

THE HASHEMITE KINGDOM OF JORDAN



TELECOMMUNICATIONS REGULATORY COMMISSION

**Public Consultation:
Review of Fixed Markets
in Jordan**

Public version

July 2019

Contents

I. EXECUTIVE SUMMARY	5
II. INTRODUCTION	8
1.1 Overview	8
1.2 Legal and regulatory background	10
1.3 Objectives and scope of the consultation	10
1.4 Structure of the consultation	10
1.5 Responses to Public Consultation	11
III. DEVELOPMENTS IN FIXED TELECOMMUNICATIONS SERVICES	13
1.1 Introduction	13
1.2 Fixed Narrowband access	13
1.3 Fixed voice services	18
1.4 Fixed Broadband services	23
1.5 Forward-looking developments	32
IV. DEFINITION OF RETAIL AND WHOLESALE FIXED TELECOMMUNICATIONS MARKETS	35
1.1 Methodology for market definition	35
1.2 Market definition in the previous reviews	38
V. RETAIL MARKET FOR FIXED TELEPHONY ACCESS AND CALL ORIGINATION (FACO)	39
1.1 Introduction	39
1.2 Product market definition	40
1.3 Geographic market definition	52
VI. RETAIL MARKET FOR FIXED BROADBAND SERVICES	54
1.1 Introduction	54
1.2 Product market definition	55
1.3 Geographic market definition	68
1.1 Summary of retail fixed telecommunications product and geographic market definitions	Error!
Bookmark not defined.	
VII. WHOLESALE LOCAL ACCESS (WLA) MARKET	69
1.1 Introduction	69
1.2 Product market definition	70
1.3 Geographic market definition	75
VIII. WHOLESALE BROADBAND ACCESS (WBA)	76
1.1 Introduction	76
1.2 Product market definition	79
1.3 Geographic market definition	82
IX. WHOLESALE FIXED VOICE CALL TERMINATION (FVCT)	83
1.1 Introduction	83
1.2 Product market definition	84

1.3	<i>Geographic market definition</i>	89
X.	WHOLESALE FIXED VOICE CALL ORIGINATION (FVCO)	89
1.1	<i>Introduction</i>	89
1.2	<i>Product market definition</i>	91
1.3	<i>Geographic market definition</i>	93
XI.	WHOLESALE FIXED TRANSIT	94
1.1	<i>Introduction</i>	94
1.2	<i>Product market definition</i>	95
1.3	<i>Geographic market definition</i>	98
1.4	<i>Summary of wholesale fixed telecommunications product and geographic market definitions</i>	98
XII.	MARKETS SUSCEPTIBLE TO EX ANTE REGULATION	99
1.1	<i>Approach</i>	99
1.2	<i>A market for wholesale local access (WLA)</i>	99
1.3	<i>A market for wholesale broadband access</i>	103
1.4	<i>A wholesale market for fixed voice call termination</i>	105
1.5	<i>A wholesale market for fixed call origination</i>	107
1.6	<i>A wholesale market for transit services</i>	109
1.7	<i>A retail market for fixed access and call origination (FACO)</i>	111
1.8	<i>A retail market for fixed broadband services</i>	114
1.9	<i>Summary of three criteria assessments</i>	116
XIII.	COMPETITION ASSESSMENT	118
1.1	<i>Introduction</i>	118
1.2	<i>Approach to competition assessment</i>	118
1.3	<i>Wholesale local access</i>	122
1.4	<i>Wholesale broadband access</i>	125
1.5	<i>Wholesale fixed voice call termination</i>	127
1.6	<i>Wholesale fixed voice call origination</i>	129
1.7	<i>Wholesale transit</i>	132
1.8	<i>Retail FACO</i>	134
1.9	<i>Summary of SMP findings</i>	137
XIV.	PROPOSED REMEDIES	138
1.1	<i>Approach</i>	138
1.2	<i>Wholesale local access (WLA)</i>	139
1.3	<i>Wholesale broadband access</i>	150
1.4	<i>Wholesale fixed call termination</i>	158
1.5	<i>Wholesale market for transit services</i>	165
1.6	<i>Retail FACO</i>	170
	ANNEX 1: CONSULTATION QUESTIONS	174
	ANNEX 2: LEGAL AND REGULATORY CONTEXT	176
	TELECOMMUNICATIONS LAW	176

COMPETITION SAFEGUARDS	177
WHITE PAPER	178
ANNEX 3: ACCESS REQUESTS	182
ANNEX 4: STATEMENT OF COMPLIANCE	185
ANNEX 5: MINIMUM LIST OF ITEMS TO BE ADDRESSED IN A REFERENCE OFFER FOR WHOLESALE BROADBAND ACCESS.....	188
ANNEX 6: MINIMUM LIST OF ITEMS TO BE ADDRESSED IN REFERENCE INTERCONNECTION OFFER	190
ANNEX 7: GLOSSARY	192

I. 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 ex ante regulation. The first round of reviews began in 2009. This Public Consultation document on the fixed 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 dealing, respectively, with (i) the fixed markets; (ii) the mobile markets; and (iii) the market for dedicated capacity. This is the public consultation document for the **fixed markets**.

Market context

Since the time of the last reviews, the use of fixed narrowband PSTN and ISDN has been in decline, while the use of fixed services over fibre and over Fixed Broadband Wireless Access (FBWA) is increasing. The number of subscribers to fixed broadband services continues to grow, with a significant migration of customers to higher speed services. Orange Fixed remains the sole supplier of residential fixed narrowband access lines, and has a market share above [§<Numbers omitted (NO)] for business lines and for traditional voice calls. Umniah has seen growth in its subscriber base on FBWA, with a corresponding increase in retail broadband provided over this platform. Several operators are now providing broadband services, with most new entrants providing broadband over fibre.

Market definition

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

- Retail Fixed Access and Call Origination (FACO)
- Retail Broadband
- Wholesale Local Access
- Wholesale Broadband Access
- Wholesale Fixed Voice Call Termination
- Wholesale Fixed voice call Origination
- Wholesale Fixed Transit

The TRC's preliminary assessment is that all the above wholesale markets, and the retail market for fixed access and call origination are susceptible to ex ante regulation. The retail market for fixed broadband is not susceptible to ex ante regulation.

Competition Assessment and preliminary SMP designation

The TRC has assessed separately each of the wholesale markets and the retail FACO market in terms of existing competition, potential competition, and any countervailing buyer power. Its preliminary finding is that Orange Fixed has SMP on the markets for wholesale local access; wholesale broadband access; wholesale transit; and retail FACO. All operators that can terminate fixed voice calls on their own networks have SMP for fixed voice call termination. No operator has SMP on the market for wholesale fixed voice call origination.

Proposed remedies

The TRC proposes separate remedies to be imposed on each of the wholesale and retail markets with an SMP operator. Remedies are based on an analysis of specific competition problems in each market, and on the experience of implementing previous remedies.

In the **wholesale markets**, remedies include the following:

Access upon reasonable request: SMP operators must meet reasonable access requests. They must negotiate in good faith and conclude access requests in a fair, reasonable and timely manner.

Non-discrimination: SMP operators may not discriminate, but must offer equivalent conditions, prices and quality in equivalent circumstances, and must demonstrate compliance by providing an annual Statement of Compliance to the TRC.

Transparency: Reference Offers should be kept up-to-date and 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 SMP operators will be required to provide relevant accounting information as may be specified by the TRC from time to time.

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.

In the **retail FACO market**, remedies include:

Non-discrimination: Orange Fixed may not discriminate, but must offer equivalent conditions, prices and quality in equivalent circumstances, and must demonstrate compliance by providing an annual Statement of Compliance to the TRC.

Transparency: Orange Fixed is required to publish its terms and conditions, to offer service level agreements (SLAs), and not bundle unreasonably.

Accounting separation: Orange Fixed will be required to provide relevant accounting information as may be specified by the TRC from time to time.

Cost accounting and price control: Orange Fixed will be obliged to maintain a suitable forward-looking cost accounting system. Orange Fixed will be subject to a safeguard price cap, so that retail prices cannot increase in real terms.

II. Introduction

2.1 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 justified, 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, in suppliers’ provision, and in technology. A comprehensive data request was issued to all operators, and the TRC met with operators in order to take account of their experiences in the market, and their future plans. An additional data request was issued in January 2019, focusing on refreshing data for specific markets where the TRC had evidence of potentially significant change. In the fixed markets, this concerned the supply of broadband. The TRC also analysed 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 on the fixed telecommunications markets. The outcome of the previous round of reviews of the fixed markets is summarised in Exhibit II.1 below¹.

¹ Note that, in the previous round of review, Fixed Narrowband and Fixed Broadband Markets were assessed and consulted on separately.

Group of markets	Markets	Susceptible to ex-ante regulation?	Dominant operator
Fixed narrowband markets	A retail market for fixed telephony access connections for residential and non-residential users which includes PSTN, ISDN-BRA, ISDN-PRA and telephony access achieved through broadband connections	Yes	Orange Fixed
	A retail market for fixed domestic telephony calls, for prepaid/postpaid residential and non-residential users, including local, national, fixed-to-mobile, and calls to service providers	Yes	Orange Fixed
	A retail market for international calls, both for prepaid/postpaid residential and non-residential users	No	
	A wholesale market for the termination of voice calls on individual fixed networks ("fixed call termination"), including those that are self-supplied	Yes	All licensees providing voice call termination services
	A wholesale market for call origination over all fixed networks ("fixed call origination"), which includes the wholesale provision of fixed call origination through CS/CPS and NTT0 services for all types of calls (including calls to end-users and calls to service providers) and the self-supply of fixed call origination for all types of calls (including calls to end-users and calls to service providers)	Yes	Orange Fixed
	A wholesale market for transit services over all fixed networks ("transit"), which includes the wholesale provision of transit services for national calls and the national portion of international calls for all types of calls (including calls to end-users and calls to service providers)	Yes	Orange Fixed
Fixed broadband markets	A retail market for the provision of broadband Internet access at a fixed location	No	
	A wholesale market for the provision of physical network infrastructure access	Yes	Orange Fixed
	A wholesale market for the provision of broadband access at a fixed location	Yes	Orange Fixed

Exhibit II.1 Relevant fixed narrowband and fixed broadband markets and dominant service providers identified in the last market review [Source: TRC]

2.2 LEGAL AND REGULATORY BACKGROUND

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

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

2.3 OBJECTIVES AND SCOPE OF THE CONSULTATION

This Public Consultation document presents the TRC's preliminary findings on the review of fixed markets and provides its conclusions on whether existing *ex ante* obligations on these markets should be maintained, revised or withdrawn, and/or whether or not new *ex ante* obligations should be introduced.

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.

2.4 STRUCTURE OF THE CONSULTATION

The Public Consultation document on fixed telecommunications markets is structured as follows:

Section 2 provides an overview of developments in fixed telecommunications. The overview considers the structure of the 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 approach to market definition, and outlines the methodology to be applied.

²TRC, *White Paper on Market Review Process*, released 14th May 2009.

Sections 4 and 5 define the fixed retail markets, considering product and geographic aspects.

Sections 6 to 10 define the wholesale markets that address the defined retail markets.

Section 11 considers whether the defined relevant markets are susceptible to ex ante regulation. This section includes an explanation of the three criteria test.

Section 12 assesses conditions of competition in those markets found to be susceptible to ex ante regulation. Section 12 sets out the TRC's preliminary conclusions on operators with SMP.

Section 13 proposes remedies that should be applied in each market in which there is at least one SMP operator. The discussion includes a consideration of competition problems, and how these may best be addressed.

2.5 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 that are 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 fixed 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.

III. Developments in fixed telecommunications services

3.1 INTRODUCTION

Fixed telecommunications services are provided over a physical connection from a fixed location to the public telephone network. This connection can be used to deliver a range of retail services, including narrowband voice telephony, and broadband voice and data services.

