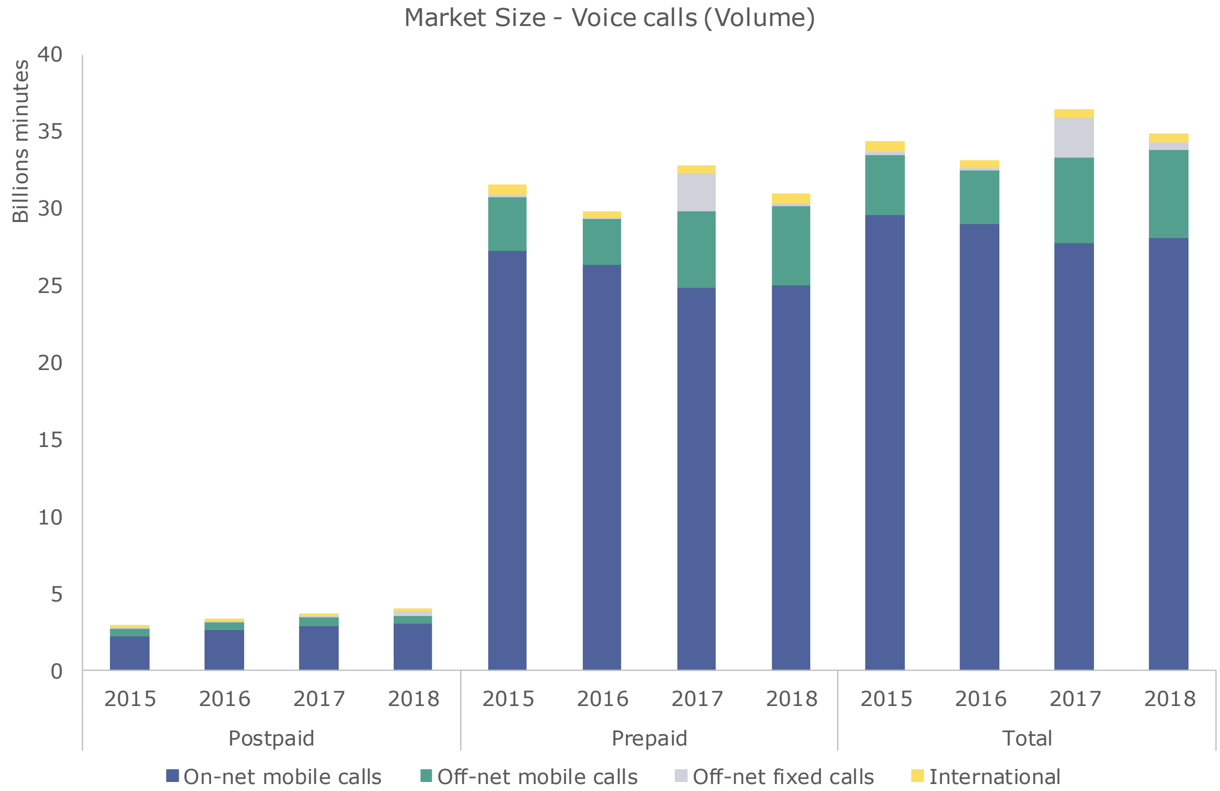

Exhibit II.5 Total mobile voice calls (by number of minutes by call type) [Source: Responses to data request]

	Postpaid				Prepaid				Total			
	2015	**2016**	**2017**	**2018**	**2015**	**2016**	**2017**	**2018**	**2015**	**2016**	**2017**	**2018**
Domestic												
On-net mobile calls	80.1 %	81.0 %	80.3 %	78.8%	88.9 %	88.2 %	81.8%	81.0%	88.2%	87.5%	81.6%	80.7%
Off-net mobile calls	16.7 %	16.3 %	17.3 %	12.3%	8.9%	10.0 %	16.4%	16.8%	9.6%	10.6%	16.5%	16.3%
Off-net fixed calls	1.9%	1.7%	1.5%	8.1%	0.6%	0.6%	0.4%	0.5%	0.7%	0.7%	0.5%	1.3%
International	1.4%	1.0%	0.8%	0.8%	1.6%	1.2%	1.5%	1.7%	1.6%	1.2%	1.4%	1.6%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Exhibit II.6 : Share of call volumes by call type [Source: Responses to data request]

The total SMS volume in the market is observed to be increasing during the last three years, as shown in Exhibit II.7 below. Indications from operators suggest that SMS volumes are increasing on both post-paid and pre-paid subscriptions.

	2015	**2016**	**2017**	**2018[8]**
Total	1,652,510,035	1,951,452,928	1,901,206,524	2,079,889,793
% share of International	1.4%	0.8%	0.7%	NA

Exhibit II.7 Total SMS traffic, prepaid and postpaid [Source: Responses to data request]

Most SMS are sent domestically, with only a very small proportion being international. For example, in 2017 only 0.7% were international.[9]

Mobile data volumes (Gigabytes (GB)) consumed by standalone mobile broadband subscriptions have been increasing rapidly over the past three years rising from a total (by technology, including 2G + 3G + 4G) of around 58 million GB in 2015 to nearly 243 million GB in 2017 and 388 million GB in 2018. The Exhibit II.8 below shows the data traffic usage corresponding to mobile broadband services.

[8] SMS traffic value for 2018 does not have domestic / international breakdown.

[9] Note that according to the findings from the data request, there are negligible premium SMS volumes.

	2015	2016	2017	2018
Actual usage of standard mobile broadband subscriptions (handsets)	58,884,789 (49.9%)	107,988,508 (40.6%)	243,207,173 (50.9%)	387,850,299 (57.1%)
Dedicated data subscriptions for stand-alone services[10]	59,131,386 (50.1%)	158,080,672 (59.4%)	234,838,416 (49.1%)	291,283,154 (42.9%)
Total	**118,016,174**	**266,069,180**	**478,045,589**	**679,133,453**

Exhibit II.8 Total mobile broadband traffic (GB) [Source: Responses to data request]

It can be seen that although there are proportionally fewer subscribers of dedicated data subscriptions, the share of total broadband traffic is greater than that coming from standard mobile broadband subscriptions. This suggests that those with dedicated data subscription may be using more data per subscriber than standard mobile broadband connections.

The share of 4G network in overall data traffic is increasing as 4G handset availability and network roll-out improves. In 2017, 4G traffic accounted for 46.9% of all mobile data traffic.

As seen from the Exhibit II.9 below, prepaid lines correspond to 89.6% of the total mobile data traffic in the market in 2018.

	2015	2016	2017	2018
Post-paid	6,256,646 (10.6%)	14,386,598 (13.3%)	28,153,676 (11.6%)	40,438,403 (10.4%)
Pre-paid	52,628,142 (89.4%)	93,601,910 (86.7%)	215,053,497 (89.4%)	347,411,896 (89.6%)
Total	**58,884,789**	**107,988,508**	**243,207,173**	**387,850,299**

Exhibit II.9 Total data traffic distribution by pre-paid and post-paid (GB) [Source: Responses to data request]

Traffic revenue

[10] Zain's value for 2015 estimated from the 2016 traffic by using total mobile data growth rate from 2015 to 2016. Umniah figures are estimated to be equal to the total data traffic for all the years.

Revenue corresponding to voice traffic has decreased over the past four years. There is a decreasing trend in voice revenues despite an increase in overall revenue in 2018, which shows that the share of voice in total revenue mix is declining. The prepaid and post paid voice revenues are shown in the Exhibit II.10 below:

	2015	2016	2017	2018
Post-paid	57,014,148 (21.5%)	50,804,729 (21.9%)	44,789,694 (23.1%)	36,562,143 (20.9%)
Pre-paid	208,389,179 (78.5%)	180,309,216 (78.1%)	148,986,409 (76.9%)	138,636,135 (79.1%)
Total	**265,403,327**	**231,113,945**	**193,776,103**	**175,198,278**

Exhibit II.10 Post-paid and pre-paid voice revenues (in JD) [Source: Responses to data request]

Revenue associated with SMS traffic has been decreasing, despite an increasing volume of SMS traffic. Again, this could be due to both pricing and also changes in revenue allocation algorithms among voice, data and SMS services in bundles.

Revenues corresponding to data traffic are shown per prepaid and postpaid in Exhibit II.11 below, showing prepaid lines corresponding to 68.1% of total mobile data revenue in 2018:

	2015	2016	2017	2018
Post-paid	17,783,966 (20.5%)	23,368,881 (21.7%)	31,107,191 (21.6%)	77,400,837 (31.9%)
Pre-paid	68,896,579 (79.5%)	84,392,532 (78.3%)	112,882,580 (78.4%)	164,926,535 (68.1%)
Total	**86,680,545**	**107,761,413**	**143,989,772**	**242,327,372.52**

Exhibit II.11 Total revenue[11] for mobile data services (JD) [Source: Responses to data request]

11 Orange Mobile pre-paid revenue for 2015 is estimated from 2016 revenue based on proportion of the traffic volume.

While revenue figures for data traffic have increased over the three years, high demand for data results in a competitive pricing strategy which is reflected in the decreasing unitary revenues per GB.

2.3 TRENDS IN MARKET SHARE

As well as examining overall trends in the retail mobile market, the TRC has conducted a more granular analysis of the performance of each MNO with respect to these overall trends. Market share analysis follows the structure set out in the preceding section:

- Subscriber numbers;
- Overall revenues;
- Traffic volume; and
- Traffic revenue.

Market share by subscribers

The total number of subscribers for each operator has declined over the period 2015-2018. In 2015, all three operators held a broadly similar subscriber market share. Zain gained share in 2016 and although its share has fallen again in 2017 and increased in 2018, it remains larger than the other two, with a share of [✂NO]

	2015	2016	2017	2018
Orange Mobile	Numbers Omitted (NO) NO	NO NO	NO NO	NO NO
Zain	NO NO	NO NO	NO NO	NO NO
Umniah	NO NO	NO NO	NO NO	NO NO
Total	**13,733,018**	**9,818,446**	**9,703,287**	**8,731,760**

Exhibit II.12 Mobile services market share by subscribers [Source: TRC]

Market share by revenues

The revenues follow a similar trend as the volume of subscribers, as shown in Exhibit II.13 below. Umniah has lost [✂NO] revenue market share, i.e. has decreased from [✂NO] to [✂NO] between 2015 to 2018, while Zain has managed to increase its market share from [✂NO to NO.] Similarly, Orange Mobile has managed to increase its share from [✂NO] to [✂NO] over the same period.

Total market revenue has decreased from JD 372.4 million to JD 355.5 million from 2015 to 2017 and revenue decrease is mostly accounted for by the drop in the revenues of Umniah. After a three-year decline in market revenue, total market revenue has increased to 433.6 million in 2018, driven by growth in the all operators revenues.

	2015	**2016**	**2017**	**2018**
Orange Mobile	[✂NO NO	NO NO	NO NO	NO NO
Zain[12]	NO NO	NO NO	NO NO	NO NO
Umniah[13]	NO NO	NO NO	NO NO	NO NO
Total	**372,422,370**	**357,385,482**	**355,503,533**	**433,611,035**

Exhibit II.13 Mobile market share by total revenues (in JD) [Source: Responses to data request]

Market share by traffic volume

The TRC has considered market share by traffic volume in more detail and has examined separately traffic volume associated with voice calls, SMS and data. The total volume of **voice call** minutes remained broadly stable between 2015 and 2017. However, in 2018 total voice traffic has increased to 37.1 million. As shown in Exhibit II.14 below, [✂Zain's share has decreased to [✂NO in 2018, though Zain still holds the largest share].

[12] Zain revenue figures are the aggregate of the revenues corresponding to voice, Data and SMS services.

[13] Umniah revenue figures are the aggregate of the revenues corresponding to voice, Data and SMS services. M2M revenues are considered as post-paid.

	2015	2016	2017	2018
Orange Mobile	[✂NO NO	NO NO	NO NO	NO NO
Zain	NO NO	NO NO	NO NO	NO NO
Umniah	NO NO	NO NO	NO NO	NO NO
Total	**33,548,662,254**	**33,166,243,240**	**34,020,459,278**	**37,114,420,982**

Exhibit II.14 Mobile market share by mobile voice calls [Source: Responses to data request]

The volume of SMS traffic by operator is shown in **Error! Reference source not found.** below.

	2015	2016	2017	2018
Orange Mobile	[✂NO NO	NO NO	NO NO	NO NO
Zain	NO NO	NO NO	NO NO	NO NO
Umniah	NO NO	NO NO	NO NO	NO NO
Total	**1,652,510,035**	**1,951,452,928**	**1,901,206,524**	**2,079,889,793**

Exhibit II.15 Total SMS traffic, pre-paid and post-paid[14] [Source: Responses to data request]

[14] Umniah did not report Bulk SMS termination figures. Hence, total domestic and international SMS traffic figures are considered for all the operators.

This analysis shows that Zain's share in SMS traffic has increased between 2015 and 2018 [✂from NO to NO].

Data services are provided by all three mobile operators (Orange Mobile, Zain and Umniah) and the evolution of share by total data traffic volumes per operator from 2015 to 2018 is shown below in Exhibit II.16.

	2015	2016	2017	2018
Orange Mobile	[✂NO NO	NO NO	NO NO	NO NO
Zain	NO NO	NO NO	NO NO	NO NO
Umniah	NO NO	NO NO	NO NO	NO NO
Total	**58,884,789**	**107,988,508**	**243,207,173**	**387,850,299**

Exhibit II.16 Market share of mobile data services (in GB) [Source: Responses to data request]

Each operator's share of data volumes has remained fairly constant between 2015 and 2017. However, in 2018 Zain has lost [✂NO] market share, whilst Orange Mobile and Umniah increased market share by [✂NO] and [✂NO] respectively].

Market share of traffic revenue

The TRC has separately considered market share of traffic revenue associated with mobile voice calls and data.

While the total number of **mobile voice call** minutes in the market has increased in 2018, the revenues have decreased consistently during the last four years. This decrease in revenues are observed for all the three operators.

	2015	2016	2017	2018
Orange Mobile[15]	[✂NO NO	NO NO	NO NO	NO NO
Zain	NO NO	NO NO	NO NO	NO NO
Umniah	NO NO	NO NO	NO NO	NO NO
Total	**265,403,327**	**231,113,945**	**193,776,103**	**175,198,278**

Exhibit II.17 Mobile market share of total mobile voice calls by revenue (in JD) [Source: Responses to data request]

Although it may be expected that Zain would have larger revenues on account of its greater number of call volume minutes, in order to understand the competitive landscape in the mobile voice market, it is useful to examine the unitary revenues (revenue per minute) for each of the three operators. As shown in Exhibit II.18 below, Orange has the highest unitary pricing until 2018 and Umniah has lowest unitary revenues consistently since 2015.

	Postpaid				Prepaid			
	2015	2016	2017	2018	2015	2016	2017	2018
Orange Mobile	[✂NO	NO	NO	NO	NO	NO	NO	NO
Zain	NO	NO	NO	NO	NO	NO	NO	NO
Umniah	NO	NO	NO	NO	NO	NO	NO	NO

Exhibit II.18 Unitary revenue trend (in JD) for mobile voice services (domestic calls) for each operator [Source: Responses to data request]

Revenues corresponding to the **data traffic** indicate that the greatest increase is attributed to Orange Mobile, while Zain and Umniah has decreased the data revenues in the last years as shown in the Exhibit II.19 below:

15 Orange Mobile pre-paid revenue figures for total domestic voice traffic and international traffic are estimated for 2015. It is estimated from 2016 revenue information by taking into consideration yearly growth from 2015 to 2016 for corresponding post-paid services.

	2015	2016	2017	2018
Orange Mobile[16]	[✂NO NO	NO NO	NO NO	NO NO
Zain	NO NO	NO NO	NO NO	NO NO
Umniah	NO NO	NO NO	NO NO	NO NO
Total	**86,680,545**	**107,761,413**	**143,989,772**	**242,327,372**

Exhibit II.19 Market share of mobile data services by revenue (in JD) [Source: Responses to data request]

The TRC has reviewed inconsistencies in data on subscriber numbers submitted by operators, and is confident that current data is reliable. This shows that the penetration of mobile in Jordan is high, and there is stability in mobile call volumes, growth in the volume of SMS (but not in associated revenue), and significant growth in volume and revenue associated with mobile broadband, even in the face of a decreasing number of subscribers.

2.4 FORWARD-LOOKING DEVELOPMENTS

As set out in the White Paper, the market review should be forward-looking, and should take into account not just the current status and recent trends of telecommunications services in Jordan, but also likely future developments which could impact on the market and on the conditions of competition.

In the retail mobile market, the TRC expects that the volume of mobile voice calls is not likely to increase, and indeed may decline. This would be in line with experience elsewhere, which indicates that volume and revenue associated with traditional voice services is decreasing. It is not the case that people no longer make voice calls, but rather that there are now various alternative ways of making a voice call. These alternatives are likely to continue to grow over the next few years. They include making voice calls over broadband (both managed and unmanaged VoIP). As well as alternative ways of making a voice call, there are increasingly communication options available which may be alternatives to making a voice call in the first place. While

16 Orange prepaid revenue for 2015 is estimated from 2016 revenue based on proportion of the traffic volume.

texting was often an alternative to making a mobile voice call, there are now many more options available, particularly in the form of OTT services.

The TRC expects that retail demand for OTT services will continue to increase over the next few years. This is facilitated by the increasing availability of higher speed and higher quality broadband, over both fixed and mobile platforms, and by the increasing use of smartphones. The growth in OTT services is disruptive for telcos (except where they also offer OTT services) because the service is often 'free' to the user, but requires an underlying infrastructure which is usually not provided by the OTT service provider. In common with all other jurisdictions, it is not easy to gather reliable data on the use of OTT services, not least because many OTT services are provided by international companies outside the data gathering powers of the TRC. However, the table below shows the figures reported for OTT data consumption on each of the three mobile networks in Jordan in 2017 showing the significant volume of data used by these services (over 50% of total data consumption on the mobile network).

	Orange	Zain	Umniah
Total OTT data consumption 2017 (GB)	[✂NO	NO	NO

Exhibit II.20 Total OTT data consumption in 2017 [Source: Responses to data request]

An alternative to OTT services is the use of WiFi Calling. It is a service offered by MNOs that allows a compatible 4G mobile handset to use a WiFi connection to make and receive calls, texts and multimedia messages. The service offers seamless switching between WiFi and cellular, and is a function installed on the handset, rather than an app. Because the call is made through the WiFi network and not through the mobile network, WiFi calling is useful in areas with weak mobile coverage or poor signal. Unlike an OTT service, WiFi calling does not need the called party to be logged into the same OTT app.

For mobile data and mobile broadband services, the emergence of advanced 4G networks and (further into the future) 5G technologies could lead to further improvements in service quality and download speeds (as well as some other characteristics, e.g. latency, device density, power consumption, etc.) compared to what can currently be achieved over 3G and 4G technologies. There may also be improvements in Fixed Wireless Access (provided largely in Jordan over Fixed-LTE at present) and this may replace some existing technologies. For example, Umniah and Mada already shut down its WiMax service in 2017 transferring those customers on to FWBA provided over its LTE network. Such developments might allow for mobile data speeds to reach those comparable with fixed networks.

The roll-out of voice over LTE (VOLTE)[17] could offer superior call quality to that available over 2G or 3G connections, and could effectively improve mobile coverage for calls. As 2G and 3G connections are still available even where there is no 4G signal, VOLTE means that there is greater mobile coverage overall. In terms of call quality, VOLTE is like a high definition voice call, and so is much closer to the quality expected from a fixed line call. At present, VOLTE is not available on every handset – it is limited to the newest 4G enabled handsets. The roll-out of VOLTE does require the MNO to upgrade its voice call infrastructure.

The emergence of 5G will allow for much more than just 'enhanced mobile broadband' and will encourage the development of massive machine type communications and the Internet of Things. Therefore, the M2M sector (which is currently quite small in Jordan) may grow and provide new opportunities and revenue streams for mobile operators. Exhibit II.21 below shows the percentage of M2M SIM cards as a proportion of total SIM cards and shows that this is growing slowly, but still represents a small share of the overall number of SIM cards.

	2015	2016	2017
Percentage of M2M SIM cards over total SIM cards	0.64%	1.62%	2.85%

Exhibit II.21 M2M evolution based on percentage of M2M SIM cards over total SIM cards [Source: Responses to data request]

III. Definition of Retail and Wholesale Mobile Markets

3.1 METHODOLOGY FOR MARKET DEFINITION

The purpose of market definition is to identify the products and services that make up a telecoms market, with a view to assessing, in a systematic way, the competitive constraints faced by operators. The eventual aim of market definition is to enable the determination of any operator potentially holding SMP (Significant Market Power or dominance). This requires establishing whether any actual and potential competitors are capable of constraining such an operator's behaviour by preventing it from behaving,

[17] VOLTE is voice calls over a 4G LTE network.

within the defined market, to an appreciable extent independently of effective competitive pressure, i.e. independently of competitors, customers and ultimately consumers. The market definition exercise does this by considering the available products and services, and assessing the extent to which these can be substituted for each other.

The definition of the relevant market is the prerequisite for assessing whether a particular market is characterised by effective competition or should be subject to *ex ante* regulation. The starting point for the identification of markets susceptible to *ex ante* regulation is the definition of retail markets. Retail markets are considered to be markets where products and services are bought from operators by end users – users could be, for example, businesses, consumers, or government services. Retail markets should be distinguished from wholesale markets, in which telecom products and services are bought by telecom operators or licensees from each other.

In addition to taking into account recently observed trends, the approach to market definition should also consider forward-looking developments, extending to any reasonably likely developments within a 3-year timeframe.

The list of markets identified in the last round of market reviews is a good starting point, and the TRC has considered all the markets represented on that list. However, it is important to consider how change (particularly technological change) is impacting on the structure of telecoms markets. The TRC has therefore covered all the functions of the currently regulated markets, but has framed these markets in a context which does not depend on legacy markets, but on current and future structures.

Once retail markets have been defined, the assessment can then consider wholesale markets that are upstream to those retail markets, i.e., markets for the provision of wholesale access to facilities, products and services necessary to provide services in the (downstream) retail markets concerned.

The first step in the market definition process is to identify constraints on price-setting behaviour arising from demand-side and supply-side substitution.

- **Demand-side substitution** relates to the ability and will of consumers to replace the service offered in the relevant market with other available services. Suitable services will be considered substitutes to the extent that they can provide similar functionalities or can satisfy consumer needs to the same extent as the relevant service. The key issue here is to determine whether the price of a potential substitute service is effectively constraining the price of the relevant service.

- **Supply-side substitution** relates to the ability of one or more operators not yet offering the relevant service to promptly switch to production of the service in question (or of a substitute). Supply-side substitution can occur in the form of production substitution, when an operator shifts the use of existing assets from the production of a given product to the production of the relevant one, or production extension, when the existing production facilities are used for the supply of the current products as well as the relevant one.

When examining substitutability it is common practice to apply the '**hypothetical monopolist test**'[18]. In line with international best practice and Section 3.1 of the White Paper, the TRC has implemented a demand-side substitutability analysis by initially considering a narrowly defined service that is representative of the relevant market and by subsequently extending the market's boundaries, including relevant demand-side substitutes. The hypothetical monopolist test is also used for the purpose of identifying constraints on the price-setting behaviour arising from supply-side substitution.

If products are considered to be sufficiently close substitutes from a demand or supply side perspective, then they can be considered to fall within the same market. It should be noted, however, that hypothetical supply-side substitution is not sufficient, on its own, for the purposes of market definition; it is supply-side substitution that should be relied upon as the primary criterion.

Geographical segmentation: Market definition also considers the geographic scope of markets, i.e., the extent to which these can be considered to comprise the whole national territory or whether there are different areas, within that territory, which exhibit significantly different conditions of competition, sufficient to justify the definition of distinct local or regional geographic markets. The geographic market(s) should thus be defined taking into account the intensity and likelihood of dissimilar conditions of competition in different areas within Jordan. Within any single geographic market, the conditions of competition should be homogenous.

18 The main principle underlying the hypothetical monopolist test is that a market should be defined as a service (or a group of services) such that a hypothetical, profit-maximizing firm, not subject to price regulation, which was the only present and future seller of that service (or group of services) could profitably impose a small but significant and non-transitory increase in price (SSNIP) above prevailing or likely future levels. The hypothetical monopolist test looks for the smallest group of services and the smallest geographic area in relation to which a telecommunications service provider can impose and profitably maintain a small but significant non-transitory increase in price. In most cases, a 5-10% price increase would be considered significant and a period of one year or less would be considered transitory.

The next sections set out the TRC's preliminary views on the definition of retail and wholesale mobile services markets.

3.2 RETAIL MOBILE PRODUCT MARKET DEFINITION

In the previous round of market reviews, the retail market for mobile services was defined as a single national market including a cluster of voice and data-related services (in both post-paid and pre-paid forms) for the provision of access, national, international and roaming calls, SMS and other value-added services.

All mobile operators operating in Jordan provide consumers with access to a range of services as part of a single contract (whether pre-paid or post-paid). By obtaining a mobile subscription, customers are able to make or receive calls to and from other mobile phones, and to and from fixed lines, to both domestic and international numbers, and send or receive SMS and access data services of some kind.

Whilst consumers may have different preferences or motivations for accessing individual mobile services, these services are offered by mobile operators as a single package of services. Consumers would find it difficult to "unpick" this package and would be unlikely to have multiple SIMs/subscriptions with the sole aim of accessing different types of mobile services (e.g. voice vs. data) from different operators. These services are thus always provided as part of a group of retail services offered by MNOs, and customer choice will be based on the price of the bundle rather than the individual service elements.

Therefore, the focal product is taken to be a group of mobile retail services including**:**

- access (national, international and roaming)
- voice calls;
- SMS;
- mobile data services.
- The existence of demand and supply side substitutability with other products and services must then assess:
- whether post-paid and pre-paid services should be considered in the same retail market;
- whether business and residential services should be considered in the same market;

- whether mobile and fixed retail services fall within the same market;
- whether there should be a retail market distinction between the different technologies used for the provision of mobile services (2G, 3G, 4G); and
- whether Over-The-Top (OTT) services are a substitute for mobile services.

Are post-paid and pre-paid services part of the same retail market?

In Jordan all mobile operators offer a number of post-paid and pre-paid offers, with the primary distinction being on the way services are billed. In some cases, post-paid offers also include the provision of (and charges for) a handset (which may be subsidised). Pre-paid subscriptions tend to be more popular in Jordan: in 2017 92% of subscribers had a pre-paid subscription.

Demand side substitution

In principle, customers of each of pre-paid (or post-paid) services would be easily able to switch to post-paid (or, conversely, pre-paid) services in response to a SSNIP of the hypothetical monopolist. However, in practice there are some issues that might also influence the willingness and ability of consumers to switch quickly. For example, those on a post-paid contract might be 'locked-in' to a minimum contract period and therefore find it difficult to switch quickly without additional costs. However, it is likely that any price rises would come at the time of contract renewal, or price rises may be for "new customers" only, so existing customers would have the option to switch at the time they are exposed to the price rise.

Pre-paid customers may prefer not being locked into a contract, or they may be unable to access post-paid services for reasons of affordability and ability to obtain credit. They therefore may not always have the option of switching away from pre-paid services in response to a SSNIP. However, those that are able to switch might have the added incentives of also being able to take advantage of hand-set subsidies often provided with post-paid services.

Supply side substitution

It would be easy for a MNO supplying only pre-paid services (or, conversely, only post-paid services) to switch to providing post-paid services (or pre-paid services) in response to a SSNIP, through either production substitution or production extension. The underlying network and service provision are not materially different from a technical standpoint, as the main difference relates to the way in which the services are billed. This means that the switch could be made quickly and with little cost.

Conclusion

Given the clear supply side substitutability and the arguments in favour of demand side substitutability, the TRC proposes that pre-paid and post-paid services should be considered to belong to the same product market.

Are business and residential services part of the same market?

Demand side substitution

In terms of functionality, mobile services provided to a residential customer are the same as those provided to business customers, although there may be some differences in terms of pricing and marketing between offers targeted at these customer segments. Customers will generally choose the tariff that best meets their needs in terms of the traffic volumes for example, and there is likely to be a significant overlap between a residential customer buying mobile services and, say, a small business user. For example, given that an individual user must have an individual plan (regardless of whether this is used for business or personal purposes) it is likely and possible that enough customers at the margin would switch to a tariff offered to the other segment in response to a SSNIP on all tariffs offered to their segment, such that the SSNIP would become unprofitable. Therefore, business and residential mobile services can be considered to be demand side substitutes.

Supply side substitution

It would be easy for a MNO supplying only business services (or, conversely, only residential services) to switch to providing residential services (or business services) in response to a SSNIP, through either production substitution of production extension. The underlying network and service provision are not materially different from a technical standpoint, as the main difference relates to the way in which the services are marketed and billed. This means that the switch could be made quickly and with little cost.

Conclusion

The TRC proposes that residential and business mobile services should be considered to belong to the same market.

Are mobile and fixed services part of the same market?