The previous market reviews distinguished between fixed narrowband and fixed broadband services, and this consideration of developments in fixed services takes that as the starting point for assessing the market structure and trends. As will be set out when defining the relevant markets, the TRC is of the view that changes, particularly in technology, have made this distinction less relevant. However, for the purposes of examining trends since the last reviews, the TRC uses the distinction between narrowband and broadband services as a starting point.

This section begins by considering the market structure and trends associated with the provision of a physical access connection to a customer. It then goes on to consider types of service offered over that connection, in terms of voice and broadband.

3.2 FIXED NARROWBAND ACCESS

Market structure

The previous market review identified a market for fixed telephony access, including PSTN, ISDN-BRA, ISDN-PRA and telephony access achieved over broadband. As the previous review effectively separated narrowband and broadband access in its analysis (even though VoIP was considered as part of the fixed narrowband market), for the purposes of assessing market developments, this section focuses on narrowband access and will consider broadband access separately below. Fixed narrowband access relates to the provision of telephony access i.e. the connection to the end-user premises that allows the user to make and receive calls.

Excluding VoIP, which is provided over a broadband connection, narrowband access connections are currently provided over a number of different technologies in Jordan:

- PSTN (Plain Switched Telephony Network);³
- ISDN-BRA (Integrated Service Digital Network – Basic Rate Access). This is a system for digital transmission of voice and data over PSTN networks;⁴
- ISDN-PRA (Integrated Service Digital Network – Primary Rate Access).⁵
- In Jordan, retail fixed narrowband access is provided by three operators, offering a mix of residential and business services over a mix of technologies:
- Orange Fixed (residential services over PSTN; and providing business services over PSTN, ISDN-BRA, ISDN-PRA and 284KB LL);
- Zain (providing a small number of business services over ISDN-PRA); and
- Batelco (providing business services over ISDN-PRA).

Overall trends

The total number of fixed subscriber lines has been falling steadily over the last 3 years from 372,974 in 2015 to 330,228 (a fall of around 11.5%). The Exhibit II.1 below shows the changes in absolute figures, population and penetration rate:

	2015	2016	2017
Fixed access subscriber lines	372,974	359,771	330,228
Population	9,559,000	9,798,333	9,919,496
Penetration rate in terms of % of population	3.90%	3.67%	3.33%

³ As described in Telecommunications Regulatory Commission, 'Review of Telecommunications Markets: Public Consultation Document on Fixed Narrowband Markets', 14 July 2010: "*The PSTN allows end-users to make and receive calls (one telephony channel per PSTN line), while also providing data rates of up to 34kbps.*"

⁴ As described in Telecommunications Regulatory Commission, 'Review of Telecommunications Markets: Public Consultation Document on Fixed Narrowband Markets', 14 July 2010: "*The basic ISDN line has several additional features compared to PSTN lines, namely (i) the simultaneous usage of two telephony channels (the end-user can use two telephony lines in parallel); and (ii) the provision of data rate connectivity up to 64kbps (or 128kbps in case both channels are used for data connections).*"

⁵ As described in Telecommunications Regulatory Commission, 'Review of Telecommunications Markets: Public Consultation Document on Fixed Narrowband Markets', 14 July 2010: The primary ISDN service consists of 30 voice channels (the end-user could use 30 telephony lines in parallel), and provides data rate connectivity up to 2 Mbps.

Exhibit III.1 Penetration rate of fixed telephony access connections [Source: Responses to data request and Department of Statistics]

Residential subscriber lines represent a larger share of total subscriber lines compared to business lines, and the number of residential subscriber lines has been falling at a faster rate than for business subscriber lines.

From 2015 to 2017, business subscriber lines have fallen by around 8.6% from 132,839 to 121,461. Over the same period, residential subscriber lines have fallen by around 13% from 240,135 to 208,767, as shown in Exhibit III.2 below.

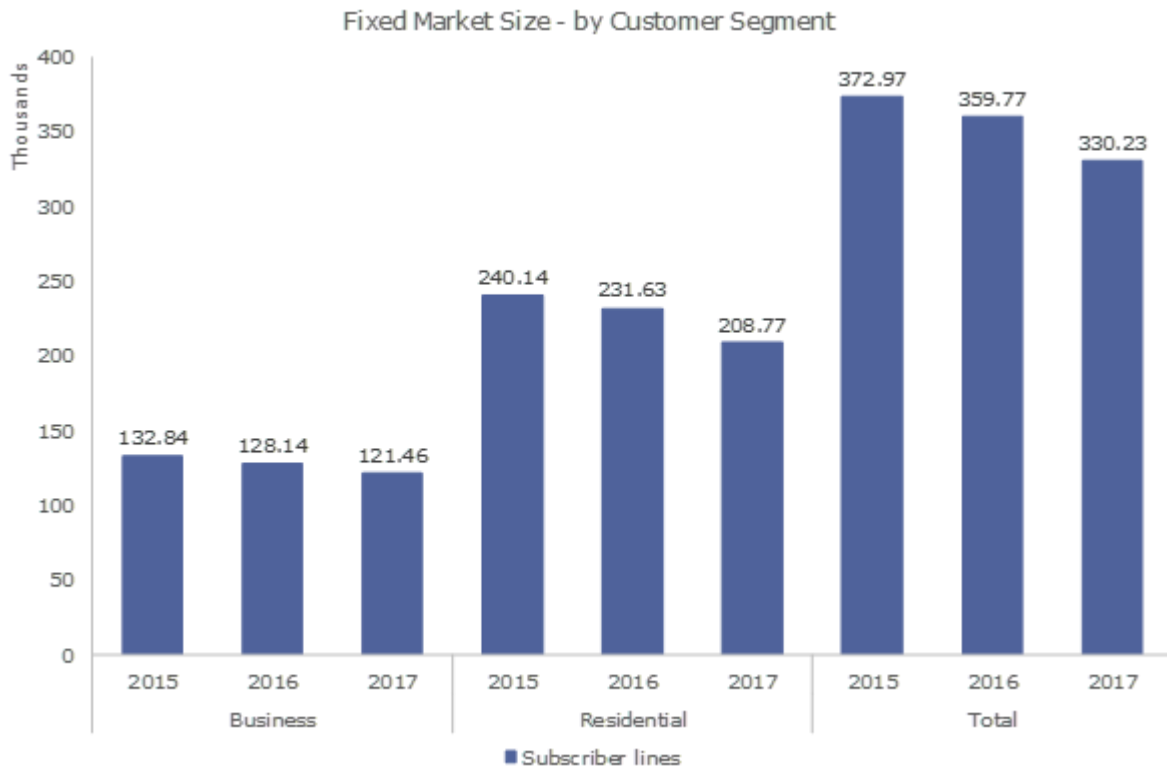


Exhibit III.2 Retail telephony access market size – number of subscriber lines by customer segment [Source: Responses to data request]

The breakdown of total subscriber lines by technology type is shown in Exhibit III.1 below. The majority of subscriber lines in Jordan are still provided over the PSTN; in 2017, close to 99% of all subscriber lines (residential and business) were PSTN⁶ with the remainder accounted for by a small number of business subscriber lines provided over ISDN BRA and ISDN PRA (1,027 and 1,807 subscriber lines respectively).

⁶ 326,313 PSTN lines from a total of 330,228 subscriber lines.

Technology	2015	2016	2017
PSTN access lines	368,938 (99%)	355,821 (99%)	326,313 (99%)
ISDN – BRA⁷	1,435 (0.4%)	1,256 (0.3%)	1,027 (0.3%)
ISDN – PRA⁸	1,581 (0.4%)	1,695 (0.5%)	1,807 (0.5%)
Total	372,974	359,771	330,228

Exhibit III.1 Fixed telephony subscriber lines and share by technology [Source: Responses to data request]

In addition to a decline in the number of fixed narrowband subscriber lines, the number of new connections has fallen steadily in both the residential and business markets, consistent with observed trends over a longer period. This is illustrated Exhibit III.2 below. This shows that the number of new **residential connections** has fallen from 55,444 in 2015 to 41,814 in 2017 (a fall of around 24.5%) and the number of new **business connections** has fallen from 18,666 in 2015 to 15,182 in 2017 (a fall of around 18.7%).⁹ Therefore, the number of both residential and businesses users taking up new fixed narrowband connections is declining year on year.

⁷ The figures presented here indicate actual subscriber lines. However, it may be more relevant to consider 'equivalent subscriber lines'. Equivalent Subscriber lines are calculated by converting the number of ISDN subscription lines into their equivalent voice channels. For ISDN-BRA, this is the number of basic rate subscriptions multiplied by two.

⁸ The figures presented here indicate actual subscriber lines. Equivalent Subscriber lines for ISDN-PRA, are the number of primary rate subscriptions multiplied by 23 or 30, depending on the standard implemented. See:

https://www.itu.int/ITU-D/ict/material/telecomict_indicators_definition_march2010_for_web.pdf

⁹ The number of new connections refer solely to Orange Fixed. However, Batelco also provides a small portion of connections for business users, but no figure for new service connections were provided for 2015-2017. Batelco users contributed to only 2.6% of the total minutes in 2017, so represent a very small share of the market)

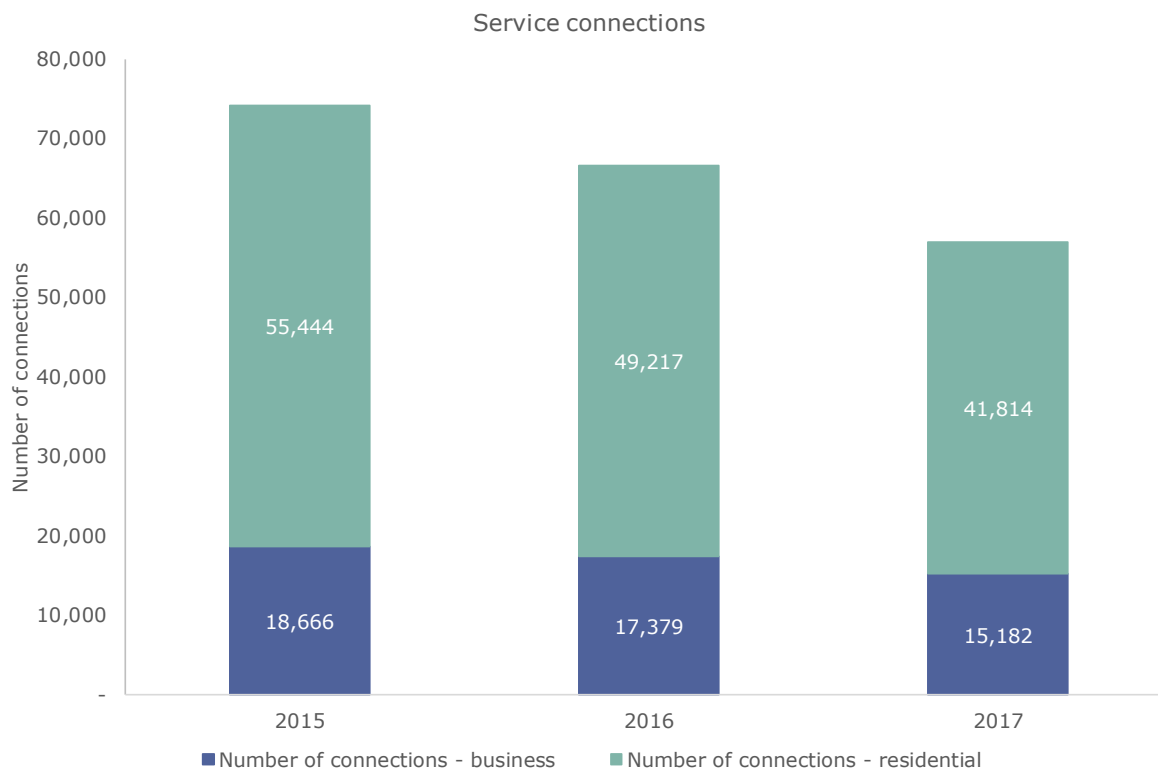


Exhibit III.2 Number of new connections (installation service connection) residential and business¹⁰ [Source: Responses to data request]

Trends in market share

Based on data on subscriber lines provided by operators, in 2017 the market shares of each of these players in each of the total, residential and business market are as follows:

	Total	Residential	Business
Orange	[X] Number omitted NO	NO	NO
Zain	NO	NO	NO
Batelco	NO	NO	NO

Exhibit III.3 Retail fixed telephony access market shares by subscriber lines (2017) [Source: Responses to data request]

¹⁰ No information received for Batelco

Orange Fixed has always been the sole supplier of fixed narrowband telephony access lines for residential services. While the market shares of Zain and Batelco in supplying business customers has increased, they still account for less than [%<NO] of the market.