Demand side substitution

In Jordan, the difference in penetration rates between fixed and mobile access suggests that there are a significant number of ‘mobile-only’ households. The TRC has considered whether enough customers would switch to a fixed service in response to a SSNIP in the price of mobile to render it unprofitable for the hypothetical monopolist. The TRC’s preliminary view is that such a switch would be unlikely.

Functional differences between fixed and mobile services are such that a customer for mobile services would not be likely to find fixed services to be a good substitute. For example, the characteristic with the greatest impact for a mobile user is mobility: a mobile caller can make and receive calls from anywhere and do so whilst constantly changing location (even abroad via roaming), whereas a fixed caller is tied to one location. Any customer switching from a mobile service to a fixed service would lose that characteristic.

Furthermore, while retail mobile services constitute a cluster of services that includes not only calls but also SMS and data services, retail fixed services are not always provided as a cluster in the same way as mobile. Mobile customers could replicate some, but not all,[19] of the components of a mobile service if they were to switch to a fixed service.

Supply side substitution

It is unlikely that a mobile operator would switch to supply fixed services in response to a small but significant price increase in fixed services, because of the required fixed network infrastructure roll-out.

In addition, the TRC notes that all mobile operators in Jordan also offer fixed services, suggesting that operators view fixed and mobile as complementary services. Therefore, the services are not considered supply side substitutes.

[19] For example, SMS.

Conclusion

The TRC proposes that mobile and fixed services should not be considered part of the same product market.

Should there be a retail market distinction between the different technologies used for the provision of mobile services?

All mobile operators in Jordan are providing voice and data services within their customer offerings, based on 2G, 3G and 4G technology.

There are some instances where tariffs are advertised specifically as a 4G/LTE package or line,[20] but most retail offers for mobile services do not distinguish between 3G and 4G services. For example, operators tend to offer data allowance on their pre-paid and post-paid tariffs as part of the bundle of services, but do not specify/differentiate between whether data is provided over 3G and 4G. In these cases, it is likely that the technology for which the customer will access at the point of use will depend on the service coverage.

Similarly, although all mobile service offerings come with data (typically provided over 3G or 4G), 2G services may still be important for the provision of voice services. For example, where 3G or 4G is not available (and where handset/networks are not capable of proving voice over LTE (VoLTE)) there will be a fall back onto 2G or 3G for voice services.

As shown in Exhibit III.1 below, coverage (of the population) of all operators for 2G, 3G and 4G technologies is close to ubiquitous in 2017. However, 3G has slightly greater population coverage from 4G showing that there will be some areas where consumers cannot access 4G and will fall-back to the 3G network.

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20 For example, Zain offers a pre-paid package called "4G/LTE line", but other tariff descriptions refer to a generic data allowance (see: https://www.jo.zain.com/english/consumer/voice/prepaid/plans/Pages/default.aspx accessed on 24.8.18). Orange Mobile has a general statement that with its mobile plans customers can "enjoy the best internet bundles with 4G+ speed which you can use as you wish at any time", but the individual tariff descriptions refer to a generic data allowance (see: https://www.orange.jo/en/offers/pages/mobile-prepaid-offers.aspx accessed on 24.8.18).

	2G	3G	4G
Orange Mobile	[✂NO	NO	NO
Zain	NO	NO	NO
Umniah	NO	NO	NO

Exhibit III.1 Mobile operator population coverage by technology [Source: Responses to data request]

Demand side substitution

When buying the cluster of mobile services (including access, voice calls, SMS and data) consumers cannot easily distinguish between, and/or actively choose to purchase, a 3G only or a 4G only service offering. The decision over which technology they actually receive their service will be influenced by coverage. The technologies could therefore be considered as complements.

However, even in the small number of cases where a customer could directly subscribe to a 3G or 4G only service, these technologies essentially provide the same service (with 4G allowing greater speeds and higher quality). Given this, it is likely that a consumer with a 3G subscription would switch to a 4G subscription in response to a SSNIP on 3G services.

Similarly, for the making of voice calls, the customer is unlikely to actively differentiate between those calls that are made over the 4G network (using VoLTE) and those that are provided over the 3G or 2G network. There is no option to choose the technology or substitute at the point of making a call.

Supply side substitution

In Jordan, all existing operators have access to spectrum that would allow them to provide 2G, 3G and 4G services, and all mobile operators are providing 2G, 3G and 4G services with near ubiquitous population coverage.

Conclusion

Mobile services provided over 2G, 3G and 4G networks fall within the same product market.

Are over-the-top services a substitute for mobile services?

Over the Top ('**OTT**') services originate over the internet and terminate via the internet without using a mobile number. Examples would include Skype and Facetime. The whole voice path involves OTT via third party IP providers, and as with any OTT service, the call quality cannot be fully managed or guaranteed. As OTT calls do not terminate to a mobile number, they do not incur a mobile termination charge.

Demand side substitution

A customer of mobile services could choose to use OTT voice or messaging applications instead of a traditional mobile voice call or SMS. The customer's ability to do this would depend on having the appropriate handset, data plan and software, and on the called party also being appropriately connected. This suggests that the option to choose an OTT application would apply to a sub-set of mobile customers, and that this would limit the number of customers who could switch, and so would limit the impact of a switch.

A customer choosing to use OTT services would normally already have a mobile cluster package that would include voice calls, SMS and data. Most packages include at least some inclusive calls, and the marginal price of a call within a call allowance is zero. For most customers, there would be no financial benefit in switching to make an OTT call where traditional voice calls or SMS are included in the package. This means that the switch would apply primarily to calls or SMS that are not included in the package – for example, to international calls.

In considering demand side substitution, the TRC notes that a customer choosing to make an OTT call is using the data element of his package rather than the voice part, but the retail product is considered to be a cluster of services, including voice, data and SMS[21]. OTT services therefore represent an additional service or application that is accessed using the mobile service, and for the purposes of market definition it should not be included in the same market (in the same way that social media applications or similar cannot be considered a substitute for mobile services but rather a service accessed over that service).

21 The use of mobile broadband as a standalone service is examined in the context of broadband services in the Fixed Markets Consultation.

Supply side substitution

A supplier of OTT services would be unlikely to switch to provide mobile services because to provide a similar functionality, they would need to have access to mobile network infrastructure. This would require significant and costly investments, and would not be a likely short term response to a SSNIP in the price of mobile services.

Conclusion

The TRC proposes that OTT voice and messaging services are not part of the same product market as mobile services. However, it recognises that OTT voice and messaging services do fulfil some functions that are similar to those available through some regulated services (such as mobile voice and SMS), and this is a factor that needs to be considered in the “three criteria test” and any competition assessment.

Summary of conclusions on the relevant product market

- The relevant product market consists of a cluster of voice and data-related services that includes the provision of access, national, international and roaming calls, SMS and other value-added services;
- pre-paid and post-paid services belong to the same product market;
- business and residential services belong to the same product market;
- the retail market for mobile services is distinct from that for fixed services;
- the different technologies used for the provision of mobile services belong to the same product market;
- OTT services are not part of the same market as mobile services.

3.3 Retail Mobile Geographic market definition

All mobile operators offer Governorate-specific price offers[22]. The offers apply only to the use of the service within the Governorate. The TRC has considered whether these offers indicate significantly different conditions of competition between Governorates, and notes that the offers are provided by the same operators in each Governorate, and although each operator may vary its prices across the country, the conditions of competition are not appreciably different between Governorates.

Furthermore, where there is pricing differentiation between Governorates this is not due to differing competitive pressures. For example, prices are lower for those packages offered in Governorates outside of Amman. However, if differentiated pricing was a consequence of competitive pressure, it would be expected that prices would be lowest in the presence of alternative operators and strong competition (e.g. in Amman), not that they would be highest. It is therefore more likely that differentiated pricing is due to demand stimulation measures than to competitive pressures.

All MNOs in Jordan are licensed to provide services on a national basis. There are also obligations on geographic and population rollout obligations on MNOs as part of licensing conditions. All of these reasons suggest that the market for mobile services is national.

Conclusion

The geographic market is national in scope, covering the whole of Jordan.

Q1 Do you agree with the TRC's preliminary conclusions regarding the relevant product and geographic market definitions for retail mobile services?

[22] For example, Umniah's 'Al Ajaweed' tariff offers "A special line for Umniah's valuable south governorates customers, allowing them to enjoy unlimited calls on Umniah's network from all governorates except Amman, Irbid and Zarqa", with prices to these three governorates slightly more expensive.

3.4 WHOLESALE MOBILE PRODUCT MARKET DEFINITION

The wholesale inputs that are required to offer a retail mobile cluster of services are access and call origination, and termination for voice calls and for SMS. These are discussed in turn below.

Wholesale Mobile voice call termination

All mobile operators are responsible for terminating calls to their network and it is technically infeasible to terminate voice calls on a network other than that of the operator to which the called party is subscribed. Therefore, all mobile operators have a monopoly on voice call termination to their network.

In the presence of a SSNIP (i.e. an increase in the termination rate charged by the called party) there are no demand side substitutes at the wholesale level. A call to a given user or user's terminal is not a substitute for a call to another terminal.

It is possible that a SSNIP would not be profitable for the hypothetical monopolist, if the increase in termination rates was observed directly by the calling party at the retail level and where the price increase led the caller to avoid making the call altogether, or to seek an alternative method of contact. However, demand-side substitution at the retail level does not lead to wholesale level substitution and therefore does not warrant the widening of the definition of the wholesale termination market.[23]

Therefore, there are no demand or supply side substitutes to call termination on a network. The relevant market is limited to each terminating operator's network. This holds true regardless of the retail market definitions. While this assessment indicates that mobile voice call termination is an absolute bottleneck, the TRC has considered the boundaries of the market, including the following:

- Should termination of SMS and data be considered in the same market as termination of voice calls?

[23] As noted by the European Commission: "Although call termination charges may be theoretically constrained by demand-substitutes at retail level, which are a reasonable alternative for making a call to the subscriber concerned, even in presence of substitutes at retail level, a widened retail market including for instance fixed and mobile calls does not lead to substitutability at wholesale level. Thus, the definition of the retail market does not impact on the wholesale market definition"; see the Explanatory Note provided alongside the European Commission's 2014 Recommendation on relevant product and service markets susceptible to ex ante regulation.

- Should voice call termination on 2G, 3G and 4G networks be considered to fall within the same market?
- Should there be a single market for fixed and mobile voice call termination?
- Should the market comprise termination in all MNOs' networks, as a single market?

Should termination of SMS be considered to be part of the same product market as the termination of voice calls?

Demand side substitution

In the retail analysis, we noted that voice and SMS services are part of the retail mobile cluster of services. However, at a wholesale level, the purchase of voice call termination can be considered to be a service that is distinct from SMS termination, in terms of technical inputs and pricing. A wholesale purchaser of mobile voice call termination would be unlikely to consider SMS termination to be a substitute – SMS is a complement rather than a substitutable product. Therefore, from the viewpoint of demand side, SMS termination would not be considered to belong to the same market as voice call termination.

Supply side substitution

All MNOs provide termination of all mobile services, and there is no example of a provider of one type of termination service switching to provide another. MNOs would be likely to consider voice call termination and SMS termination to be complementary, rather than substitutable. In Jordan at present, voice services are priced on the basis of Calling Party Pays (CPP), while SMS is priced on a "Bill and Keep" basis[24], which further differentiates these two forms of termination.

24 "Bill and Keep" is a voluntary pricing arrangement for interconnection under which reciprocal SMS termination charges are zero, such that each network has agreed to terminate calls from the other network at no charge.

Conclusion

Termination of SMS is not part of the same product market as termination of mobile voice calls.

Should voice call termination on 2G, 3G and 4G networks be considered to fall within the same market?

Demand side substitution

Wholesale customers will be indifferent as to the technical platform used to terminate a voice call given that termination on all of them is functionally equivalent.

Supply side substitution

All MNOs in Jordan can route voice calls over 2G, 3G or 4G, and so the issue of supply side substitution is not material.

Conclusion

Voice call termination on each of 2G, 3G and 4G networks falls within the same product market.

Should there be a single product market for fixed and mobile voice call termination?

Demand side substitution

Fixed call termination and mobile call termination are distinct services, as termination on a mobile network is not a demand side substitute for termination on a fixed network.

Supply side substitution

It is not possible for a fixed supplier to switch, at negligible cost and in the short term, to providing termination services on a fixed network in response to an increase in the price of wholesale mobile termination rates. Therefore, wholesale mobile and wholesale fixed termination services should be considered to belong to separate product markets.

Conclusion

Fixed voice call termination is not part of the same product market as mobile voice call termination.

Should the market be defined as including mobile termination by all MNOs?

Demand side substitution

At the retail level, under the CPP principle, calling parties generally have no option to choose a different terminating operator based on its wholesale termination charges, but may well end-up paying different charges depending on the mobile network they call (e.g. with tariff distinctions between on-net and off-net calls). If the mobile termination market were a single market, comprising termination to any and all MNOs, there would be no possibility for such price differences on the retail level.

At the wholesale level, the operator of the network on which a call to a mobile subscriber originates cannot freely choose the mobile network that will terminate the call. Therefore, the individual networks of MNOs are not demand side substitutes to each other.

At the same time, mobile operators are unable to differentiate between individual called numbers (to their own network) when setting their wholesale termination rates. This means that their individual mobile network constitutes a single relevant product market for termination on that network.

Therefore, the TRC's preliminary view is that the defined market should relate to calls terminated on a mobile operator's network, with a different market for each mobile operator's individual network.

Supply side substitution

Terminating networks are not substitutable, and a consideration of supply side substitution is not relevant here.

Conclusion

The market should constitute the termination of voice calls on an individual mobile operator's network.

Summary of conclusions on wholesale mobile termination

- there are no demand or supply side substitutes to call termination on an individual mobile network;
- these conclusions hold regardless of the underlying technology of the originating call;
- voice call termination and SMS termination belong to different markets;
- fixed call termination and mobile call termination belong to different markets;
- the defined market relates to calls terminated on each mobile operator's network (with a different market for each individual mobile network).

Wholesale mobile voice call termination Geographic market definition

Competitive conditions for wholesale mobile voice termination services are homogenous across the whole of Jordan. Therefore, the market is national, covering the entire territory of Jordan.

Q2 Do you agree with the TRC's preliminary conclusions regarding the relevant product and geographic market definitions for wholesale mobile voice call termination services?

Wholesale mobile SMS termination

The assessment of wholesale SMS termination[25] has close parallels to that of voice call termination. All mobile operators are responsible for terminating SMS to their own network and it is technically infeasible to terminate SMS calls on a network other than that of the operator to which the called party is subscribed. In the presence of a SSNIP (i.e. an increase in the SMS termination rate charged by the terminating operator) there are no demand side substitutes at the wholesale level. An SMS to a given user or user's terminal is not a substitute for an SMS to another terminal.