3.3 FIXED VOICE SERVICES

Market structure

This section examines trends in voice calls made over fixed narrowband connections. This includes all fixed calls to local or national geographic fixed line numbers, to international numbers, to mobile, or to service providers using non-geographic numbers.

The fixed voice market is served primarily by Orange Fixed, which has both residential and business users. Batelco and Zain serve a small number of business customers over ISDN-PRA and managed VoIP.

Overall trends

The TRC has assessed trends in:

- Call volumes
- Calls by destination
- Overall revenue.

Call volumes

The table below shows that the total call volumes¹¹ have been declining steadily over the past three years, in both the residential and business markets. For business services, between 2015 and 2017 there has been a reduction in fixed voice call minutes of [NO] from around [NO] million to [NO] million of which nearly [NO] were originated on the Orange Fixed network.¹² For residential services, fixed originated

¹¹ The total minutes of fixed voice calls presented captures all fixed calls to local or national geographic fixed line numbers, to international numbers, to mobile, or to service providers using non-geographic numbers.

¹² [%<NO] originated business minutes for Orange Fixed. Representing a share of [%<NO]] of all business orientated minutes in 2017.]

voice minutes fell from around [NO] million in 2015 to around [NO] million in 2017, a reduction of [NO] %.

	2015	2016	2017
Total business minutes ¹³	227,975,355	202,970,215	175,083,935
Total residential minutes	209,528,250	181,878,526	139,491,620

Exhibit III.4 Number of fixed originated voice minutes (residential and business) [Source: Responses to data request]

Given the increase in mobile and the decline in traditional fixed services, the TRC has carried out additional analysis of the relative positions of fixed and mobile calls.

The assessment of trends for fixed voice calls and mobile voice calls independently shows that there are significantly more mobile voice calls than fixed voice calls. In addition, the volume of fixed voice call minutes has been declining whereas the demand for mobile voice call minutes has been increasing.

These trends are illustrated in Exhibit III.5 below, showing that the share of fixed voice call minutes in total voice calls is very small and declining. In 2017, mobile voice calls made up 99.1% of all voice calls.

	2015	2016	2017
Fixed voice call minutes	437,290,799 (1.3%)	384,578,621 (1.1%)	314,307,317 (0.9%)
Mobile voice call minutes	33,548,662,254 (98.7%)	33,166,243,240 (98.9%)	34,020,459,278 (99.1%)

Exhibit III.5 Share total voice calls for fixed voice calls and mobile voice calls (in minutes) [Source: Responses to data request]

Looking in more detail at fixed and mobile call patterns. Exhibit III.6 below shows the proportion of total originated minutes and their destination from fixed and mobile respectively:

	To fixed numbers	To mobile numbers	To international numbers
--	------------------	-------------------	--------------------------

¹³ Zain's business traffic was estimated from its number of lines information and Orange Fixed's total traffic and total number of lines information.

	2015	2016	2017	2015	2016	2017	2015	2016	2017
From fixed	72%	66%	63%	22%	28%	30%	6%	7%	7%
From mobile	1%	1%	1%	98%	98%	98%	2%	1%	1%

Exhibit III.6 Percentage of calls originating from fixed and mobile devices terminating at fixed, mobile and international numbers [Source: Responses to data request]

Considering this from the perspective of terminating calls, Exhibit III.7 Percentage of calls terminating at fixed, mobile and international numbers (from fixed vs from mobile)

[Source: Responses to data request]

below shows that calls to fixed numbers are from both fixed and mobile users (with a close to 50% share), whereas calls to mobile numbers are predominantly from those originating on the mobile network, as are international calls.

	Terminating on fixed numbers			Terminating on mobile numbers			Terminating on international numbers		
	2015	2016	2017	2015	2016	2017	2015	2016	2017
From fixed	57.3%	53.1%	52.3%	0.3%	0.3%	0.3%	4.9%	5.9%	4.5%
From mobile	42.7%	46.9%	47.7%	99.7%	99.7%	99.7%	95.1%	94.1%	95.5%

Exhibit III.7 Percentage of calls terminating at fixed, mobile and international numbers (from fixed vs from mobile) [Source: Responses to data request]

The analysis of fixed voice call data shows clearly that the volume of traditional voice calls is in decline, and makes up a very small part of the overall volume of voice calls.

Destination

For both residential and business fixed services, **local calls** make up the largest share of total minutes originating from a fixed line, with **calls to mobile** also making up a reasonable share. However, it is important to note that in addition to overall call minutes declining, the *share* of call minutes to fixed lines (in particularly local calls) has also been declining, while the share of total minutes from calls to mobiles is increasing. This trend is true for both residential and business users.

Combining residential and business minutes, in 2017, **local call** minutes made up around 53% of all fixed originated call minutes. **National long-distance** calls account for around 9% with call minutes to **mobile** making up a share of around 30%. **International** call minutes accounted for just over 7% of calls, with calls to **special numbers** (0.1%) and calls to other numbers (0.2%) accounting for the remainder, as shown in Exhibit III.8 below.

The total minutes for local, national, and international call minutes as well as to special numbers have been declining, and their share as a proportion of total calls is also declining or remaining static. In contrast, the share of calls to mobile has been steadily increasing.

Call type	2015	2016	2017
Local calls	271,865,959 (62%)	217,575,716 (57%)	167,892,222 (53,4%)
National long-distance calls	39,652,500 (9%)	34,383,862 (9%)	28,234,625 (9%)
Calls to mobile	96,274,405 (22%)	105,925,209 (28%)	95,095,134 (30,2%)
International calls	27,233,672 (6%)	25,421,518 (7%)	22,496,460 (7%)
Calls to special numbers	456,901 (0.1%)	315,838 (0.1%)	240,726 (0.1%)
Calls to other numbers	2,020,168 (0.5%)	1,226,598 (0.3%)	616,388 (0.2%)
Total	437,290,799	384,578,621	314,307,317

Exhibit III.8 Share of total number of minutes in the fixed market by call type – residential and business combined [Source: Responses to data request]

Overall revenue

Although the total number of minutes originating from fixed operators has been declining fairly significantly over the past three years, total revenues have declined at a slower rate. Exhibit III.9 shows the trends in the total revenues disaggregated by revenues for business and residential services. For example, in the residential market, the total number of call minutes has fallen by 33%, whilst revenues have only fallen by 13%. For business calls, minute volumes have fallen by around 23% between 2015 and 2017, whilst business revenues have increased by 2%.¹⁴

¹⁴ Note that this could be explained by operators moving to minute bundles in recent years such that revenue may not drop as much as total minutes traffic as revenues are less dependent on 'per-call' charges.

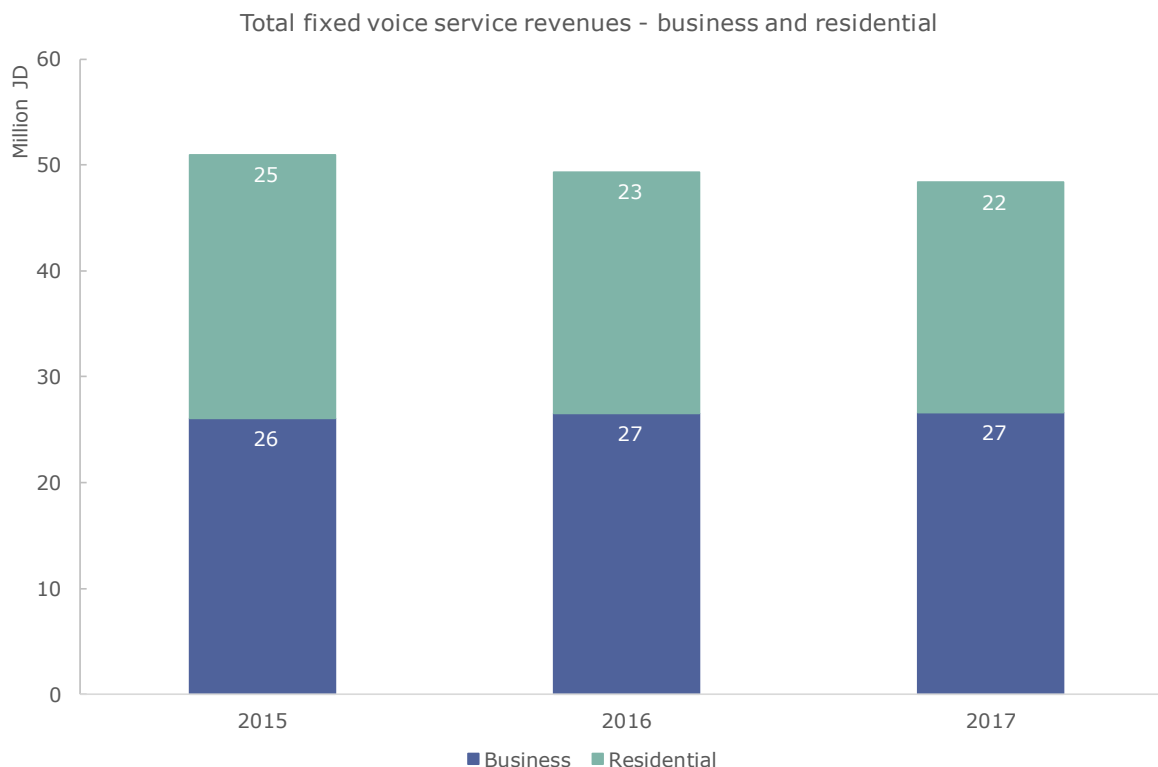


Exhibit III.9 Share of total revenues in the fixed voice service– residential and business combined¹⁵ [Source: Responses to data request]

Trends in market share

In 2017, Orange Fixed had a [x NO] revenue share of residential fixed voice services and almost [x[NO] revenue share of the business fixed voice services. Batelco had [x[NO] revenue share of the business services, while Zain’s estimated business traffic and revenue corresponded to a share of [xNO .¹⁶] There has been no appreciable change in these market shares over the last three years.

¹⁵ Zain’s total revenues for business services were estimated based on revenue per minute of Orange Fixed and Zain’s estimated traffic.

¹⁶ Although Zain provided figures on a small number of ISDN PRA lines, it did not provide business traffic data. Therefore, Zain’s business traffic has been estimated from its number of lines information and Orange Fixed’s total traffic and total number of lines information. All Zain’s business metrics (total traffic and revenue, traffic and revenue disaggregated by call type) are now estimated from Orange Fixed KPIs. This estimation approach assumes all business customers have similar traffic mix and ARPUs. The estimates figures do not have any significant impact on overall volumes or revenues for voice calls given that estimated figures corresponded to a miniscule share of both revenue and volume figures.

3.4 FIXED BROADBAND SERVICES

Market structure

In its 2010 market review, the TRC defined a single retail market for the provision of broadband Internet access at a fixed location. This included fixed broadband access (connection) and Internet connectivity, as two components of a single, integrated service. It included all fixed broadband access technologies offered and utilized in Jordan (i.e., xDSL, FBWA, FTTx) at all speeds and contention ratios offered. Since the last review, broadband access is now also available over mobile. Mobile broadband, available as part of a cluster of mobile services, is considered in the parallel Public Consultation on the Market Review of the Mobile Markets.

The following companies are currently providing retail fixed internet services in Jordan:

- Orange Fixed (business and residential, ADSL and FTTH provided over its own network infrastructure);
- Zain (business and residential, FTTH provided over its own network infrastructure and xDSL leased from Orange Fixed);
- Al-Nayi (recent entrant since 2017, to date a small number of business FTTB and Fixed Broadband Wireless Access active lines provided over its own network infrastructure);
- Damamax (business and residential FTTH and FTTB provided over its own network infrastructure);
- Jordan European Internet Services Co (residential FTTH provided over its own network infrastructure);
- Orange Data – Jordan data communications (business and residential ADSL and VDSL access using Orange Fixed network);
- TE Data Jordan (business and residential ADSL access using other operator's network);
- V-Tel (providing FTTB to business customers and FTTH to residential customers over its own network infrastructure);
- Umniah (business and residential with a combination of FTTH, FTTB, Fixed Broadband Wireless Access (fixed LTE) and WiMAX (which was shut-down at the beginning of 2017) provided over its own network infrastructure and some xDSL access using other operator's network);
- Batelco (business and residential bitstream access using other operator's network);

- Mada (residential FBWA (Fixed LTE) and WiMAX (which was shut-down at the beginning of 2017) provided over its own network infrastructure).
- Broadband coverage for each of these operators (in terms of homes passed) is provided in Exhibit III.10 below. Orange Fixed has the most extensive network coverage (on account of its national copper network), with Zain covering over 5% based on its FTTH networks.

	2015	2016	2017	2018 ¹⁷
Orange Fixed	[X NO] [NO %]	[X NO] [NO %]	[X NO] [NO %]	[X NO] [NO %]
Zain			[X NO] [NO %]	[X NO] [NO %]
V-Tel	[X NO] [NO %]	[X NO] [NO %]	[X NO] [NO %]	[X NO] [NO %]
Umniah			[X NO] [NO %]	[X NO] [NO %]
Batelco			[X NO] [NO %]	
Mada	[X NO] [NO %]	[X NO] [NO %]	[X NO] [NO %]	
Damamax	[X NO] [NO %]	[X NO] [NO %]	[X NO] [NO %]	[X NO] [NO %]
Total	2,180,910	2,236,022	2,559,218	2,421,341

Exhibit III.10 Broadband coverage of operators (by number of homes passed) [Source: Responses to data request]

Overall trends

The TRC has assessed change in the market in terms of:

- Broadband subscribers
- Technology
- Speed of service
- Revenue

¹⁷ Orange, Zain, V-Tel, Umniah and Damamax reported figures for 2018

Broadband subscribers

There has been an increase in the total number of active lines in the past four years (rising from 309,823 in 2015 to 391,955 in 2018).

	2015	2016	2017	2018
Number of active fixed internet access lines	309,823	300,598	333,691	391,955
Population	9,559,000	9,798,333	9,919,496	10,289,110
Penetration rate in terms of % of population	3.2%	3.1%	3.4%	3.8%

Exhibit III.11 Penetration rate of active fixed internet access lines [Source: Responses to data request and Department of Statistics]

As shown in Exhibit III.12, in 2018, total number of all active lines, has increased to 392,000.

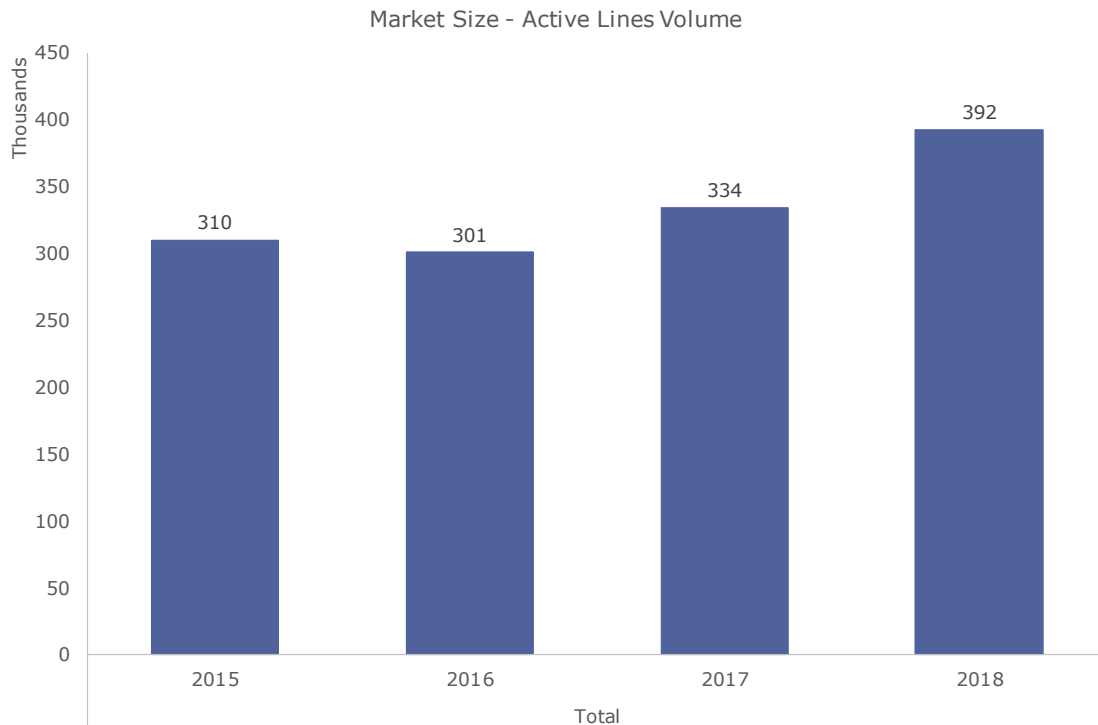


Exhibit III.12 Number of active fixed internet access lines¹⁸ [Source: Responses to data request]

Technologies

Retail fixed internet access is provided over a wide range of technologies including: xDSL, VDSL, FTTH, FTTB, Fixed Broadband Wireless Access (Fixed-LTE), and WiMax. In response to the data request, operators indicated where they were using Bitstream access to provide retail services. As all wholesale Bitstream access is provided over the Orange xDSL network, all retail broadband connections using 'Bitstream access' are being provided as an xDSL connection. The disaggregation of these lines into VDSL is done based on the speed information, where lines above 40 Mbit/s are considered to be VDSL.

Exhibit III.13 and Exhibit III.14 below show the number of active internet access lines by technology and the share of lines by access technology for business, residential and total access line¹⁹.

¹⁸ Zain's lines are considered to be business. Number of WiMAX lines for Mada for 2016 (Mada provided revenue information for 2016 but not number of lines) is estimated from the revenue per line information of 2015.

¹⁹ A speed breakdown for 2018 figures was not provided by operators and so VDSL numbers (i.e. xDSL lines with a higher speed than 40Mbps) couldn't be calculated. Hence, all bitstream access figures are included under xDSL.

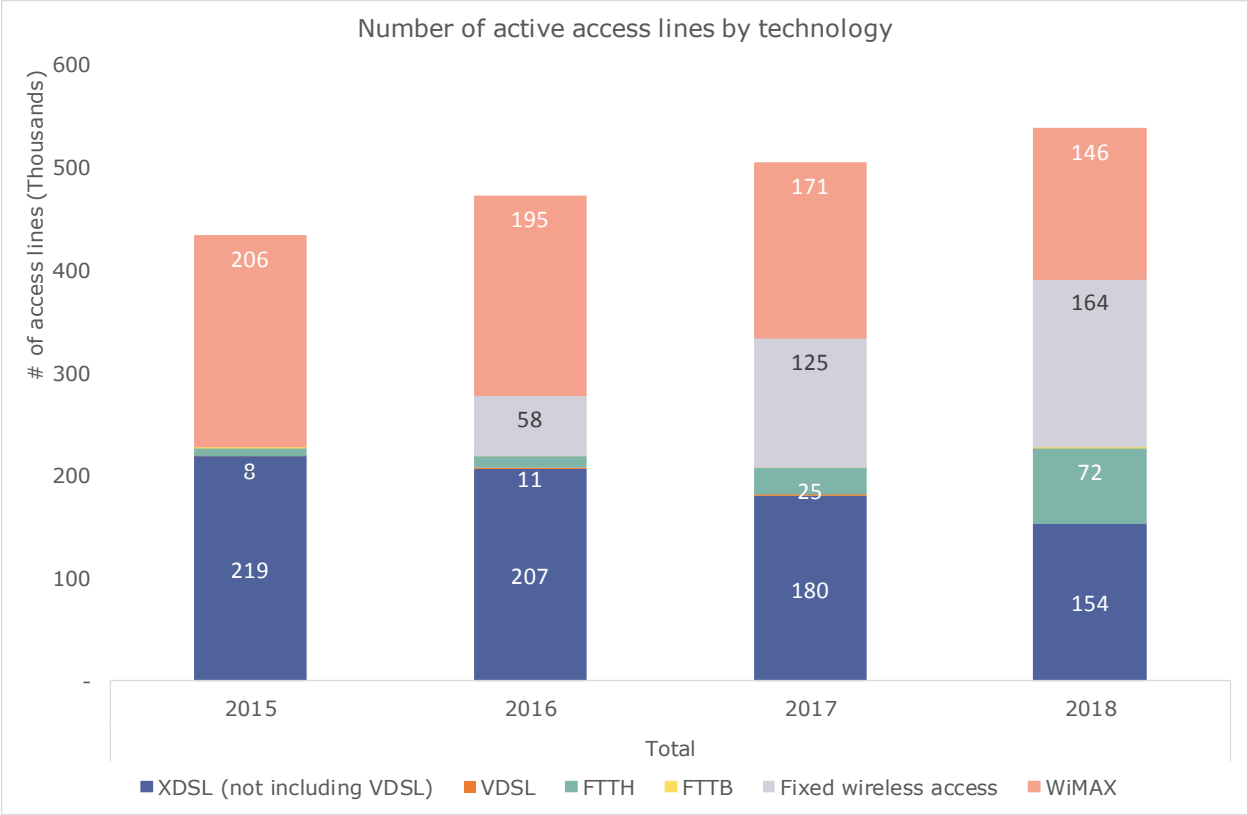


Exhibit III.13 Number of active internet access lines – by technology²⁰ [Source: Responses to data request]

	Total			
	2015	2016	2017	2018
xDSL	70.7%	68.7%	54.0%	39.3%
VDSL	0.1%	0.5%	0.8%	0.0%
FTTH	2.7%	3.8%	7.5%	18.5%
FTTB	0.1%	0.2%	0.3%	0.4%
FBWA (Fixed LTE)	0.0%	19.2%	37.4%	41.8%

²⁰ Number of WiMAX lines for Mada for 2016 (Mada provided revenue information for 2016 but not number of lines) is estimated from the revenue per line information of 2015.

	Total			
	2015	2016	2017	2018
WiMAX	26.4%	7.6%	0.0%	0.0%
Total	100%	100%	100%	100%

Exhibit III.14 Share of lines by access technology by technology [Source: Responses to data request]

This demonstrates that for both business and residential users, the most common forms of access technology for broadband at a fixed location are xDSL and FBWA access. However, the share of total xDSL active access lines is falling, whilst the share of fibre lines (FTTH or FTTB) is rising for both business and residential users.