25 SMS is, by definition, a data service. Beyond the scope of voice call termination, all other termination services are, by necessary implication, data-related.

While this assessment indicates that wholesale SMS termination is an absolute bottleneck, the TRC has considered the boundaries of the market, including the following:

- Should the termination of voice calls fall within the same market as the termination of SMS?
- Should person-to-person (P2P) SMS and application-to-person (A2P) SMS be in the same market?
- Should the market be defined as including all MNOs?

Should the termination of voice calls fall within the same market as the termination of SMS?

In considering the market for wholesale voice call termination, the TRC has already proposed that SMS termination would not fall within the same market as voice call termination. In this section, the focal product is wholesale SMS termination, and the assessment is whether voice call termination would fall within the same market.

Demand side substitution

A wholesale customer of SMS termination would not find wholesale voice call termination to be a good substitute. They are not functional substitutes. In addition, the pricing conditions differ, as voice call termination is based on CPP and SMS termination is (currently) based on a “Bill and Keep” agreement.

Supply side substitution

Unlike voice call termination, SMS termination occurs only between MNOs themselves. There is no relationship with fixed line operators. It is unlikely that a fixed operator would choose to enter the market for wholesale SMS termination if there was a SSNIP on SMS termination. At present, all MNOs provide termination of voice calls and of SMS, so there would be no entry or expansion into the wholesale SMS termination market from wholesale mobile voice termination. Therefore, it is unlikely that any operator not currently active in the supply of SMS termination would enter the market to provide SMS termination. Wholesale services for the termination of voice calls and SMS are not supply side substitutes.

Conclusion

Termination of voice calls falls within a separate market to the one for SMS termination.

Should person-to-person (P2P) SMS and application-to-person (A2P) SMS be in the same market?

During 2017, the TRC considered whether separate markets should be defined for person-to-person (P2P) SMS and application-to-person (A2P) SMS. The TRC issued a consultation in August 2017[26], where it proposed that the SMS termination market could potentially be redefined into two sub-markets:

- The market for person to person SMS termination (P2P SMS), which would include the termination of SMS generated by mobile end users; and
- The market for applications to mobile subscribers SMS termination (A2P SMS), which would include the termination of SMS generated by bulk SMS service providers.

The reason for such differentiation was the impact that OTT services might have on P2P SMS, and the extent to which OTT services could be considered to be a substitute for SMS. Further, the TRC noted that if there was a technical ability to identify SMS originated from an application and block or price such SMS differently, treating P2P and A2P as separate markets might be justified.

The TRC received responses to consultation which did not support these preliminary views. The TRC has now taken these responses into account in considering the definition of a market for mobile SMS termination.

Demand side substitution

A purchaser of wholesale termination services could already offer A2P and P2P, and so while there is a distinction at the retail level, and while the purchaser may need to use additional inputs to offer an A2P service, at the wholesale level there is a single wholesale input.

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[26] TRC, "Review of wholesale market for the provision of SMS Termination", 1 August 2017.

Supply side substitution

Both A2P and P2P SMS require wholesale SMS termination services and, according to the operators’ responses to the consultation, the terminating operator cannot distinguish between P2P and A2P from a technical perspective. Therefore, there are no supply side differences between the termination services for A2P or P2P.

Conclusion

Following its assessment and having taken into account responses of industry to the August 2017 consultation, the TRC concludes that there should be a single market for SMS termination that includes both P2P and A2P. The main reason for this conclusion includes the technical difficulty of distinguishing between P2P and A2P services.

The TRC recognises that OTT services may exert some level of constraint on wholesale SMS termination, and this is considered further in the competition assessment. However, for the purposes of market definition, the TRC’s preliminary conclusion is that there is a single market for all SMS termination.

Should the market be defined as including all MNOs?

Demand side substitution

At the retail level, under the CPP principle, parties sending an SMS have no option to choose a different terminating operator based on its wholesale SMS termination charges, but may well end-up paying different charges depending on the mobile network they call (e.g. with tariff distinctions between on-net and off-net SMS). If the SMS termination market were a single market, comprising termination to any and all MNOs, there would be no possibility for such price differences on the retail level.

At the wholesale level, the operator of the network on which an SMS originates cannot freely choose the mobile network that will terminate the SMS. Therefore, the individual networks of MNOs are not demand side substitutes to each other.

At the same time, mobile operators are unable to differentiate between individual numbers receiving an SMS on their own network when setting their wholesale SMS termination rates. This means that their individual mobile network constitutes a single relevant product market for SMS termination on that network.

Therefore, the TRC's preliminary view is that the defined market should relate to SMS terminated on a mobile operator's network, with a different market for each mobile operator's individual network.

Supply side substitution

Terminating networks are not substitutable, and a consideration of supply side substitution is not relevant here.

Conclusion

The relevant product market should consist of the termination of SMS on each individual mobile operator's network.

Summary of conclusions on wholesale SMS termination

- No demand or supply side substitutes to SMS termination on a mobile network;
- These conclusions hold regardless of the underlying technology of the originating SMS;
- Voice termination and SMS termination belong to different markets;
- A2P and P2P SMS termination belong to the same market;
- The defined market consists of the termination of SMS on each mobile operator's network, with a different market for each mobile operator.

Wholesale mobile SMS termination geographic market definition

Given a common pricing constraint, and the homogeneity of conditions of competition, the wholesale market for SMS termination is a national market, defined by the coverage of each mobile operator's network.

Q3 Do you agree with the TRC's preliminary conclusions regarding the relevant product and geographic market definitions for wholesale mobile SMS termination services?

Mobile access and voice call origination (MACO)

Under the previous market definition, the MACO market was defined as "*an integrated multi-mobile network operator market, which incorporates both the wholesale access element and the wholesale provision of origination services*". It is recognised that mobile access and call origination cannot be purchased or supplied separately, and so it would not be feasible for an operator requiring wholesale access and origination to "unpick" this bundle.

Wholesale mobile access and call origination services will be required for:

- The self-supply, by the MNO, to its own retail arm in order to provide all types of retail services – i.e., a vertically integrated operator wishes to provide its end users with access to the mobile network, and to enable them to originate all types of services. Therefore, it provides the necessary wholesale inputs to its retail arm; and
- the provision of MACO to other mobile service providers that seek to purchase access (for example, mobile virtual network operators (MVNOs)).

  There are currently no MVNO agreements in place in Jordan, but there have been MVNO agreements in the past.

In order to determine the boundaries of the MACO market, the TRC has considered:

- Whether all wholesale mobile access and call origination services sold to access seekers should be considered to be part of the same market; and
- Whether wholesale services provided over different mobile networks belong to the same relevant product market.

Do all wholesale mobile access and call origination services belong to the same product market?

Demand side substitution

Depending on the exact requirements of the access seeker, wholesale mobile access and origination services may be subject to different patterns of demand. For example, indirect access operators may require only call origination, whereas MVNOs might also require access to the radio access network. Further, MNOs without national coverage seeking wholesale access for national roaming may also demand something different, yet again. The mobile wholesale services required to support those different business models may not always be directly substitutable. However, these various wholesale access and call origination services are ultimately just inputs required to satisfy retail customers' needs, and operators may be willing to switch between different wholesale access types in response to a SSNIP in order to be able to offer retail services to meet the needs of the consumer.

Supply side substitution

Given that all MNOs are self-supplying wholesale services, these suppliers could easily switch to providing different combinations of wholesale mobile access and call origination services to other access seekers with relative ease in a short time frame. Therefore, the scope of services falling within the relevant MACO product market should in principle include all forms of mobile access and call origination which the host MNO can provide to itself.

Conclusion

Given the relative importance of supply-side substitutability analysis in connection with the range of potential wholesale services that could be provided, and the probability of demand-side substitutability, the relevant product market should consist of all wholesale mobile access and call origination services that could be offered over a MNO's network, including self-supply.

Do wholesale services provided over different mobile networks belong to the same relevant product market?

It is unlikely that a wholesale access seeker would need access to all MNO networks. An access seeker only needs to connect to one network and (subject to coverage and capacity) all such networks are substitutes. Therefore, (and unlike the situation of the termination markets) the MACO market includes all mobile networks.

The relevant market should therefore be considered to include self-supplied mobile access and call origination services by all three of the vertically integrated MNOs currently operating in Jordan.

Summary of conclusions on mobile access and call origination

- The relevant product market should consist of all wholesale access and call origination services that could be offered over an MNO's network;

- The relevant market should therefore be considered to include self-supplied mobile access and call origination services by all three of the vertically integrated MNOs currently operating in Jordan.

Wholesale MACO Geographic market definition

Vertically integrated MNOs are in the position to provide the wholesale service throughout Jordan, as they are currently able to do so for their own retail operations (through self- supply) given their near ubiquitous network coverage. Access seekers would likely be seeking geographic coverage for their services which would include the whole territory of Jordan.
Therefore, the geographic market is the whole of Jordan.

Q4 Do you agree with the TRC's preliminary conclusions regarding the relevant product and geographic market definitions for wholesale mobile access and call origination services?

IV. Markets susceptible to ex ante regulation

4.1 APPROACH

Market definition is not an end in itself. It is a prerequisite for assessing whether a market is subject to effective competition. The next step of the review is to assess each of the defined markets to determine whether there is likely to be a requirement for ex ante regulation (i.e. intervention to address structural, and not just behavioural, problems).

Such an assessment will require the application of the "three criteria test" (3CT), in which the TRC considers whether any of the defined markets exhibit the following features:

- High and non-transitory entry barriers e.g. due to sunk costs, economies of scale;
- Not tending towards effective competition; and
- Adequacy of competition law – insufficiency of ex post intervention.

The three criteria must be met cumulatively, i.e. all three of them must be satisfied for a conclusion to be reached that the market is susceptible to ex ante regulation. Therefore, failure to meet any one of these criteria will necessarily lead to the conclusion that the market is ***not*** a candidate market for ex ante regulation.

This section considers in turn each of the defined wholesale and retail mobile markets. An overview of the analysis is provided in a summary table, supported by reasoning in the subsequent text. Note that the three criteria test examines a *market*. Although the test considers whether there is, or is likely to be, effective competition in the market, this is not the same as assessing an individual operator's market power. The assessment of market power is carried out in Section V, for those markets identified as being susceptible to ex ante regulation.

The analysis below starts with an assessment of the wholesale mobile markets and then assesses the downstream retail markets.

4.2 A WHOLESALE MARKET FOR MOBILE VOICE CALL TERMINATION

For the reasons described below, the TRC provisionally concludes that this market <u>*is*</u> susceptible to ex-ante regulation.

Entry barriers	Market structure trend	Sufficiency of Competition Law
• Every mobile operator controls access to its subscribers via wholesale mobile voice call termination. • No other operator can provide call termination for any network other than its own. • There are unavoidable technical barriers to entry for any alternative operator to	• Under the calling party pays principle (CPP) there is no competitive pressure on terminating operators to lower termination fees. • Each mobile operator is the only provider of termination on its own network and has 100% market share. • There is no scope for this power to be	• Lack of competition in this market is a systemic, structural problem that can only be addressed through regulated charges. • Ex post application of competition law alone would be insufficient to control market power in this market.

provide wholesale termination services to another mobile operator.	undermined. • There is no trend towards effective competition in this market.	

High and persistent barriers to entry

All mobile operators are responsible for terminating calls to their network, and it is technically infeasible to terminate voice calls on a network other than that of the operator to which the called party is subscribed. Therefore, all operators have a monopoly on voice call termination to their network. Under CPP, the price of termination is set by the called party network and must be paid for by the calling party network.

It is technically infeasible to terminate voice calls on a network other than that of the operator to which the called party is subscribed. Barriers to entry are structural and technological and every mobile network operator has absolute termination bottleneck control over its mobile customers.

Lack of a trend towards competition

Each MNO has a monopoly position within the defined relevant market of voice call termination on its network. It has 100% market share, and this will not change over time.

International best practice also indicates that countervailing buyer power (e.g. the extent to which a purchaser of termination services could, with a significant degree of countervailing buyer power, constrain the pricing behaviour of the monopolist) is highly unlikely.

We conclude that there will be no trend towards competition in this market.

Insufficiency of ex post intervention alone

Lack of competition in this market is a systemic, structural problem that can only be addressed through regulated charges. Ex post intervention cannot effectively constrain market failures where there is a need for frequently recurring, timely, and anticipatory intervention. We consider that ex post competition law alone would be insufficient to control market power in this market.

Conclusion

The TRC's preliminary conclusion is that the wholesale market for voice call termination on individual mobile networks meets each of the three criteria, and is susceptible to ex-ante regulation.

4.3 A WHOLESALE MARKET FOR SMS TERMINATION ON INDIVIDUAL MOBILE NETWORKS

For the reasons described below, the TRC provisionally concludes that this market *is* susceptible to ex-ante regulation.

Entry barriers	Market structure trend	Sufficiency of Competition Law
• Every MNO controls access to its subscribers • No other operator can provide SMS termination • High and non-transitory barriers to entry exist	• Each MNO is the single provider of termination on its network (monopoly) • Market does not tend towards effective competition.	• Lack of direct competition is a systemic problem that can only be addressed through regulated charges. • Ex-post application of competition law alone would be insufficient to control market power in this market.

High and persistent barriers to entry

All mobile operators are responsible for terminating SMS to their network and it is technically infeasible to terminate SMS on a network other than that of the operator to which the receiving party is subscribed. Therefore, all operators have a monopoly on SMS termination to their network.

It is technically infeasible to terminate SMS on a network other than that of the operator to which the called party is subscribed. Barriers to entry are structural and technological and every mobile network operator has absolute termination bottleneck control over its mobile customers.

Lack of a trend towards competition

Each mobile network operator has a monopoly position within the defined relevant market of SMS termination on its network. It has 100% market share, and this will not change over time.
While the structure of the market indicates that each operator will maintain a monopoly for the termination of SMS on its own network, the TRC has previously concluded that the "Bill and Keep" regime has minimized any potential abuse of market power. This contributed to the finding, in the previous market review, that the market for wholesale SMS termination was not susceptible to ex ante regulation. However, trends in the market indicate that the volume of A2P SMS is increasing, and that the traffic is no longer balanced amongst the three mobile operators. The "Bill and Keep" regime is based on a voluntary agreement between MNOs, and the TRC has been informed that at least one MNO may seek to dissolve the agreement in favour of charging for SMS termination.

If the "Bill and Keep" regime is partly or fully dissolved during the lifetime of this review, the market for wholesale SMS termination would exhibit the same characteristics as the market for wholesale mobile voice call termination, which indicates that there will be no trend towards competition in this market.