For residential users, FBWA represents an increasing share of total active lines. The TRC understands that Umniah and Mada migrated all WiMAX users onto FBWA (Fixed LTE, provided using LTE network), which explains the drop off in WiMAX subscriptions in 2016 and 2017 and the corresponding increased share of FBWA.

Speed

As shown by Exhibit III.15 , between 2015 and 2017 the number of access lines providing lower access speeds is in decline, and those with faster speeds are accounting for a larger share of total active internet access lines. In 2017, access lines with a speed of between 8 and 16 Mbit/s represent the greatest share of total active internet access lines.

	Business			Residential			Total		
	2015	2016	2017	2015	2016	2017	2015	2016	2017
< 2 Mbit/s	28.5%	15.5%	11.1%	31.7%	8.2%	4.2%	31.3%	9.2%	5.0%
≥2 to <4 Mbit/s	17.6%	11.5%	7.8%	14.2%	6.1%	2.1%	14.7%	6.8%	2.8%
≥4 to <6 Mbit/s	10.7%	20.3%	15.3%	10.9%	35.2%	10.6%	10.9%	33.3%	11.1%
≥6 to <8 Mbit/s	0.1%	0.1%	0.0%	-	-	-	0.0%	0.0%	0.0%
≥8 to <16 Mbit/s	34.9%	31.3%	22.2%	33.2%	32.2%	49.1%	33.4%	32.1%	45.9%
≥16 to <24 Mbit/s	3.8%	13.8%	17.5%	8.5%	15.5%	17.2%	7.9%	15.3%	17.2%
≥24 to <40 Mbit/s	3.1%	4.0%	6.0%	1.3%	1.1%	6.6%	1.5%	1.5%	6.5%
≥40 to <80 Mbit/s	1.0%	2.3%	7.1%	0.2%	0.9%	2.6%	0.3%	1.1%	3.2%
≥80 to <100 Mbit/s	0.3%	0.7%	9.0%	0.0%	0.2%	0.2%	0.1%	0.3%	1.2%
≥100 to <200 Mbit/s	0.1%	0.4%	3.1%	0.0%	0.5%	7.4%	0.0%	0.5%	6.9%
≥200 to <300 Mbit/s	-	0.1%	0.5%	-	0.0%	0.1%	-	0.0%	0.1%
≥300 Mbit/s	-	0.0%	0.3%	-	-	0.1%	-	0.0%	0.1%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

Exhibit III.15 Active internet access lines by speed²¹ [Source: Responses to data request]

Revenue

Total broadband access revenue has increased by 24.9% from 2015 to 2018 despite a slight decline in 2016, in line with the trend in the total subscriber base. The last four years' revenue trend is shown below:

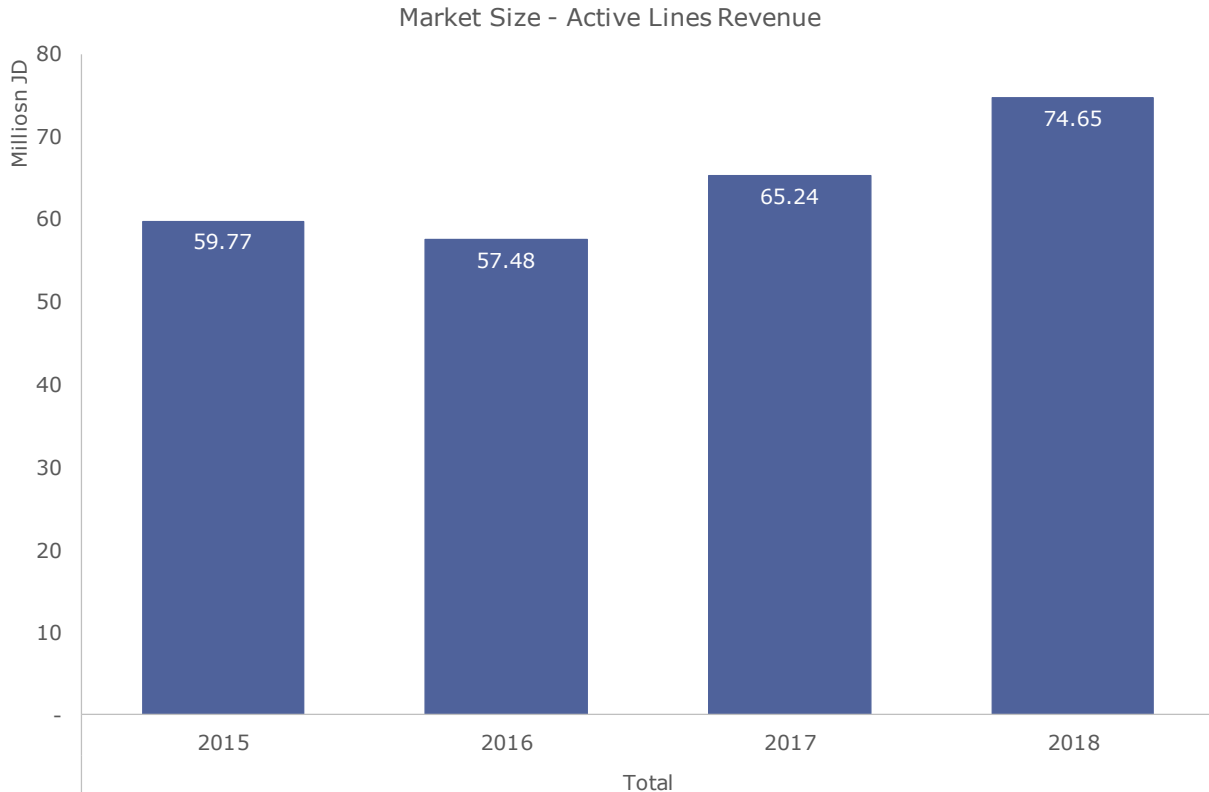


Exhibit III.16 Active lines revenues [Source: Responses to data request]

Trends in market shares

The Exhibit III.17 below shows the technology over which each operator provides broadband services and shows the market share by each technology for each operator in 2.

²¹ Zain's lines are considered to be business. The number of WiMAX lines for Mada for 2016 (Mada provided revenue information for 2016 but not number of lines) is estimated from the revenue per line information of 2015.

In 2017, Orange (Fixed and Data) account for nearly all services provided over ADSL/VDSL. FBWA is provided mainly by Umniah and Mada, and FTTH/FTTB is provided by Orange Fixed, Zain, Damamax, Jordan European, V-Tel, Al-Nayi and Umniah.

	ADSL	VDSL	FTTH	FTTB	FBWA (Fixed LTE)	WiMAX	Total share
Orange Fixed	[X NO%]	-	[X NO%]	-	-	-	[X NO%]
Zain	[X NO%]	-	[X NO%]	-	-	-	[X NO%]
Al-Nayi	-	-	-]	[X NO%]	-]	-	[X NO%]
Damamax	-	-	[X NO%]	[X NO%]	-	-	[X NO%]
Jordan European	-	-	-	[X NO%]	-	-	[X NO%]
Orange data	[X NO%]	[X NO%]	-	-	-	-	[X NO%]
TE Data Jordan	[X NO%]	-	-	-	-	-	[X NO%]
V-Tel	-	-	[X NO%]	[X NO%]	-	-	[X NO%]
Umniah	[X NO%]	-	[X NO%]	[X NO%]	[X NO%]	-	[X NO%]
Batelco	[X NO%]	-	-	-	-	-	[X NO%]

	ADSL	VDSL	FTTH	FTTB	FBWA (Fixed LTE)	WiMAX	Total share
Mada	-	-	-	-	[< NO%]	-	[< NO%]

Exhibit III.17 Shares of fixed broadband connections by technology and operator (2017)

[Source: Responses to data request]

The Exhibit III.18 below shows the technology over which each operator provides broadband services and shows the market share by each technology for each operator in 2018.

	ADSL	VDSL	FTTH	FTTB	FBWA (Fixed LTE)	WiMAX	Total share
Orange Fixed	[< NO%]	-	[< NO%]	-	-	-	[< NO%]
Zain	[< NO%]	-	[< NO%]	-	-	-	[< NO%]
Al-Nayi	-	-	-	-	-	-	-
]Damamax	-	-	[< NO%]	[< NO%]	-	-	[< NO%]
Jordan European	-	-	[< NO%]	-	-	-	[< NO%]
Orange data	[< NO%]	-	-	-	-	-	[< NO%]
TE Data Jordan	[< NO%]	-	-	-	-	-	[< NO%]
]V-Tel	-	-	[< NO%]	[< NO%]	-	-	[< NO%]

	ADSL	VDSL	FTTH	FTTB	FBWA (Fixed LTE)	WiMAX	Total share
Umniah	[< NO%]	-	[< NO%]	[< NO%]	[< NO%]	-	[< NO%]
Batelco	-	-	-	-	-	-	-
Mada	-	-	-	-	[< NO%]	-	[< NO%]

Exhibit III.18 Shares of fixed broadband connections by technology and operator (2018)

[Source: Responses to data request]

3.5 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 common with most other jurisdictions, the use of fixed narrowband in Jordan is in decline. The TRC notes a consistent decrease in subscribers for line rental and calls on the PSTN and ISDN, in terms of both numbers/volumes and revenue. Alongside this, there is a growth in fixed services provided over fibre and FBWA, although this is limited by the reach of fibre and FBWA roll-out to date. Qualitative evidence from operators suggests that retail purchasers of fibre services are often switching from copper-based fixed services – they are not new purchasers of fixed services.

The use of fixed broadband has been increasing. While xDSL remains the most prevalent technology, broadband over FBWA now accounts for around 37% of all fixed broadband. Users have been migrating towards higher speed broadband – less than 20% of broadband purchased is now at less than 8 Mbit/s.

The TRC expects to see a continuing decline in the volume of legacy fixed voice calls, and the downward trend is clear from the analysis above. 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) and using a mobile to make a voice call.

A shift to all IP

Like most jurisdictions, Jordan is moving towards all-IP networks. What the shift to an all-IP network means in practice is the end of discrete networks for voice, data and image, leading to the withdrawal of the copper network and the end of the PSTN, and of ISDN. The magnitude of this change in terms of network investment means that this is not an immediate transition anywhere. For example, Deutsche Telekom will have moved to all-IP in FYROM, Slovakia and Croatia by the end of 2018²² - but not in its home market of Germany. BT in the UK does not expect to switch off the PSTN until 2025.

The TRC does not expect that the copper network will be switched off in Jordan during the lifetime of the review, and it is important to note that there will remain a base of customers using the legacy fixed network for narrowband access and calls, and for xDSL broadband. However, the roll-out of fibre to date and the operators' plans for the future do indicate a move away from copper and a move towards all-IP.

Roll out of FTTH

The last few years have seen the emergence of fibre-to-the-home (FTTH) and fibre-to-the-building (FTTB) networks in Jordan, mainly focussed in denser urban areas such as parts of Amman. Although these networks are relatively limited in coverage at present, and the high costs of deployment will prevent rapid expansion and widespread deployment in a short time period,²³ the TRC expects that over time the trend to fibre networks (compared to those based on copper) will continue. It is notable that all infrastructure investment by Orange Fixed and alternative operators is in fibre.

Over the top (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.

²² <https://www.lightreading.com/ethernet-ip/new-ip/dt-completes-all-ip-move-in-croatia/d/d-id/719616>

²³ Acknowledging that Orange Fixed may have a slight advantage in this regard due to having access to physical infrastructure that may lower the costs of deployment (e.g. existing poles).

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, Exhibit III.19 below provides 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 III.19 Total OTT data consumption in 2017 [Source: Responses to data request]

Bundles

Fixed and mobile services are (separately) already sold as bundles. For example, fixed access is often sold together with a package of voice calls and occasionally together with a retail broadband service. Mobile customers are able to buy a bundle of calls, SMS and data. The TRC notes that bundling is a common practice in telecommunications markets in most countries, and is generally popular with customers as well as with operators.