Insufficiency of ex-post intervention alone

In the absence of ex ante regulation, operators would be free to set prices at any level they wish. Ex post intervention cannot effectively constrain market failures where there is a need for frequently recurring, timely, and anticipatory intervention. The TRC considers that ex post competition law alone would be insufficient to control market power in this market. The lack of competition in this market is a systemic, structural problem that can only be addressed through regulated charges.

Conclusion

The TRC's preliminary conclusion is that the wholesale market for SMS termination on individual mobile networks meets each of the three criteria, and <u>is</u> susceptible to ex-ante regulation.

4.4 A WHOLESALE MARKET FOR MOBILE ACCESS AND CALL ORIGINATION

For the reasons described below, the TRC provisionally concludes that this market *is not* susceptible to ex-ante regulation.

Entry barriers	Market structure trend	Sufficiency of Competition Law
• Can only be provided by existing national MNOs and there are entry barriers to becoming a licensed MNO (e.g. spectrum licences and network build).	• No wholesale access and call origination services at present, except for self-supply. • Three established MNOs with fairly static market shares • Based on call volumes, retail market shares of the mobile operators in 2018 were: Orange Mobile [✂ (NO), Zain (NO) Umniah (NO) Zain's market share by call volume increased between 2015 and 2017, but decreased in 2018]. • Market shares by subscribers in 2018 are: [Orange Mobile ✂ (NO), Zain (NO), Umniah (NO), while revenue market shares are Orange Mobile (NO), Zain (NO) and Umniah	• Competition law could address any issues in the wholesale MACO market

	(NO)]. • MVNO agreements generally on basis of commercial agreement, rather than as a regulatory obligation	

High and persistent barriers to entry

Having an established mobile network is an essential pre-requisite for the provision of wholesale mobile access and call origination. For a new entrant to enter the retail market for mobile services as a mobile network operator (MNO), it would require access to radio spectrum and a mobile access network (for example, including physical infrastructure such as base stations).

There is a limited amount of spectrum available for the provision of mobile services and even if the possibility exists that further mobile licences can be granted (as is the case in Jordan) the process of accessing a sufficient amount of spectrum may not be quick and is potentially costly, presenting a barrier to entry. There also exist high and persistent structural barriers to entry due to the economies of scale, scope, and density that are relevant to investment decisions in mobile access networks and sunk costs of investment.

Lack of a trend towards competition

There are no merchant market wholesale mobile access and call origination services at present, so there is no competition in the wholesale merchant market. However, in Jordan there are currently three competing MNOs who are self-supplying wholesale MACO which is included within the market definition. All current MNOs have market shares higher than a Minimum Efficient Scale[27], however the market share is measured. The TRC has measured market shares using number of subscribers, call volume and revenue. Zain's market share is higher than [✂NO] when measured by revenue, but not when measured by call volume or subscribers. The TRC notes that the absence of

[27] See for example the EC's discussion of MES in mobile networks, setting the scale at 20% market share. 'Commission Recommendation on the regulatory treatment of fixed and mobile termination rates in the EU', 20.05.2009

Mobile Number Portability is likely to depress switching between operators, and in a market with a high penetration rate of mobile phones, this will limit movement in market shares. The TRC intends to continue to closely monitor competitive conditions in the mobile market. The TRC notes that retail prices for mobile services in Jordan are competitive, suggesting that competition in the market is functioning well.

The TRC notes that, in other jurisdictions, MVNO agreements are generally concluded on a commercial basis and without the requirement for regulatory remedies. In the previous market review of the mobile markets, the TRC considered whether or not to mandate MVNO obligations on Zain, and decided against doing this. Since then, an MVNO agreement was concluded on a commercial basis between Zain and Friendi although the latter subsequently exited the market. The TRC's preliminary view is that with three players established in the market, it is not clear what market failure would need to be addressed by obliging further market entry via an MVNO. Further, should there be a commercially agreed MVNO hosted by one of the MNOs, existing regulatory measures (for example on interconnection) should be sufficient to ensure the functioning of the market.

With three players established in the market, the TRC's preliminary view is that the market is sufficiently competitive, and that there is no need to consider mandating requirements for an MVNO.

Insufficiency of ex post intervention alone

Given the tendency of the market towards effective competition, the TRC considers that ex post competition law would be sufficient to address any issues arising, because such issues would be likely to be infrequent and behavioral, associated with particular instances of behavior by a particular operator, rather than structural.

Conclusion

The TRC's preliminary conclusion is that the wholesale market for MACO services does not meet all of the three criteria, and is not susceptible to ex-ante regulation.

4.5 A RETAIL MARKET FOR MOBILE SERVICES (A CLUSTER OF SERVICES INCLUDING VOICE CALLS, SMS AND MOBILE DATA SERVICES)

For the reasons described below, the TRC provisionally concludes that this market *is not* susceptible to ex-ante regulation.

Entry barriers	Market structure trend	Sufficiency of Competition Law
• A new operator would require access to spectrum which would not be immediate and might be costly, presenting a barrier to entry. • Scope for MVNO agreements (although none at present, there is a history of MVNO providers)	• Three strong mobile operators • Retail mobile prices have been falling • Evidence of strong competition • Based on retail call volumes, market shares of the mobile operators in 2018 are: Orange Mobile [✂ (NO) Zain (NO) Umniah (NO) Zain's market share increased between 2015 and 2017, but decreased in 2018]. • However, market shares by subscribers in 2018 are: Orange Mobile [✂ (NO), Zain (NO), Umniah (NO), with an increase in Zain's market share from 2015 to 2018].	• Potentially not relevant if the market fails one of the first two criteria

High and persistent barriers to entry

For a new entrant to enter the retail market for mobile services as a mobile network operator (MNO), it would require access to radio spectrum and a mobile access network (for example, including physical infrastructure such as base stations).

There is a limited amount of spectrum available for the provision of mobile services and even if the possibility exists that further mobile licenses can be granted, the process of accessing a sufficient amount of spectrum may not be quick and is potentially costly, presenting a barrier to entry. There also exist high and persistent structural barriers to entry due to the economies of scale, scope, and density that are relevant to investment decisions in mobile access networks.

However, it is also important to note the scope for mobile virtual network operator (MVNO) agreements. Whilst there are not currently any MVNOs in operation in Jordan, there have been historically and wholesale access was acquired on commercially negotiated terms**.** Entering the market through such an agreement may lower the barriers to expansion.

Lack of a trend towards competition

In Jordan there are currently three competing MNOs. Competition is strong and prices are low in the market showing that competition is currently very effective. On most measures of market share, the three mobile operators are fairly close competitors. When measured by number of subscribers, the market shares in 2018 showed Orange Mobile[✂ (NO), Zain (NO), Umniah (NO), with Zain's market share increasing]. Based on call volume, Zain's market share increased up to 2017, but declined in 2018, and shares in 2018 were Orange Mobile[✂ (NO) Zain (NO) Umniah (NO)].

The TRC notes that the absence of Mobile Number Portability is likely to depress the ability and incentive for retail customers to switch mobile provider.

The TRC's preliminary view is that the retail mobile market is competitive.

Insufficiency of ex post intervention alone

Given the finding of effective competition in the market, the TRC considers that mobile providers will be individually constrained in their ability to engage in anti-competitive behavior. However, ex post competition intervention would be a necessary backstop to address any such issues in the market that were to emerge in the absence of ex ante regulation.

Conclusion

The TRC's preliminary conclusion is that the retail market for mobile services does not meet all of the three criteria, and is therefore not susceptible to ex-ante regulation.

4.6 SUMMARY OF PRELIMINARY THREE CRITERIA ASSESSMENTS

Market	Susceptible to ex ante regulation?
Wholesale mobile voice call termination	yes
Wholesale mobile SMS termination	yes
Wholesale mobile access and call origination	no
Retail mobile services	no

Q5 Do you agree with the TRC's preliminary conclusions regarding the mobile markets found to be susceptible to ex ante regulation?

V. Competition assessment

5.1 INTRODUCTION

The mobile markets found to be susceptible to ex ante regulation are those for:

- Wholesale mobile voice call termination, and
- Wholesale mobile SMS termination

The conditions of competition in each of these markets are assessed in this section, with a view to determining if any operator or operators have SMP. The White Paper describes this analytical step as follows:

> *"identify whether there exists any operator or operators on that relevant market which, by their market power, effectively distort the dynamics of competition in that relevant market. The classic measurement of market power in a relevant product market that is used in a regulatory context is that of dominance (or SMP). A finding that an operator or operators holds individual or collective dominance in*

any given relevant product market is based on the understanding that the relevant market in question may not be effectively competitive"

The retail mobile market and the wholesale MACO market were found not to be susceptible to ex ante regulation for the reasons discussed in section IV. Therefore, these defined markets will not be considered further in the analysis.

5.2 APPROACH TO COMPETITION ASSESSMENT

The purpose of competition assessment is to identify whether there is an operator (or operators) with dominance (or Significant Market Power (SMP)). In this context, dominance/SMP means "*the power to behave to an appreciable extent independently of its competitors, its customers and ultimately of consumers" [White Paper].*

The approach to competition assessment entails an analysis of the level of competition in each relevant market, examining how effectively competitive forces are at work. The assessment draws on quantitative and qualitative data available within TRC and collected specifically for this Project. Dominance can be individual or collective. The assessment considers:

- **Existing competition**
- **Potential competition**
- **Countervailing buyer power**

These three elements of the assessment will now be discussed in more detail.

In assessing **existing competition** in a market, the TRC considers the number of firms competing in the market, measures of concentration and market shares.

The number of firms in the market gives a first indication of the number of competing participants. For example, where there is a single firm in the market, this would indicate a lack of competition (notwithstanding the need to still consider other measures such as the extent to which there are or are not barriers to entry or expansion).

However, the number of firms alone does not provide much indication of competitiveness. For example, there may be many firms, but they may be of different size and have largely different market shares. Therefore, it may be appropriate to look at measures of concentration such as the sum of market shares of the biggest X firms, or the Herfindahl-Hirschman Index of market concentration (HHI) (i.e., the sum of the squares of individual market shares such that firms with a higher market share are given more weight). The closer a market is to a monopoly, the higher the market's concentration (and the lower its competition). If, for example, there were only one firm in an industry, that firm would have 100% market share, and the Herfindahl-Hirschman Index (HHI) would equal 10,000. A market with an HHI of less than 2000 is unlikely to raise any cause for concern.

Current market shares and changes over time are considered in order to provide an indication of the dynamics of the relevant market. As noted in the White Paper, market shares are often used "*as a proxy for market power"* and "*very large market shares are in themselves, other than in exceptional circumstances, evidence of the existence of a dominant position"*

Whilst the relationship between market shares and market power is not precise in practice, the TRC's Instructions on Competition Safeguards in the Telecommunications Sector define a market share of 25% as an initial indicator of dominance (requiring further evidence for confirmation of dominance), and a market share above 50% as presumptive of dominance. However, even where there is a presumption of dominance, the Instructions on Competition Safeguards note that this can be overcome by consideration of evidence establishing that the Licensee does not have the ability to control and affect the activity of the market (Article 8 b)1).

It is important to understand why high market shares in a particular market may (or may not) be indicative of market power by considering other factors that may constrain a large operator's behaviour. The consideration of the **potential for competition in the market** includes, for example, barriers to entry and expansion, factors such as the existence of essential facilities, economies of scope/scale, vertical integration, network effects, technological advantages, and access to capital markets.

Possible barriers to entry and expansion in the market will affect an alternative operators' ability to respond to changes in the dominant operator's prices (or volumes). For example, as noted in the White Paper: *"Where **barriers to expansion** are low, the ability of a competitor to take advantage of an anti-competitive price increase or restriction of output by another is greatly increased"* and "[w]*here **barriers to entry** are low, the likelihood will be greater of a competitor having the ability to take advantage of an anti-competitive price increase or restriction of output by an incumbent, who would therefore not be in a position to act with impunity or to act to an appreciable extent independently of its competitors."*

Barriers to entry may be legal, technical or regulatory. They are also affected by the degree of economies of scale, scope and density associated with the provision of services in the market concerned, the level of any sunk costs, and the extent to which control of infrastructure is easily replicated. Where relevant, each of these elements is considered in the assessment.

The final element that may mitigate a dominant operator's high market share is the existence of **Countervailing Buyer Power,** where the operator's customers at the wholesale or retail level have an ability to influence the behaviour of dominant operators by, for example, threatening not to buy from them. The extent to which this constraint can be exercised by a customer will depend on its size or commercial significance, and/or its ability to switch quickly to competing suppliers thus rendering its threats credible. The White Paper states that "*A purchaser's ability to exercise its countervailing bargaining power will depend upon the existence of a number of factors, such as:*

- *its size and commercial significance to its suppliers;*
- *the presence of alternative suppliers and/or its ability to sponsor upstream market entry/ expansion (through purchasing commitments);*
- *the absence of switching costs;*
- *the credibility of the purchaser's threat;*
- *the extent to which it can impose costs on suppliers (by, for example, delaying purchases); and, as a related factor; and*
- *its incentive to exercise its purchasing power."*

Where relevant, it may be necessary to consider **additional evidence** to supplement the above analysis. Other types of evidence could include price rivalry, or excessive profitability. In addition to the factors above (all of which may be relevant when seeking to identify individual dominance), in some cases, there may scope for **collective dominance.** This would be the case where two or more firms can sustain prices above (and output below) the competitive level through adopting a *"coherent system of coordinated behaviour reinforced by implicit threats" [White Paper].* This would be a form of tacit collusion, which is more likely to occur under certain market conditions including those listed below:

- The undertakings must be able to know and monitor each other's behaviour;
- Tacit collusion must be sustainable over time, with a long-term incentive not to depart from common policy;
- A credible deterrence mechanism must exist to "discipline" any firm that seeks to diverge from the collusive outcome;
- There must be no external constraints through foreseeable reaction of customers and/or competitors.

A finding of collective dominance requires a complex analysis and cannot be based solely on superficial evidence such as occasional price reductions by competitors in the same market or past behaviour of collusion. Instead, such a finding requires a more robust confirmation that all of the above four conditions are met and will continue to be met over the review period, thus pointing to a high risk of future coordination.

In summary, the approach to competition assessment involves a thorough analysis of current and potential conditions of competition. The White Paper notes a range of factors that may be relevant – not all factors will be relevant in all markets, and some factors will be more significant than others. The TRC's assessment identifies those factors that are most important in each of the markets considered. The conclusion of the competition assessment is the designation of any operator or operators that are found to have SMP in the market in question.

5.3 WHOLESALE MOBILE VOICE CALL TERMINATION

Existing competition

All operators that can terminate voice calls have 100% market share for the termination of calls on their own networks. Therefore, all MNO's market shares are well in excess of 50%, the threshold for the presumption of dominance established required by Article 8(b) of the Competition Safeguards.