It may be envisaged that operators seek to offer a total package of fixed and mobile services (for example, a deal with fixed access, voice, fixed broadband and a mobile package sold together with a single bill), especially now that mobile operators are starting to roll out their own fixed broadband networks (specifically, residential FTTH in the Amman areas). Whilst bundling of fixed and mobile together in a single package is not as common as separate fixed or mobile packages, the opportunities for a single package for all the needs of a single customer are increased by the fact that operators are able to provide both fixed and mobile services given the networks they have in place.

The national broadband network

In addition to the incumbent network and commercial network developments in Jordan, the Jordanian Ministry of Digital economy and Entrepreneurship (MoDEE) has been working on the National Broadband Network project since 2003.²⁴

²⁴ Details of the management of the ‘National Optical Fibre Network Program’ can be found on the MoDEE website at: <http://moict.gov.jo/content/NBN-Program>

This project aims to connect public facilities across the region with high speed Internet. Originally intended to link universities and other educational institutions (including government schools, community colleges, knowledge stations and learning resource centres), it has been expanded to include linking government agencies and supporting the establishment of a secure government network and linking health services.²⁵ The network can provide these sites with high bandwidth capacity (100Mbps).²⁶

The NBN could help to provide high-speed broadband access to increase universal access and universal coverage, and future plans may include using the network to support the business sector in Jordan and increase access in under-served areas.²⁷

The TRC understands that, under certain circumstances, other licensed operators can lease dark fibre and cabling pipes of the NBN from the MoDEE, and at the time of the last market review, Batelco, VTel and Damamax had made agreements with the MoDEE for the utilisation of the National Broadband Network infrastructure (in the case of Batelco) and for the use of cabling pipes (in the case of VTel and Damamax)²⁸. If such agreements were to occur on a wide scale and allowed operators to roll out networks to compete more strongly with the dominant operator, this could have a significant impact on the assessment of competition in retail fixed broadband markets.

IV. Definition of Retail and Wholesale Fixed Telecommunications Markets

4.1 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 identification of any operator potentially holding SMP (Significant Market Power or dominance). This requires establishing whether any actual and potential competitors are

²⁵ <http://moict.gov.jo/content/NBN-Program>

²⁶ <https://www.itu.int/net4/wsis/stocktaking/projects/Project/Details?projectId=1354190429>

²⁷ <https://www.itu.int/net4/wsis/stocktaking/projects/Project/Details?projectId=1354190429>

²⁸ TRC, “Explanatory Memorandum to the Regulatory Decision on the Broadband Markets Reviews”, 14 July 2010.

capable of constraining such an operator's behaviour by preventing it from behaving, 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 products and services available, and assessing the extent to which products and services 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, such as 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 also 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. However, it has framed these markets in a context which does not depend on legacy markets, but rather 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**'.²⁹ 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

²⁹ 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.

competition in different areas within Jordan. Within any single geographic market, the conditions of competition should be homogenous.

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

4.2 MARKET DEFINITION IN THE PREVIOUS REVIEWS

In the previous round of market reviews, the TRC defined four retail fixed telecommunications markets. These were:

- A retail market for fixed telephony access connections for residential and non-residential users which includes PSTN, ISDN-BRA, ISDN-PRA and telephony access achieved through broadband connections;
- A retail market for fixed domestic telephony calls, for prepaid/postpaid residential and non-residential users, including local, national, fixed-to-mobile, and calls to service providers;
- A retail market for international calls, both for prepaid/postpaid residential and non-residential users;
- A retail market for the provision of broadband Internet access at a fixed location ("retail fixed broadband Internet access"); and

The wholesale markets that were defined as addressing those retail markets were:

- A wholesale market for the termination of voice calls on individual fixed networks;
- A wholesale market for call origination over all fixed networks;
- A wholesale market for transit services over all fixed networks;
- A wholesale market for physical network infrastructure access; and
- A market for wholesale broadband access.

In the previous market reviews, the TRC reserved the right to reconsider the defined markets and their susceptibility to ex ante regulation in light of developments in the market. This second round review is therefore not limited to markets previously found to be susceptible to ex ante regulation and so previously regulated, but rather conducts a comprehensive assessment of the telecoms market overall. The approach also considers any potentially new markets that may have emerged since the time of the last reviews.

As set out in the methodology described in section 1, retail markets are defined before considering wholesale markets.

V. Retail market for fixed telephony access and call origination (FACO)

5.1 INTRODUCTION

At the time of the last market review, the TRC definition of the retail access market emphasised the focus on access in order to provide fixed telephony, recognising that once the physical connection to the public telephone network has been made, customers can access a range of retail services, prime among which was voice calls. The definition for fixed access adopted previously was: *“telephony access connections for residential and non-residential users which includes PSTN, ISDN-BRA, ISDN-PRA and telephony access achieved through broadband connections”*³⁰. The previous market review identified separate relevant markets for retail fixed access, domestic calls and international calls. The markets for retail fixed access and domestic calls were found to be susceptible to ex ante regulation, while the market for international calls was deemed to be prospectively competitive, assuming that regulation of the wholesale interconnection markets was sufficient.

The TRC notes that, increasingly, fixed access can be used to deliver not only narrowband voice services, but also broadband services. Broadband services can include the provision of voice over broadband as well as data and image based services. These retail services may be provided by the same operator who provides the connection or by a different operator purchasing a wholesale input. Therefore, the physical connection and the service provided over it may be separable.

For fixed access, the TRC considers that the key defining feature of the market is the physical connection that allows a user to connect to the public telecommunications network. This connection is then used to provide services the user wants to use (such as narrowband voice telephony and broadband),³¹ but the importance and balance of these services may differ amongst users and may shift over time. The market definition needs to take into account changes in the use of retail services provided over the fixed access connection.

³⁰ TRC, ‘Regulatory Decision on the Fixed Narrowband Markets Review’, 1 November 2011.

³¹ All access lines in Jordan offer the ability to use retail services including voice telephony and broadband.

While there is a distinction between the provision of access and the provision of services carried over that connectivity, in practice access and calls are always purchased from the same operator. It may be that the customer also includes other retail services such as broadband in a bundle, but this is not always the case, and retail broadband can be bought separately from the provision of access and calls. A customer might buy access with a minimum allocation of calls in order to avail of a retail broadband service, and may make minimal use of fixed calls, but the point remains that the customer has no other way to purchase fixed calls than bundled with access, and that all access options include fixed calls. This applies to all retail access services in Jordan. For example, on Orange's website, there are no separate line rental and calls options, and no alternative operator in Jordan offers fixed call services on Orange's fixed access network.

Considering the supply side, although provision was made in the last review for the supply of CS/CPS, there is no use of CS/CPS, suggesting that suppliers do not see an attractive option in offering a separate voice calls package for use on a fixed access connection.

5.2 PRODUCT MARKET DEFINITION

When considering the relevant market definition, the starting point is a focal product of fixed access provided over the copper network including fixed voice call origination (FACO), which is the most prevalent retail fixed access product in Jordan. The TRC then considers whether there exist any substitutes that should be included in the same market based on an assessment of demand side and supply side substitutability. In particular, the following questions are considered:

- Should access to the PSTN and access to ISDN be considered to belong to the same market?
- Is FACO over a fibre network in the same market as FACO offered over a copper network?
- Do FACO and mobile access and call origination belong to the same market?
- Is Fixed LTE Access and call origination part of the same market as retail FACO (including PSTN, ISDN and fibre access)?
- Are domestic and international calls part of the same market?
- Do calls to all types of number fall within the same market?

- Do FACO services to business and residential customers fall within the same market?

Should access to the PSTN and access to ISDN be considered to belong to the same market?

Demand side substitution

Fixed access over the copper network in Jordan may be provided as a PSTN connection or as an ISDN connection. In general, ISDN is purchased by non-residential customers who require a separate and simultaneous voice and data channel. ISDN BRA (Basic Rate Access) offers the equivalent of two channels, and ISDN PRA (Primary Rate Access) offers up to 30 channels. From a demand side perspective, ISDN services are functionally multiples of PSTN lines, with ISDN terminating equipment allowing transparent data transmission without a traditional modem. ISDN access supports some supplementary services not supported by PSTN access³², but these are not material and a user would be likely to find that multiple PSTN lines and ISDN lines would be good substitutes.

Supply side substitution

An operator supplying only PSTN services would be likely to be able to switch to supply ISDN services in response to a SSNIP in the price of ISDN, and vice versa. This is because of the functional similarity, in that ISDN is usually (but not always³³) provided over the copper network as a multiple of PSTN lines. A supplier who provided PSTN services would therefore be able to switch to supply ISDN services in response to a SSNIP in the price of PSTN access, and vice versa.

Conclusion

PSTN access and ISDN access fall within the same retail FACO market.

³² For example, some higher level fax services are supported by ISDN.

³³ ISDN can be provided over fibre or wireless links, but is most commonly provided over copper.

Is FACO over a fibre network in the same market as FACO over a copper network?

Demand side substitution

Dealing first with the **access** part of the FACO service, copper and fibre fixed access lines available in Jordan offer fixed access to networks capable of supporting telephony and broadband services. Both offer a similar quality of service for the purposes of making a voice call, as well as the possibility of access to other retail services such as broadband. Broadband available over a copper network is more limited in terms of upload and download speeds than fibre-based broadband, and is dealt with separately below. For the purposes of this assessment of the retail fixed access market, it is sufficient to consider that both the copper and fibre networks offer access to voice and broadband services, without considering the nature of these services, and this suggests that they are demand side substitutes.

The decline in fixed narrowband subscribers at the same time as subscription to fixed access over fibre is increasing would suggest that a significant number of customers are switching from access provided over copper to access provided over fibre³⁴. Some customers retain the narrowband connection when purchasing fibre connectivity, and so use the PSTN connection for switched voice telephony and the fibre connection for broadband. However, in the TRC's view, this is likely to be a transitional arrangement, and eventually such customers will use managed VoIP for calls.

A key limitation on the extent to which fibre pricing could constrain copper pricing is the limited geographical roll-out of fibre. However, interviews with operators during the course of the review indicated that all operators currently offering fibre connectivity expected further roll-out during the lifetime of this review.

The TRC's preliminary view is that it is likely that a marginal customer of retail access provided over copper would switch to fibre access (where available) in response to a SSNIP in the price of copper access, but that the reverse is probably unlikely. A customer of fibre access would not be likely to find copper access a good substitute because the range of services that can be accessed is more limited. Indeed, the pattern of switching in most jurisdictions would confirm that switching from fibre to copper would be unusual. Demand side substitution is therefore likely to be one way.

³⁴ For example, the number of PSTN subscriber lines in Jordan has fallen by around 12% from 368,938 lines in 2015 to 326,313 lines in 2017. Over the same period, the number of fibre subscriptions (FTTH or FTTB) have increased by over 200% from 8,686 in 2015 to 26,110 in 2017.

In considering the **calls** element of the FACO service, the question is whether a call made over a fibre network (typically a VoIP call) would be a good demand side substitute for a traditional switched call made over a copper network.

There are broadly two categories of VoIP calls:

- **'Managed VoIP'** means that the Service Provider provides calls services and an IP access path to its customer, either directly on its own network, or indirectly by renting the IP access path from a third party (e.g. by purchasing Wholesale Broadband Access). A Managed VoIP Service Provider will also typically have its own switching platform, interconnect path(s) and numbering allocations. A Managed VoIP Service Provider can also manage its network so that it prioritises data traffic or can manage the quality of VoIP traffic on the IP access path in order to ensure that minimum quality of service requirements for the provision of fixed voice calls are met.
- **Unmanaged or Over the Top ('OTT')** VOIP means that the Service Provider itself does not provide the access paths to its customers and does not have a switching platform and interconnection path(s). Its customers must access the Unmanaged VOIP service via the public internet or over other applications using their broadband connection provided by another supplier.