Potential competition

These monopoly positions have not changed over the course of time, and will not change going forward, as the issue is structural. Each mobile network operator is an outright monopolist in the termination of calls to its own subscribers. An individual mobile network operator's monopoly position is not contestable – no other supplier could provide termination services on another operator's network. There is thus a lack of actual and potential competition (Competition Safeguards, Article 8(c), Number 12).

Countervailing buying power:

Given the outright monopoly on termination of calls to a particular operator's subscribers, constraints on that operator's power will not come from direct competition. Other operators cannot credibly threaten to refuse to interconnect in response to high termination rates, as they know they will stand to lose a significant number of users if their network does not provide access to all fixed line operators. Furthermore, they have a general duty to interconnect under existing Interconnection Instructions.

For end users, given the 'calling party pays' (CPP) principle, there are limitations to the way that they can constrain the power of the terminating operator, unless they are able to co-ordinate amongst their calling circle to ensure everyone is on the same network and thus benefit from lower on-net rates where termination is self-supplied by the same operator as the call is originating from.

Other constraints:

The TRC recognises that, in some cases, consumers will be able to substitute voice calls provided via over the top (OTT) services for traditional voice calls that incur termination fees. Whilst this may lead to a reduction in traditional voice call traffic, it does not alter the underlying structural issue in the market, such that *any* traditional voice calls will still require the purchase of wholesale termination services from an operator that is an outright monopolist on the termination of calls to its own subscribers.

SMP Preliminary Conclusion

All mobile operators that can terminate voice calls on their own networks have SMP for termination on their network.

In particular:

- ***Orange Mobile*** is the SMP operator in the market for wholesale voice call termination of calls to the Orange Mobile network.
- ***Zain*** is the SMP operator in the market for wholesale voice call termination of calls to the Zain network.
- ***Umniah*** is the SMP operator in the market for wholesale voice call termination of calls to the Umniah network.

5.4 WHOLESALE MOBILE SMS TERMINATION

Existing competition

All operators that can terminate SMS have 100% market share for the termination of SMS on their own networks. Therefore, the market share is well in excess of 50%, the threshold for the presumption of dominance established required by Article 8(b) of the Competition Safeguards.

Potential competition

These monopoly positions have not changed over the course of time, and will not change going forward, as the issue is structural. Each mobile network operator is an outright monopolist in the termination of SMS to its own subscribers. An individual mobile network operator's monopoly position is not contestable – no other supplier could provide SMS termination services on another operator's network. There is a lack of actual and potential competition (Competition Safeguards, Article 8(c), Number 12).

Countervailing buying power:

Other operators cannot credibly threaten to refuse to interconnect in response to (hypothetically) high termination rates, as they know they will stand to lose a significant number of users if their network does not provide SMS access to all mobile operators.

Other constraints:

The TRC recognises that, in some cases, consumers will be able to substitute messages provided by over the top (OTT) services/applications for traditional SMS that otherwise incur a charge. Whilst this may lead to a reduction in SMS traffic, it does not alter the underlying structural issue in the market, such that *any* SMS will still require the purchase of wholesale termination services from an operator that is an outright monopolist on the termination of SMS to its own subscribers.

SMP Preliminary conclusion

Under the current "Bill and Keep" regime there are no termination 'prices' or exchange of funds so no way for any operator to abuse its power. If the "Bill and Keep" regime were to be maintained, there would be no SMP finding in the market for wholesale mobile SMS termination.

However, the TRC has received requests from at least one mobile operator seeking to shift to a system where it could charge for SMS termination, most probably because SMS traffic between mobile operators has become asymmetric. If mobile operators start to charge for SMS termination, then the structure of the market becomes similar to that for mobile voice call termination. The “Bill and Keep” system is voluntary on the part of mobile operators, and so mobile operators could decide to abandon it.

Given the strong indication to TRC that at least one operator will seek changes in the system and bearing in mind that the current “Bill and Keep” system is in any case voluntary, the TRC’s forward-looking assessment is that is it unlikely to be maintained for the lifetime of this review. The TRC therefore proposes to find that all mobile operators have SMP for the termination of SMS on their own networks. Note that this holds regardless of origination (e.g. whether the SMS originates from a Bulk SMS, routed through another operator or from an international operator) as there can only be one terminating operator for a particular number.
The provision of bulk SMS or routeing is not addressed in this market because it is not an SMS termination issue.

5.5 SUMMARY OF PRELIMINARY SMP FINDINGS IN THE MOBILE MARKETS

Relevant Market	SMP Operator
Wholesale mobile voice call termination	All operators that terminate calls on their mobile networks: Orange Mobile Zain Umniah
Wholesale mobile SMS call termination	All operators that terminate SMS on their mobile networks: Orange Mobile Zain Umniah

Exhibit V.1 Summary of SMP findings

Q6 Do you agree with the TRC's preliminary competition assessment and SMP designations on the market for wholesale mobile voice call termination?

Q7 Do you agree with the TRC's preliminary competition assessment and SMP designations on the market for wholesale mobile SMS termination?

VI. Proposed remedies

6.1 APPROACH

As noted in the White Paper, remedies should be targeted at competition problems likely to exist in the absence of ex ante regulation. This means that it is not necessary to catalogue examples of actual abuse of market power, nor to provide exhaustive examples of potential abuses. If an operator has been identified with SMP, then it has the ability and incentive to engage in exploitative and exclusionary behaviour to the detriment of competition and particularly of end users.

In general, different types of competition problem may arise, involving conduct by an SMP operator that is aimed at:

- Exploiting customers by virtue of its SMP position;
- Leveraging market power into adjacent vertically or horizontally related markets with a view to foreclosing competitors in downstream and/or upstream markets;
- Excluding or delaying investment or market entry.

The Competition Safeguards list various types of abuse of a dominant position, which broadly fall within this categorisation.

Exploitative practices could include behaviours such as excessive pricing, or inefficiency or inertia in the market, where by virtue of a lack of effective competitive pressure, an SMP operator may be insulated from the need to innovate, and to improve its efficiency and quality of service. This may limit the development of new technologies or delay investment.

Leverage can be vertical and/or horizontal, and allows the SMP operator to transfer its market power from one market to another. This enables the SMP operator to strengthen its position in the related market, and potentially also reinforce its position in the market in question. Examples of leverage include denial of access to a downstream competitor;

quality discrimination; exploiting information asymmetries; and unwarranted withdrawal of access already granted; and margin squeeze.

Exclusionary practices would deter or delay network investment and market entry, and could include predatory pricing; refusal to supply access; and raising customer switching costs.
An SMP operator would, in the absence of regulation, be able to engage in a range of practices that would distort or even remove competition from the market.

This section considers remedies that are appropriate for the mobile markets in which the TRC has found, on a preliminary basis, that operators have SMP. The analysis covers the following:

- Description of remedies put in place following the last market review
- Identification of issues that have arisen since then
- Proposed remedies

6.2 WHOLESALE MOBILE VOICE CALL TERMINATION MARKET

Review of existing remedies

- **Access:**
    - Each designated licensee operating in this market must provide termination services upon reasonable request
    - This includes offering access to associated facilities and services (e.g., collocation and infrastructure sharing)
    - Obligation not to withdraw access that has already been granted (without the TRC's prior approval).
- **Transparency:**
    - Reference Offer (RO) – publishing terms and conditions and prices for the implementation of interconnection.
    - Publication of key information on SMP operators' websites (e.g. Quality of Service information) and must provide technical information on access points to other operators, upon receipt of a relevant request (subject to a confidentiality agreement between operators).

- **Non-discrimination**:
    - An obligation on all designated licensees not to discriminate on any material non-price elements related to the termination services, thereby offering equivalent conditions, prices, and quality in equivalent circumstances.
    - Additional obligation on Zain including all the various elements of TRC Decision No. 9-1/2004 in relation to the level of MTRs relative to the price for its on-net calls.
- **Accounting separation**:
    - Applies only to Orange Mobile and Zain
    - for the provisioning of wholesale mobile voice call termination, in order to reflect the performance of the wholesale business, as if it were being operated as a separate business. Financial statements for mobile termination include a profit and loss (P&L) statement and a mean capital employed (MCE) statement.
    - Not applied to smaller operators (Umniah and, at the time, Xpress).
- **Price control**:
    - Cost based FW-LRIC pricing
    - MVNOs to charge the same as the hosting MNO (unless the MVNO in question demonstrates to the TRC that a deviation from this principle is justified)

Issues in implementation of existing remedies

Competition issues

As each mobile operator holds bottleneck control over access to its customers there is a concern that, absent regulation, an SMP operator may refuse access or charge higher rates to other operators for termination than those charged to its downstream arm.

In addition to the general competition problems set out in Section 1, the TRC notes potential competition concerns related specifically to mobile termination absent SMP regulation. The power to set high MTRs absent regulation would generate profits which could affect competition in retail mobile markets. An MNO setting a high MTR would earn a higher margin and potentially harm its rivals, either by reducing their margins on calls, or by reducing their competitiveness. For example, if one MNO was able (absent regulation) to set a high MTR, while its rivals were only able to set lower MTRs, this could cause distortion in the retail market because the MNO setting a high MTR would have a greater opportunity to discount its retail offers.

If excessive profits from MTRs were passed through to the MNO's retail customers, excess profits could be competed away (the 'waterbed effect'). This is a competitive distortion where the MNO setting high MTRs would earn economic rents at the expense of customers of competing MNOs. It would potentially benefit MNOs who have net MTR inflows (i.e. MNOs who earn more from receiving payments for terminating other MNO traffic than they pay out to other MNOs).

Another potential competition problem in the mobile market arises where an MNO introduces artificial tariff differentials between on-net calls (where the caller and called party are on the same network) and off-net calls (where the MNO's customer calls a subscriber on another network). This is known as the 'club effect'. Generally, differentiation between on-net and off-net tariffs benefits MNOs with larger subscriber bases, because their 'club' contains more subscribers. The club effect is usually reduced when MTRs are lower, because there is less incentive to game. The club effect is also diminished where voice calls become less significant and use of mobile data becomes more significant – particularly, for example, when users make voice calls over OTT.

The TRC notes that there is no Mobile Number Portability in Jordan. While retail customers may respond to this by having multiple SIMs, it does tend to strengthen the position of the largest and most established MNO in the market, as the incentive for a customer to switch provider is minimised. The high penetration rate of mobile means that there are few non-mobile customers to be attracted, so MNOs seeking to build market share have to target existing customers of other MNOs.

Remedies issues

<u>Access upon reasonable request:</u>

Under the current obligations, the TRC notes that all mobile operators are providing wholesale termination services and there have not been any issues or disputes with this to date. The requirement to provide access is also governed by Paragraph 57 of the Interconnection Instructions, which states that "*All Licensees shall be required to provide Traffic termination services to all other Licensees*".

Non-discrimination:

There are standard non-discrimination obligations imposed on all operators. However, some of the non-discrimination obligations are currently applied asymmetrically. Notably, there are additional non-discrimination obligations imposed on Zain, following Decision No. 9-1/2004. Those additional obligations required that Zain enable other operators interconnected with Zain to purchase mobile call termination services at the weighted average price of on-net calls or at the approved interconnection price, whichever is lower. The intention was to ensure that Zain could not disadvantageously set on-net calls prices at a level significantly below termination rates on its network such that other operators could not compete i.e. to address the possible discrimination that might occur vis à vis third operators as a result of Zain's on-net prices and the ratio of on-net to off-net calls. The TRC notes that these obligations have not been implemented or enforced in practice.

Transparency:

The TRC notes that relevant data on KPIs have not been provided by MNOs. This may be due to a lack of clarity around what information is to be made available and by when, but it leaves room for manipulation by the SMP operators.

The TRC has been working to define a unified Reference Offer that would be applied by all mobile operators and has consulted on proposals. However, the form and content of a unified RO have not yet been finalised.

Accounting separation:

The current obligation states that Orange and Zain are to produce separated accounts, and refers to further consultation on rules and reporting formats. The principles are now approved by TRC, yet neither Orange nor Zain has provided separated accounts to the TRC.

Furthermore, at the time of the previous review, TRC excluded Umniah (and Xpress, that is no longer in the market) from the accounting separation obligations on account of the *"scale and scope of their operator relative to the costs of effective implementation" [Decision].* Therefore, there was asymmetric application of remedies across the designated SMP operators.

Cost accounting and price control:

A hybrid accounting system has been approved, and there is an obligation that prices are to be cost based. A TS-LRIC hybrid model has been constructed and TRC has published the regulated prices to be applied for mobile termination.[28] Regulated MTRs apply to the termination of calls originated in Jordan only .

Proposed remedies

Access

Under the current obligations, all mobile operators are providing wholesale termination services, and there have not been any issues or disputes with this to date. Thus, the current access remedies appear to be sufficient and appropriate. Given the development of the mobile market, particularly as it now comprises three well-established active MNOs, there is no need for asymmetric remedies. Access obligations should continue to apply symmetrically to all mobile operators identified as having SMP in the market for call termination (i.e. all mobile network operators).

However, for completeness, the access obligation should also make clear that the assumption is that access requests will be reasonable and must thus be accepted. The onus will be on the SMP operator to justify refusal of an access request as unreasonable, and not on the access seeker to justify acceptance.

In addition to the existing obligation for the SMP operator not to withdraw access to any product or associated facility without the prior approval of the TRC, the TRC further proposes that **additional conditions** should be attached to the access obligation, including the following:

- The SMP operator should be required to negotiate in good faith with access seekers;

28 Telecommunications Regulatory Commission, Regulatory Decision on Charges For Mobile Interconnection Services Based On TSLRIC+ Models, Board of Commissioners Decision No. 8-12/2017 issued on 15/10/2017

- The SMP operator should consider and conclude access requests in a way that is fair, reasonable and timely.

Non-discrimination:

The TRC proposes that a non-discrimination obligation should apply to all SMP operators for all products and associated facilities in the market for wholesale mobile voice call termination. Therefore, the obligation not to discriminate on any price or material non-price elements related to the termination services, thereby offering equivalent conditions, prices, and quality in equivalent circumstances should remain.

Having considered how the SMP operator will demonstrate that it is not discriminating, the TRC proposes that all SMP operators should be required to provide an annual Statement of Compliance with their non-discrimination obligations, to be signed by an appropriate signatory within the organisation. The TRC would expect to specify the content of a Statement of Compliance, and an example of the type of information required is provided in Annex 3. A demonstration of non-discrimination could entail information about product/service performance (for example, in the form of regularly updated KPIs). For this reason, the non-discrimination obligation would be supported by transparency and accounting obligations, and these are discussed further below.

Whilst there was an additional non-discrimination obligation imposed on Zain, as articulated in the TRC's decision No. 9-1/2004. However, since the decision no 9-1/2004 and the previous market review, the TRC has constructed a LRIC model and has published the regulated prices to be applied for mobile termination for all operators, including Zain.[29] As described below, the transition to regulated prices based on modelled LRIC cost should bring MTRs for all operators (including Zain) to the lowest level possible and therefore, there should not be any additional requirements on any operator to set MTRs relative to retail prices for on-net calls. The TRC notes that the regulation of MTRs is significantly lowering the MTR over the GlidePath period[30], and that this provides less incentive and ability for any MNO to game the system. Further, as

[29] Telecommunications Regulatory Commission, Regulatory Decision on Charges For Mobile Interconnection Services Based On TSLRIC+ Models, Board of Commissioners Decision No. 8-12/2017 issued on 15/10/2017

[30] TRC has implemented two glidpath periods after adopting regulatory decision on mobile market review in 2010, the first period started in 2011-2014 and the second period started in 2018-2021.

voice calls become less significant and the use of mobile data becomes more significant (including, for example, mobile customers making voice calls over OTT), the requirement to directly consider on-net/off-net pricing diminishes.

Therefore, and given that the TRC's preliminary view is that all remedies applied in this market should be applied symmetrically to all SMP operators, and given that the TRC considers that the additional non-discrimination remedy previously applied to Zain is no longer relevant or necessary, it is proposed that the decision NO(9/1-2004) remedy should be removed in its entirety.

Transparency:

Transparency requirements should support the access obligation and the non-discrimination obligations set out above.

There should remain an obligation that Reference Offers should be kept up-to-date, subject to advance notification. The TRC maintains the principle set out in its consultation on a unified RO that there should be no significant differences between the ROs of the mobile operators. Rather than continuing to negotiate a single format for all ROs, the TRC is considering the option, as part of the implementation of market review Decisions, of specifying a minimum set of criteria that should be included in all ROs. This would achieve the TRC's objective of ensuring that certain items are included in the RO.

A transparency obligation would require all MNOs to provide information to the TRC on a set of Key Performance Indicators (KPIs). The purpose of the KPIs will be to demonstrate that all SMP operators are compliant with their access and non-discrimination obligations. KPIs will be required to measure two key aspects. The first aspect is the treatment of orders initiated by other operators and the SMP operator's own downstream arm. The second aspect is the service supplied by the SMP operator, and in particular any difference in the treatment of faults and repairs. Examples include:

- Ordering and supply of services: this could include actual time taken to connect a service; average time to connect to a service; quality of supply could be measured by number of faults reported within 28 days of connection.
- Maintenance: measures could include time taken to repair any faults; overall number of faults (fault incidence);

- Migration: KPIs can include the time required to migrate between different services or products.

The TRC notes that, in order to demonstrate that wholesale inputs are being provided on a non-discriminatory basis, it would also be necessary to consider the retail equivalents of those inputs which the SMP operator self-supplies, or supplies to its own retail arm or affiliates.
The content of the set of KPIs will be further specified by the TRC.

Accounting separation[31]:

An obligation that Orange Mobile and Zain should produce separated accounts was imposed in the last market review, and additional documentation has been produced by the TRC. However, no separated accounts have been produced by either party.

The TRC notes that financial and accounting information is required to ensure that SMP operators are complying with their regulatory obligations. The TRC proposes that, rather than imposing an overall obligation to produce separated accounts, it will take the opportunity of identifying the **specific accounting or financial information** required to be sure that the SMP operators meet all of the obligations imposed.

The TRC also considers that there is no longer a need to exempt Umniah from these accounting separation obligations given that it is now also an established player in the mobile market and that remedies should be applied symmetrically where possible, to avoid creating any distortions in the market.

The TRC proposes that there should be an obligation, applying to wholesale mobile voice call termination services, for all operators with SMP (currently Orange Mobile, Zain and Umniah) to each provide **relevant accounting information as specified by the TRC**. This is a less onerous obligation than the production of separated accounts and should also allow the TRC to be more focused on information that will actually be useful for assessing compliance. The detailed specification of the relevant accounting information will follow in further TRC documentation, after the adoption of the TRC's decision.

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31 The TRC notes that the Accounting Separation Instruction will be reviewed and updated on the conclusion of the market review process

Cost accounting and price control:

All SMP operators should be obliged to maintain a suitable forward-looking cost accounting system, as specified by the TRC.

The current obligation to maintain appropriate **cost-based prices** should be retained. A cost-based pricing approach aims to mimic the prices that would pertain in a competitive market, while allowing the SMP operator to recover reasonably incurred costs (including a return on capital employed). Since the previous market review, a TS-LRIC hybrid model has been constructed to allow TRC to calculate these costs, and TRC has published the regulated prices to be applied for mobile termination.[32] As per the 2017 Regulatory Decision on Charges for Mobile Interconnection, the regulated rates for mobile national call termination are shown in the exhibit below:

Rate per minute (fils)	**2018**	**2019**	**2020**	**2021**
Blended	11.6	8.4	5.2	2.0

Exhibit VI.1 Regulated rates for mobile national call termination as per the 2017 Regulatory Decision on Charges for Mobile Interconnection[33]

As described in the 2017 decision, given that the actual rates at the time were materially different from those calculated from the efficient operator model, a glide path has been defined so as to smooth the impact of this Decision on the market. In case the market review situation or the regulation justifies it, the TRC is able to make a revision of rates when needed. Setting the glide path as TRC has done allows for a reduction in wholesale MTRS in a controlled way.

Given the TRC has already (and fairly recently) set the glide path and imposed the reduction of MTRs down to modelled cost over a four year period, it considers that it would be detrimental to operators to change this glide path, for risk of undermining regulatory certainty in the market.

[32] Telecommunications Regulatory Commission, Regulatory Decision on Charges For Mobile Interconnection Services Based On TSLRIC+ Models, Board of Commissioners Decision No. 8-12/2017 issued on 15/10/2017

[33] Source: Annex A of Telecommunications Regulatory Commission, Regulatory Decision on Charges For Mobile Interconnection Services Based On TSLRIC+ Models, Board of Commissioners Decision No. 8-12/2017 issued on 15/10/2017]

Therefore, the TRC proposes that MTRs should continue to be regulated as cost based on modelling costs from the TSLRIC model and as laid out in the 2017 decision. However, there should be provisions in place for a review of MTRs once the target of 2.0 fils has been reached in 2021. The TRC proposes therefore that the obligation should include a review in 2020 before the current glide path comes to an end.

Q8 Do you agree with the TRC's preliminary assessment of competition problems and appropriate remedies in the market for wholesale mobile voice call termination?

6.3 WHOLESALE MOBILE SMS TERMINATION MARKET

Review of existing remedies

Not applicable:

- At the time of the last market review, the market for wholesale termination of SMS was not identified as a market susceptible to ex ante regulation because it was deemed that the three-criteria test was not fulfilled.
- At the time, the TRC noted that the SMS termination services were provided between MNOs on the basis of a "Bill & Keep" system and concluded that there was no market failure in Jordan in the termination of SMS through the exploitation of monopoly power over the bottleneck termination resource, and that this was not likely to change during the lifetime of the review.
- Therefore, the market was not subjected to the competition assessment (for identification of SMP operators) or an assessment of remedies and no remedies were imposed in this market.
- However, the TRC now proposes that the three-criteria test is passed and that each mobile network operator has SMP in termination of SMS on its own network.
- The current Bill and Keep regime is voluntary, and in the TRC's view, it is not likely to remain in place for the lifetime of this review. A shift to a CPP regime would mean that similar characteristics would apply to SMS termination as currently apply for voice call termination. The TRC's preliminary view is that each mobile network operator has SMP for the termination of SMS on its own network.

Issues in implementation of existing remedies

The current Bill and Keep regime means that, at present, no single operator is able to abuse its dominant position in terms of its SMP over SMS termination on its network, as it is not setting or charging a set price for its wholesale SMS termination services. The regime is voluntary, and a move away from it would remove the constraint on the bottleneck power each mobile network operator holds over the termination of SMS on their own network.

Proposed remedies

Access

The requirement to provide access to wholesale termination is already governed by Paragraph 57 of the Interconnection Instructions, which states that "*All Licensees shall be required to provide Traffic termination services to all other Licensees*". However, the TRC considers that there should be a formal obligation to provide access on reasonable request such that:

- Each designated licensee operating in this market shall provide SMS termination services upon reasonable request
- This includes offering access to associated facilities and services (e.g., collocation and infrastructure sharing)
- An obligation not to withdraw access which has already been granted (without the TRC's prior approval).

Non-discrimination:

There should be an obligation on all designated licensees not to discriminate on any price or non-price elements related to the SMS termination services, thereby offering equivalent conditions, prices, and quality in equivalent circumstances.

The TRC has considered how the SMP operator will demonstrate that it is not discriminating. The TRC proposes that all SMP operators should be required to provide an annual Statement of Compliance with their non-discrimination obligations, to be signed by an appropriate signatory within the organisation. The TRC would expect to specify the content of a Statement of Compliance, and an example of the type of information required is provided in Annex 3. A demonstration of non-discrimination could entail information about product/service performance (for example, in the form of regularly updated KPIs). For this reason, the non-discrimination obligation would be supported by transparency and accounting obligations, and these are discussed further below.

Transparency:

Transparency requirements should support the access obligation and the non-discrimination obligations set out above.

There should be an obligation that Reference Offers should be kept up-to-date, subject to advance notification. The TRC maintains the principle set out in its consultation on a unified RO that there should be no significant differences between the ROs of the mobile operators. Rather than continuing to negotiate a single format for all ROs, the TRC is considering the option of specifying a minimum set of criteria that should be included in all ROs. This would achieve the TRC's objective of ensuring that certain items are included in the RO.

A transparency obligation would require all MNOs to provide information to the TRC on a set of Key Performance Indicators (KPIs). The purpose of the KPIs will be to demonstrate that all SMP operators are compliant with their access and non-discrimination obligations. KPIs will be required to measure two key aspects. The first aspect is the treatment of orders initiated by other operators and the SMP operator's own downstream arm. The second aspect is the service supplied by the SMP operator, and in particular any difference in the treatment of faults and repairs. Examples include:

- Ordering and supply of services: this could include actual time taken to connect a service; average time to connect to a service; quality of supply could be measured by number of faults reported within 28 days of connection.
- Maintenance: measures could include time taken to repair any faults; overall number of faults (fault incidence);
- Migration: KPIs can include the time required to migrate between different services or products.

The TRC notes that, in order to demonstrate that wholesale inputs are being provided on a non-discriminatory basis, it would also be necessary to consider the retail

equivalents of those inputs which the SMP operator self-supplies, or supplies to its own retail arm or affiliates.
The content of the set of KPIs will be further specified by the TRC.

Accounting separation:

The TRC notes that financial and accounting information is required to ensure that SMP operators are complying with their regulatory obligations. The TRC proposes that, rather than imposing an overall obligation to produce separated accounts, it will take the opportunity of identifying the specific accounting or financial information required to be sure that the SMP operators meet all of the obligations imposed.

The TRC also considers that there is no longer a need to exempt Umniah from these accounting separation obligations given that it is now also an established player in the mobile market and that remedies should be applied symmetrically where possible, to avoid creating any distortions in the market.

The TRC proposes that there should be an obligation, applying to wholesale mobile voice call termination services, for all operators with SMP (currently Orange Mobile, Zain and Umniah) to each provide **relevant accounting information as specified by the TRC**.
This is a less onerous obligation than the production of separated accounts and should also allow the TRC to be more focused on financial and accounting information that will be directly relevant for assessing compliance.
The detailed specification of the required relevant accounting information will follow in further TRC documentation, after the adoption of the TRC's decision.

Cost accounting and price control:

All SMP operators should be obliged to maintain a suitable forward-looking cost accounting system, as specified by the TRC.

Termination rates for SMS should be capped at cost-based FW-LRIC pricing. A cost-based pricing approach aims to mimic the prices that would pertain in a competitive market, while allowing the SMP operator to recover reasonably incurred costs (including a return on capital employed). Since the previous market review, a TS-LRIC hybrid model has been constructed to allow TRC to calculate these costs. Rates would be based on the TSLRIC hybrid model, from which TRC has already derived the costs of SMS termination.

Rate per message (fils)	2018	2019	2020
	0	4.68	6.09

Exhibit VI.2 Termination rates for SMS as per TSLRIC hybrid cost model[34]

There would be good reason for setting prices at cost immediately if operators split from the Bill and Keep regime, and so the TRC does not propose a glide path towards the regulated price cap.

Q9 Do you agree with the TRC's preliminary assessment of competition problems and appropriate remedies in the market for wholesale mobile SMS termination?

34 Source: TSLRIC hybrid cost model

Annex 1: consultation questions

1. Do you agree with the TRC's preliminary conclusions regarding the relevant product and geographic market definitions for retail mobile services?
2. Do you agree with the TRC's preliminary conclusions regarding the relevant product and geographic market definitions for wholesale mobile voice call termination services?
3. Do you agree with the TRC's preliminary conclusions regarding the relevant product and geographic market definitions for wholesale mobile SMS termination services?
4. Do you agree with the TRC's preliminary conclusions regarding the relevant product and geographic market definitions for wholesale mobile access and call origination services?
5. Do you agree with the TRC's preliminary conclusions regarding the mobile markets found to be susceptible to ex ante regulation?
6. Do you agree with the TRC's preliminary competition assessment and SMP designations on the market for wholesale mobile voice call termination?
7. Do you agree with the TRC's preliminary competition assessment and SMP designations on the market for wholesale mobile SMS termination?
8. Do you agree with the TRC's preliminary assessment of competition problems and appropriate remedies in the market for wholesale mobile voice call termination?
9. Do you agree with the TRC's preliminary assessment of competition problems and appropriate remedies in the market for wholesale mobile SMS termination?

Annex 2: legal and regulatory context

TELECOMMUNICATIONS LAW

The main legislative text governing the telecommunications sector in Jordan is the **Telecommunications Law no. (13) of 1995 and its amendments**, as amended (hereinafter, 'the Law'). Its provisions provide a general legal basis for the TRC's power and duty to stimulate competition through reliance on, and regulation of, market forces in a manner that prevents anti-competitive conduct and abuses of a dominant position. Article 6 (e) mandates the TRC to:

> *"stimulate competition in the telecommunications and information technology sectors, relying on market forces, and so regulating them as to ensure the effective provision to telecommunications and information technology services and to ensure that its regulation is sufficient and effective to forbid or curtail illegal competitive practices or prevent any person with a dominant position in the market from abusing his position, and to take all necessary actions in this regard."*

Article 6 (o) specifies that the TRC is obliged to:

> *" … re-assess the need for the adjustment of the level of regulation of any Telecommunication Services, or a specific type or a group thereof, taking into consideration competition factors and any other reasons, and to escalate the same to the Board for approval".*

Article 12 (a) provides for the authority to:

> *"7. …establish the bases for determining rates and rents for Telecommunications Services offered to Beneficiaries by Licensees, in line with the state of competition in offering of services and service levels, and monitor the compliance of Licensees as may be necessary.*
>
> *8. …set the rates and rents of Telecommunications Services offered to beneficiaries in the case where competition is absent or weak because of the dominance."*

The Telecommunications Law does not provide a separate definition of "dominance" or "dominant position". It should be noted, however, that **Article 2 of the Competition Law (Law 33 of 2004)** defines "dominant position" as a condition in which an enterprise is able to control and affect the activity of the market.