An end user would be likely to view a Managed VoIP call as being a close functional substitute for a traditional fixed voice call, for a number of reasons. The service is provided at a fixed location and a geographic number can be allocated to the line. Usually, the handset has functionality and performance equivalent to a traditional phone. The process of making a call is similar, in that the user hears a dial tone and dials the desired number. The user can purchase additional call functionality which is similar to that available via traditional fixed telephony. The quality of a managed VoIP call is likely to be equivalent to the quality of a fixed telephony call. However, customers who would consider managed VoIP to be a good substitute are limited to those customers who also choose to buy a broadband service, as this is a prerequisite for the use of managed VoIP. This would limit the number of customers who could switch to using managed VoIP in response to a SSNIP of fixed narrowband voice calls.

Unmanaged VoIP calls can be made using a computer, smartphone or tablet, or using a VoIP enabled handset or adaptor. An end user can make and receive calls with devices that have interoperable hardware and software. Where both users require a data connection and compatible hardware and software, and to be connected simultaneously (for example, where the service is provided over an OTT application to which users must be logged-in) there may be limitations to the service compared with managed

services (e.g. switched voice or managed VoIP). However, in some cases unmanaged VoIP users may be able to make and receive calls from a fixed voice caller, and some unmanaged VoIP services may also offer the possibility of being allocated a geographic number.

A key differentiating factor between managed VoIP and unmanaged VoIP is the quality of the service. An unmanaged VoIP service provider is unlikely to have control over the broadband connection over which the service is carried, and so cannot guarantee the quality of service associated with fixed voice calls or managed VoIP. Research in other jurisdictions suggests that the quality issue means that business use of unmanaged VoIP is less common than residential use. As with managed VoIP, customers who would consider unmanaged VoIP to be a good substitute are limited to those customers who also choose to buy a broadband service.

Unmanaged VoIP may be free to the caller for certain call types (e.g. to a similar platform), and even when charged, is likely to be significantly cheaper than both traditional voice calls and managed VoIP.

For all the reasons discussed above, the TRC considers that managed VoIP calls services are likely to be a substitute for fixed switched calls, but that unmanaged VoIP calls cannot be considered to fall within the same market as fixed switched calls.

Supply side substitution

A supplier of fibre **access** could technically switch to provide fixed narrowband access in response to a SSNIP in the price of narrowband access, in that narrowband access can be provided over fibre. The development of voice-only offerings for FTTP is an example of how a fibre network operator may take into account customers who only want narrowband access. However, the difference in pricing would mean that a supplier of fibre access would be unlikely to find it profitable to offer fixed narrowband retail access alone, because the fibre access business model depends on the customer purchasing broadband services.

It is expected that over the lifetime of this review, managed VoIP based **calls** services will increasingly replace traditional circuit switched calls delivered over the copper based network. For the supplier, this is to do with upgrading network infrastructure as this moves to all-IP, and it is not necessarily the case that managed VoIP automatically translates into a new or separate calls market.

A supplier of unmanaged VoIP services would be unlikely to switch to provide switched telephony because to provide a similar functionality, the supplier would need to have access to geographic numbers, and usually its own switching path and access path to the customer. This would incur investment cost, and would not be a likely short term response to a SSNIP in the price of traditional voice calls.

As noted above, some customers retain a narrowband connection when purchasing fibre connectivity, and so use the PSTN connection for switched voice telephony and the fibre connection for broadband. This is likely to be a transitional arrangement, and eventually such customers will use managed VoIP for calls. Furthermore, if the price of calls (or the access and calls bundle) provided over a copper network were to increase significantly, then it would be feasible and expected for operators providing the fibre connection to offer a VoIP service, which consumers would be likely to take up.

Conclusion

The FACO market includes access provided over fibre as well as access provided over copper. Because fibre access is included in the same market, even though, at present, only a limited number of customers could switch from copper to fibre FACO due to the need to have a broadband service for VoIP calls, managed VoIP should be considered to be part of the same market, due to functional similarities and usage.

However, unmanaged VoIP should not be included in the FACO market, due to functional and quality differences in addition to the same limitation on the number of customers who would switch.

Given the trends observed in the markets over the last few years and the increasing number of OTT services, the impact of unmanaged VoIP services on the FACO market will be considered again in the three criteria assessment and in the competition assessment.

Are FACO and mobile access and call origination in same market?

Demand side substitution

There is a difference in the pattern of take-up of **access** for fixed and mobile users. A household would typically have a single fixed access line which could be used by everyone in the household. Similarly, for business customers, a business would have one or a limited number of access lines which would serve a greater number of users. In contrast, each mobile customer would have their own “access line”.

There are also clear differences in functionality. For example, fixed access is attached to a specific location whereas mobile access is attached to a single handset/person.

If there was a significant price increase on fixed access, then a fixed access user may find mobile access to be a functional substitute. However, substitution is likely to be one way, as it is unlikely that a mobile user would find fixed access to be a functional substitute for mobile access, given the loss of mobility. Furthermore, any comparison of prices between the two must take account of the number of users of a fixed access line compared with the single user of a mobile access subscription. In our view, this would give rise to a significant pricing differential, which would limit the number of customers likely to switch from fixed to mobile access.

In examining the **calls** element of the FACO service, the number of calls from mobile phones and minutes associated with mobile calls have increased over the last few years. At the same time, the number of fixed calls and the associated minutes have been decreasing.³⁵ The TRC has considered whether a customer who buys fixed calls would be likely to switch to making mobile calls in response to a SSNIP in the price of fixed calls.

In terms of functionality, the key difference between a fixed call and a mobile call is the location independence associated with mobile, and the variation in quality of mobile calls compared with fixed calls. A fixed call can only be made and received from the fixed access location, whereas a mobile call can be made and received wherever there is mobile coverage. There is greater variation in the quality of a mobile call, where quality may be affected by interference, poor network coverage, poor signal (for example, poor in-building coverage) or cell congestion. Users who have a fixed access connection in an area with poor mobile coverage would be more likely to choose to make a fixed voice call.

Furthermore, for the purposes of the substitutability analysis, it cannot be assumed that the customer will already have available an alternative platform over which to make a call. The question then is the extent to which customers of retail fixed calls (switched and managed VoIP) would switch to making mobile calls in response to a SSNIP in the price of retail fixed calls. It should be assumed that the customer would need to buy a mobile subscription in order to make the call, and that this would mean that the price of

³⁵ Total fixed voice originated minutes have fallen 28% from around 437 million minutes in 2015 to 314 million minutes in 2017.

the ability to make a mobile call would be considerably higher than the price of the call itself. In reality, in Jordan, data provided on fixed and mobile penetration suggest that most end users who have the fixed access required to make a fixed voice³⁶ call are likely to also have a mobile, and the ability to make a mobile call,³⁷ so users can compare the price of making the call. However, in practice, it is not straightforward to compare the pricing of fixed and mobile calls because both are normally packaged with access, and the bundles themselves are not necessarily comparable – for example, the bundle may or may not include free minutes, reduced rates for certain categories of number called, reduced rates for certain calling destinations and so on. A comparison of out-of-bundle pricing is not particularly useful either, because it tends to reflect the marginal calls which are made.

In any case, usage patterns in other jurisdictions indicate that a caller will choose how to make a call depending on category of number called, perceived cost and convenience. This would suggest that, for most users, fixed and mobile calls are complementary rather than substitutes, in that a user who has access to both will use either option depending on circumstance.

Supply side substitution

It is unlikely that a mobile operator would switch to supply retail FACO in response to a small but significant price increase in FACO because of the required investment in fixed infrastructure.

All of the mobile operators in Jordan have rolled out fixed access infrastructure, and so operate parallel infrastructures, suggesting that, from a supply-side perspective, fixed and mobile access and call origination are seen as complementary products rather than substitutes.

Conclusion

Retail FACO and retail mobile access and call origination are not in the same market.

³⁶ As noted above, all retail fixed access sold in Jordan is bundled with a calls package, so all purchasers of a fixed access line can make fixed voice calls.

³⁷ Note that the converse is not true – not all users who can make a mobile voice call will be able to make a fixed voice call.

Is fixed LTE access and call origination in the same market as retail FACO (including PSTN, ISDN and fibre access, switched calls and managed VoIP)?

Demand side substitution

Fixed LTE access would allow the customer to access a network from a fixed location and has similar functionality and pricing to copper and fibre services. The customer of fixed access over copper or fibre would be able to access a similar range of services over a fixed LTE connection. A customer of fixed access over copper or fibre would find fixed access over LTE to be a good substitute.

Voice services provided over Fixed-LTE would be a form of managed VoIP and, for reasons outlined above, could be considered to be a reasonable substitute for switched calls.

Supply side substitution

Fixed LTE offers an alternative access infrastructure to access offered over copper and fibre, and there would be no reason for a supplier of fixed LTE to switch to provide a different platform in response to a SSNIP in access offered over copper and fibre.

Conclusion

Based on demand side substitution, Fixed-LTE (FBWA) access is in the same FACO market as access and call origination via copper and fibre networks.

Are domestic and international calls in the same market?

As the previous review differentiated between domestic and international calls, the TRC has considered whether this differentiation is still valid.

Demand side substitution

All fixed operators in Jordan are licensed to provide services on a national basis and all fixed operators set uniform charges for fixed telephony services across Jordan. Therefore, for calls to all numbers within Jordan, there is a single market for domestic calls.

At the highest level, domestic and international calls cannot be considered demand side substitutes, because a caller would not switch to making an international call instead of

a domestic call in response to a SSNIP. However, an end user is likely to expect to be able to make calls to all destinations from their fixed line and therefore might consider the full 'basket' of calls before switching to an alternative operator.

For a customer of retail fixed calls, the cost of calling a domestic number differs from the cost of calling an international number. However, this reflects tariff structures that take into account the higher transit and termination costs associated with international calls, rather than indicating separate product markets.

The TRC notes that some retail customers choose to make certain international calls via prepaid calling cards. This does not necessarily indicate the existence of a separate market for international calls, because it is not clear that such customers would make *all* international calls via calling cards, and also the volume of calls made via calling cards is small and declining. A number of international calls are still made not using calling cards, as demonstrated by fixed origination minutes by call type shown in Section III.3.3 above.

Supply side substitution

A supplier of fixed domestic calls could readily switch to providing fixed international calls (and vice versa). The initial phase of a retail call involves the same network equipment regardless of the destination of the number called. All providers of call services must interconnect either directly or indirectly with other providers of call services in order to offer a calls service in the first place, and this involves routing and handing over originated calls (if not on-net) for transit or termination. Therefore, a calls service provider that has the facilities in place to offer one type of outbound call is generally well-placed to offer all outbound calls. This suggests a high degree of supply-side substitutability.

However, there may be some exceptions to this typical situation, for example where a supplier of international calls only might struggle to switch quickly and with little cost into providing domestic call services. Doing so would depend on being able to interconnect with other providers of call services within Jordan. At present, all fixed network operators are providing both domestic and international calls to retail customers on their network. International-only calls via calling cards are offered by some operators, but the small and declining volume of these calls means that they are unlikely to have a material impact on the analysis.

While the initial phase of a retail call may be similar to all destinations, the costs associated with transiting and terminating the call will differ, and this is reflected in the variation in retail prices.

Conclusion

Domestic and international calls belong to the same FACO market.

Are calls to all types of numbers in the same market?

Demand side substitution

A customer of retail fixed calls is able to call a range of categories of numbers, including fixed geographic (local or long distance), mobile numbers, and non-geographic numbers such as those associated with calls to service providers.