The TRC's tasks in relation to market reviews and ex ante regulation of operators with dominance or significant market power were further endorsed by the General Policy for the Information and Communications Technology and Postal Sectors 2018 **('Government Policy Statement')**, which requires TRC to:

"…carry out such market reviews. Specifically, Government requires that these market reviews identify relevant product markets, determine the market power of individual operators within those markets, and specify remedies to mitigate the effects of dominance or significant market power".

COMPETITION SAFEGUARDS

Based on this regulatory and policy framework, further details on the required competition analysis in the telecommunications sector and its implications on an ex ante and an ex post basis were set out in the TRC's **2006 Instructions on Competition Safeguards in the Telecommunications Sector** (hereinafter, 'the Competition Safeguards').

As regards dominance, and in line with the definition used in the Competition Law, Article 8(a) of the Competition Safeguards provides that "*a Licensee shall be deemed dominant in a relevant market when it has such a sufficient impact on the market that it can control and affect the activity of the relevant market."*

Pursuant to Article 6(a) of the Competition Safeguards, the TRC must define relevant product markets on a case-by-case basis, but rely on the following four product market definitions as a starting point:

- Fixed public telecommunications network and services;
- Mobile public telecommunications network and services;
- Leased lines; and
- Interconnection.

The Competition Safeguards' provisions on ex ante analysis and regulation are largely inspired by the EU ex ante regulation model, with some adjustments to the Jordanian circumstances. These include, for example, certain rebuttable presumptions that can simplify the associated regulatory tasks and reduce uncertainty.

Accordingly, the remaining provisions of Article 6 link the definition of product markets to demand-side substitutability and the state of the relevant products' and services' development in Jordan and allow the TRC to consider economic analytic techniques such as the "hypothetical monopolist test". They also introduce a rebuttable presumption that the relevant geographic market for all telecommunications services will be deemed to cover Jordan.

On the basis of the resulting market shares and 14 other "impact factors" set out in Article 8(c) of the Competition Safeguards, the TRC must establish whether one or more licensed telecommunications operator(s) in the market(s) concerned is dominant, i.e., “has such a sufficient impact on the market that it can control and affect the activity of the relevant market”. There is a rebuttable presumption that a licensee with a market share of 50% or more is dominant in the market concerned, whereas one with less than 25% is not. A licensee with a market share of at least 25% and less than 50% shall be subject to classification as dominant if there is evidence to show that it has the ability to control and affect the activity of the market. The designation of dominance under these criteria can be used for the purposes of both ex ante regulation and the evaluation of alleged anticompetitive conduct on an ex post basis (Article 8 of the Competition Safeguards).

The remainder of the Competition Safeguards deal in more detail with various forms of abuses of a dominant position (Articles 9 to 18), collusion (Article 19) and acquisitions or transfers of interests in licensed telecommunications operators susceptible to “lessen substantially competition or to tend to create a monopoly” (Article 20). This represents the ex post elements of the Competition Safeguards.
The White Paper (discussed below) provides more details on the market review process for ex ante intervention.

WHITE PAPER

A systematic market review process based on this legal background started with the adoption of a White Paper on the Market Review Process, dated May 2009 (hereinafter, ‘the White Paper’). This outlined the methodology and steps to be undertaken by the TRC in achieving its goal of carrying out the first round of market reviews to reassess the scope of existing ex ante obligations imposed earlier on licensed telecommunications operators under the previous regulatory framework.

The White Paper provides more detailed guidance and clarity on the successive steps involved in telecoms market reviews, namely:

- Identification of candidate markets, based on the advanced modified greenfield approach;
- Definition of relevant markets, based on short-run substitutability analysis;
- Assessment of their susceptibility to ex ante regulation taking into account factors such as barriers to entry and expansion and longer-run competitive dynamics and sufficiency of ex-post intervention
- Analysis of the effectiveness of competition and identification of dominant operators; and

- Selection of appropriate ex ante obligations to deal with the specific competition problems or market failures identified and likely to exist in the absence of ex ante regulation.

In various respects, the White Paper signifies a closer alignment with the EU ex ante regulation model. For instance, although it is not based on a concept of “significant market power”, distinct from “dominance” in a more traditional competition law context, it does clarify that ex ante and ex post analyses, while based on a similar methodology, may produce different results owing to their different policy perspectives (e.g., ex ante product definitions may sometimes be broader than ex post definitions), especially as regards any appropriate remedies.

As regards the relationship between “dominance” and “significant market power” (SMP), it should be clarified that the afore-mentioned definition of “dominance” under the Jordanian competition law and the Competition Safeguards is broad enough to include SMP in all cases. Accordingly, the term “significant market power” (SMP) used in the White Paper and the TRC’s market analyses, which is inspired by international best practice, is effectively identical, under Jordanian law, to the term “dominance”. At most, it can be considered narrower in some cases, as the identification of SMP operators for the purposes of ex ante regulation tends to follow stricter or additional (telecoms-specific) criteria, in addition to those relied on to define “dominance” in general, under Jordanian law. It therefore follows that if an operator is considered to hold “significant market power” in a specified telecommunications market for ex ante regulation purposes, that same operator is by definition and a fortiori, also “dominant” in that market, and hence subject to any regulation that may be imposed on dominant operators under the Telecommunications Law.

Regarding the definition of markets, the TRC also concluded that, on balance, it would be more appropriate to adopt a “modified greenfield” approach for the identification of markets susceptible to ex ante regulation. Under this approach, a regulator must examine whether, in the absence of a regulatory intervention upstream (at the wholesale level), there is a risk of consumer harm on the downstream retail market(s) due to a lack of competition. The ex-ante regulation of a retail market can thus be considered necessary only if the regulation of the upstream wholesale market(s) is insufficient.

The White Paper distinguishes between primary and secondary remedies, with the latter supporting the implementation of primary remedies and justified only in connection with the imposition of the relevant primary remedy. The distinction is illustrated in the table below:

Primary remedy	Associated secondary remedies
Wholesale Markets	
Obligation to provide access on reasonable request	Obligation to publish terms and conditions in a transparent manner, e.g., as a Reference Offer
Obligation to offer access on non-discriminatory terms and conditions	Obligation of accounting separation, KPIs and SLAs in Reference Offers, and (potentially) vertical separation
Obligation of price control	Obligation of cost accounting
Retail Markets	
Carrier (pre-) selection	
Unbundling of retail services	
Non-discrimination	Accounting separation
Price controls (price caps, cost-based prices)	Cost accounting

Exhibit VI.3 Primary and secondary remedies identified in the White Paper [Source: White Paper]

In the White Paper, the TRC confirmed its intention to run market reviews for four sets of markets, which were different from the more generic categories listed in Article 6(a) of the Competition Safeguards.

Following the White Paper, TRC issued, after four public consultations with the industry, a number of regulatory decisions that resulted in the definition and ex ante regulation of a total of 10 wholesale and 4 retail markets subject to ex ante regulation, with different appropriate ex ante remedies per market. Those decisions are the following:

- Regulatory decision on the fixed broadband markets review (July 2010).
- Regulatory decision on the fixed narrowband markets review (November 2011).
- Regulatory decision on the mobile markets review (December 2010).
- Regulatory decision on the dedicated capacity markets review (December 2010).

An overview of the above-mentioned milestones is summarised in the exhibit below.

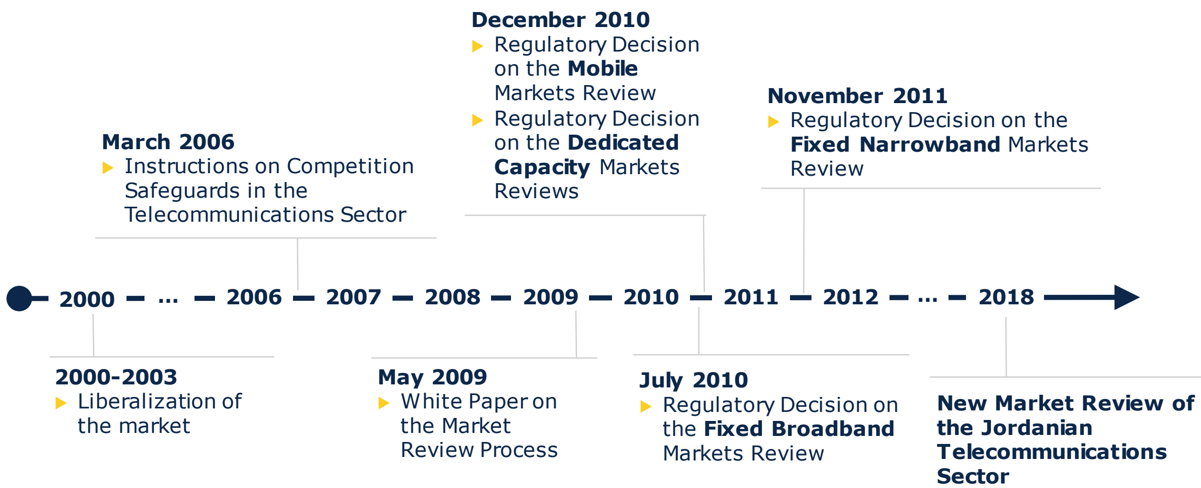

Exhibit VI.4 Main milestones of the background context of this Project [Source: Axon Consulting and DotEcon]

Following the publication of decisions on the first round market reviews, TRC has issued a number of supplementary decisions that need to be taken into account in this Project, namely:

- Accounting Separation Instructions (November 2012).
- Decision on the Reference Offer for Wholesale Broadband Access (September 2013).
- Decision on the Reference Interconnection Offer for Call Termination in Mobile Networks (September 2013).
- Instructions on the top-down fully allocated cost accounting system (December 2014).
- Instructions on Long Run Incremental top-down cost accounting system (December 2014).
- Approval of Jordan Telecom Reference Unbundling Offer (April 2017).
- Decision on charges for mobile interconnection services based on TSLRIC+ models (October 2017).
- Decision on charges for fixed interconnection services based on TSLRIC+ models (October 2017).

Annex 3: Statement of compliance

As part of any non-discrimination obligations imposed on an ex ante basis, an SMP operator should submit to the TRC a written annual Statement of Compliance (SoC). Such a requirement is considered proportionate and justified to ensure effective monitoring and enforcement of SMP operators' ex ante regulatory obligations, given the potential for any non-compliance to impact ultimately on competition in downstream or adjacent markets.

The purpose of this Annex is to describe, in general terms, the information to be provided in the SoC. The TRC expects to specify in more detail and as a model text the required minimum content of this SoC, as part of the implementation of ex ante remedies put in place on the adoption of the relevant Decisions.

In particular, the Statement of Compliance should adequately demonstrate the SMP operator's compliance with its ex ante regulatory obligations on non-discrimination, with respect to both price and non-price components.

The SoC must be signed by an authorized person within the SMP Operator. It should include information reasonably required for the TRC to understand the review and verification process followed, and to satisfy itself that the SMP operator complies with its relevant regulatory obligations.

Therefore, the SoC must include, at a minimum:

- A full and true written statement, signed by a person of appropriate qualifications and authority within the SMP operator, confirming that the signatory is responsible for securing the SMP operator's compliance with its regulatory and legal non-discrimination obligations, and that, to the best of its knowledge, the SMP Operator is in compliance with these obligations;

- A brief and summary description of the information relied upon and the process followed by the signatory in order to substantiate and provide the above statement. The purpose of the description is to demonstrate the kinds of information available on which the signatories can base their conclusions. Information would be available to the TRC upon request, sufficient to allow the TRC, or any third party appointed by TRC (such as an auditor or consultant), to confirm that the SMP operator has not discriminated on price or non-price elements of the services provided to its downstream operator and any other licensed operators.

For all services supplied in each market where the operator has an ex ante obligation of non-discrimination, such information must cover at least the following categories of activities during the year:

- Price of products and services offered to operators, and to the SMP operator's downstream operation or affiliates. For example, the SMP operator could refer to its Reference Offer and confirm that these prices have been applied to all purchasers.
- Report on Key Performance Indicators (KPIs). The TRC will further specify required KPI details as part of the implementation of the market review Decisions. KPIs will be required to measure two key aspects. The first is the treatment of orders initiated by other operators and the SMP operator's own downstream arm. The second aspect is the service supplied by the SMP operator, and in particular any difference in the treatment of faults and repairs. Examples include:

    - Ordering and supply of services: this could include actual time taken to connect a service; average time to connect to a service; quality of supply could be measured by number of faults reported within 28 days of connection.
    - Maintenance: measures could include time taken to repair any faults; overall number of faults (fault incidence);
    - Migration: KPIs can include the time required to migrate between different services or products.

- The TRC notes that, in order to demonstrate that wholesale inputs are being provided on a non-discriminatory basis, it would also be necessary to consider the retail equivalents of those inputs which the SMP operator self-supplies, or supplies to its own retail arm or affiliates.
- Other categories, as reasonably required by TRC from time to time.

Statements of Compliance will be kept updated by the SMP operator as required to reflect material changes to the documentation.

In all cases, SoC and associated updates should include Version Control information, including a Revision History in order to allow the reader of the SoC to easily identify changes and the date of their introduction.

Annex 4: Glossary

Broadband: A service or connection which is capable of supporting always-on services, which provide the end user with high data transmission speeds.

Calling party pays (CPP): Calling Party Pays" is a payment model set basically in telephony that states that the payment for an incoming call is set on the caller.

Collocation: The provision of physical space and technical facilities necessary to accommodate and connect the relevant equipment of an alternative operator seeking access.

FWBA: Fixed wireless broadband access. A wireless local access technology for delivering broadband services.

Over-the-top (OTT) services: OTT services are when the telecommunications service provider delivers one or more services across an IP network. The IP networks is predominantly the public internet although sometimes telco-run cloud services delivered via a corporation's existing IP-VPN from another provider, as opposed to the carrier's own access network

Worldwide Interoperability for Microwave Access (WiMAX): A wireless technology, similar to WiFi, but with a longer range which allows it to cover many kilometres.