Even if these call types are unlikely to be functional substitutes (a call to one number cannot readily be substituted by a call to a different number), access providers typically offer local and national voice services, and the ability to make calls to mobile and non-geographic numbers as a service cluster. Customers purchase a cluster of calls from their supplier. As such, there do not appear to be distinct purchasing patterns for fixed calls to different types of numbers. Accordingly, the individual services that constitute a retail service cluster can be considered to fall within one and the same relevant product market.

Supply side substitution

A supplier of national long distance calls, calls to mobile or calls to non-geographic numbers would likely respond to a SSNIP on the price of fixed calls to local numbers as such potential entrants will likely have access to the necessary wholesale inputs (through existing access and interconnection arrangements) needed to provide these services.

Conclusions

Calls to all types of numbers are in the same market.

Are business and residential customers in same market?

Demand side substitution

In terms of functionality, retail FACO (including PSTN, ISDN, copper and fibre) supplied to a residential customer is the same as retail FACO supplied to a business customer. There is limited differentiation in terms of pricing and marketing between access targeted at residential and business customers in Jordan. For example, a residential offer of Orange fixed line with unlimited local and national calls with discounted rates for some international calls (but no broadband included in the bundle) is priced at [١٢.٢٦٠ JD] per month³⁸ whilst similar small business fixed line packages (with no broadband in bundle, but including unlimited local and national calls plus discounted rates for international calls) are priced from 12.28 JD per month³⁹.

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 retail FACO services and a small business user.

In the last review, the TRC considered whether differing contractual terms would suggest that services to business and residential customers belong to separate markets. The TRC concluded that, although contracts for business and residential customers may contain different provisions, this would not act as a constraint on the supplier of either business or residential services. In the TRC's view, this remains the case.

Supply side substitution

A supplier that currently supplies business FACO could easily switch to supply FACO to residential customers, at negligible cost and in the short term, and vice versa because there is no requirement for additional investment, and the products are functionally similar.

Conclusion

³⁸ See Orange postpaid paid fixed line unlimited bundle: <https://eshop.orange.io/en/fixed-line/fixed-postpaid-lines/alo-unlimited-bundle.html>

³⁹ See Orange small business fixed line offer Pro Alo 1: <https://www.orange.io/sites/sme/en/fixed-line/pages/fixed-offers-with-minutes.aspx>

Despite possible contractual limitations to demand side substitution, the conclusion is that retail FACO supplied to business and residential customers belongs to one and the same market, given that the services are functionally equivalent.

Summary of conclusions on the relevant product market

The retail FACO market consists of the provision of a physical connection that allows a user to connect to the public telecommunications network. The market includes access and voice call origination, because these products cannot be bought separately.

- The market includes both pstn and isdn access;
- The market includes access over copper networks, access over fibre networks, and access over fixed lte;
- The market includes voice calls originated over switched networks and managed voip;
- Retail mobile access and call origination is not part of the faco market;
- (Fixed) calls to all types of numbers form part of the same faco market
- Domestic and international calls are part of the same market;
- The market is not differentiated by type of customer – both residential and business customers fall within the same market.

5.3 GEOGRAPHIC MARKET DEFINITION

For a customer of retail FACO, the same PSTN and ISDN fixed retail copper-based products are available throughout Jordan. Coverage of FBWA is increasing and FBWA availability is wider than fibre. While availability of fibre based access is limited to areas of fibre roll-out, all operators currently offering fibre based access expect to roll out further,⁴⁰ so there is no distinct boundary between fibre and non-fibre areas that will be stable over time. The growth of alternative networks may mean that there is potential for

⁴⁰ Discussions with operators during this review are supported by public notices regarding operator roll-out plans including Orange's recent continued expansion of its fibre network into the southern regions. This rollout forms part of its current five-year development strategy, 'Essentials 2020' which aims to develop the nation's IT sector and increase the availability and usage of internet in the Kingdom. See: <https://www.telegeography.com/products/commsupdate/articles/2018/04/18/orange-jordan-improves-networks-in-southern-regions/>

localised competitive pressures to emerge at the retail level. It would be expected that any new infrastructure development would tend to be in the more densely populated urban areas, and that operators would tend to benefit from economies of scale and density in such areas. However, there has been no obvious competitive response in areas where there are alternative networks, in that neither the incumbent nor alternative operators have introduced any geographic variation in products or pricing to account for more or less competitive conditions.

The pricing of retail FACO is uniform across the whole country and suppliers of retail FACO are licensed to provide services across the whole country.

The TRC has considered the extent to which 'exclusive' agreements set up by property developers or other commercial interests could lead to a finding of sub-national geographic markets. The TRC's understanding is that exclusive agreements have been entered into by most of the licensed operators, but that there is no standard form for these agreements. In general, the agreement would grant one operator the exclusive right to provide access services to retail customers within a specified area, and customers would be obliged to purchase access services from that operator. A retail customer who wanted to purchase services from a different operator would need their preferred operator to negotiate access from the exclusively contracted operator.

The exclusive agreement would usually have been entered into following a competitive tender amongst operators. The contract between the property developer/owner and the telecom operator would be 'exclusive' in the sense that the property/developer owner would not contract directly with another operator. However, the contracted operator would be free to engage in commercial agreements with any other operators or service providers. In practice, this is likely to mean that the contracted operator would have an influence over the prices and terms and conditions for services provided by other operators within the exclusive area, through the terms of access it grants.

The definition of a geographic market requires the identification of stable and persistent boundaries, within which the conditions of competition are appreciably different from those in neighbouring areas. Exclusive contracts are by their nature transitory – agreements can be renegotiated, often have stipulated end dates and so on. In this context, it is difficult to argue that stable and persistent boundaries can be identified. In the retail market, a customer would not be barred from purchasing services from an operator other than the contracted operator, but may not be able to secure desirable terms and conditions. However, there will be some indirect constraint on retail prices because it would not be in the property developer's interest for retail prices to be higher in its exclusive area than in other areas. In other words, although the property developer

is granting an operator 'exclusive' rights, it is not likely to accept that end users are charged a premium as a consequence of this.

Therefore, the TRC concludes that the existence of exclusive arrangements does not define any boundaries of sub-national geographic retail markets because the arrangements are transitory, and do not give rise to appreciably different conditions of competition. The TRC's preliminary view is that the outcome of exclusive arrangements would be reflected in the market shares of operators, and would be considered further in the competition assessment. It is recognised that additional issues arise in the wholesale market, and these are addressed in the consideration of the wholesale access market.

Conclusion

The geographic market for retail FACO is Jordan.

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

VI. Retail market for fixed broadband services

6.1 INTRODUCTION

The previous market review defined a market for retail fixed broadband that included fixed broadband access (connection) and Internet connectivity as two components of a single, integrated service. It included all fixed broadband access technologies offered and utilized in Jordan (i.e., xDSL, FBWA, FTTH) at all speeds and contention ratios offered.

However, the approach set out in section V to defining a retail fixed access market in terms of the physical link between the end user and the public telecommunications network means that the access part of the broadband service is already covered in the definition of the retail fixed access and call origination market (FACO). Therefore, the consideration in this section is with the broadband access service provided over the fixed connection. This is bundled by some (but not all) operators with physical access, and may be bundled with other retail services, such as fixed voice calls. The product is

considered below irrespective of whether it is bundled with another retail product or supplied as a standalone service.

6.2 PRODUCT MARKET DEFINITION

At the time of the first data request, the most prevalent retail broadband product was xDSL broadband⁴¹, accounting for around 55% of all active retail broadband lines⁴² by access technology. The second data request indicated that xDSL broadband was no longer the most prevalent retail product, with a significant increase in the uptake of fibre based broadband (increasing from 7.5% to 18.5% between 2017 and 2018), and an increase in FBWA broadband (from 37.4% to 41.8% between 2017 and 2018)⁴³. The TRC notes that the most recent data collected provides an interesting insight into how the retail broadband market is changing, but cannot yet be considered to indicate an established pattern. However, the TRC considers that, even although it is no longer the most used retail broadband product, as xDSL broadband is the retail broadband service offered over the ubiquitous fixed access network, it continues to represent an appropriate starting point for the analysis. The TRC has assessed whether there are any substitutes that should be included in the same market as broadband provided over xDSL based on an assessment of demand side and supply side substitutability. In particular, the following questions are considered:

- Should broadband services provided over xDSL and fibre be part of the same market?
- Do broadband services provided over Fixed Broadband Wireless Access (FBWA) belong to the same market as broadband services provided over xDSL and fibre?
- Should retail broadband offerings provided at all speeds be included in the same market?
- Do retail broadband offerings used by business and residential customers form part of the same market?
- Are leased line services part of the same market as retail broadband services?

⁴¹ xDSL services include ADSL and VDSL. Typically xDSL service providing speeds of 40 Mbps or more is VDSL with other xDSL services being ADSL.

⁴² Combining residential and business broadband lines.

⁴³ See III.3.4

- Are mobile data services (provided over 3G and 4G) part of the same market as fixed broadband services?

Should broadband services provided over xDSL and fibre be in the same market?

Demand side substitution

A customer who purchases broadband delivered over xDSL is likely to find that broadband provided over a fibre connection is a good substitute in terms of product functionality. The product characteristics and intended use of broadband provided over fibre are broadly similar to those of broadband provided over copper, allowing for (at least) the same speeds and an ‘always on’ capability.

Exhibit VI.1 compares the service offerings⁴⁴ over xDSL and fibre in terms of advertised maximum download speeds and any restrictions on the data allowance. The exhibit also shows the average, maximum and minimum prices for broadband tariffs (estimated monthly price⁴⁵) with tariffs grouped by technology type:

	Advertised download speeds	Caps on download allowance	Average monthly price (JD)	Maximum monthly price (JD)	Minimum monthly price (JD)
Broadband services provided over xDSL ⁴⁶	4 Mbps, 24 Mbps	Unlimited (with fair usage conditions)	16.13	21.83 (@ 16 Mbps)	11.42 (@ 24Mbps)

⁴⁴ Data compiled on over 40 different tariffs being offered by the main retail broadband providers in Jordan including: Orange, Umniah, Zain, Vtel, Damamax, Mada and JCS.

⁴⁵ Estimated monthly price is calculated by considering the total cost of the package over the specified term (e.g. where the offer requires a 1, 2 or 3 year commitment the total cost is calculated over that period) including any specified connection/set-up fees and introductory offers (e.g. discounted price for the first few months). The estimated monthly price is then calculated as the total cost divided by the number of months in the minimum term period. If there is no minimum term specified, then estimates are based on an assumed 18 month subscription (including connection/set-up charge and then divided by 18 to get a comparable “per month” figure), as most fixed term offers range between 1 and 2 years.

⁴⁶ Note that xDSL packages are provided by Orange. These are often bundled with telephony. Therefore, to estimate the price of “standalone” broadband we deduct the price of a basic fixed plan, which is approximately 8 JD for a 1 year commitment and 7 JD for a 2 year commitment. xDSL connections with a speed of 40 Mbps or more are considered as VDSL

	Advertised download speeds	Caps on download allowance	Average monthly price (JD)	Maximum monthly price (JD)	Minimum monthly price (JD)
Broadband services provided over Fibre	50 Mbps, 60 Mbps, 75 Mbps, 80 Mbps, 100 Mbps and increasing up to 500 Mbps	Unlimited (with fair usage conditions)	39.05	66.98 (@1000Mbps)	18.00 (@ 50 Mbps)

Exhibit VI.1 Comparison of broadband service offerings provided over xDSL compared with those provided over a fibre connection [Source: Axon-DotEcon]

In terms of achievable speeds, there is an overlap between the speeds available in the mid-high end of advertised xDSL speeds and the bottom end of fibre. Furthermore, the monthly cost of broadband offered over each technology overlaps, allowing consumers to move between these technologies to achieve faster download speeds, while maintaining the average monthly cost of their broadband service. Note that the indicative price for xDSL does not include the cost of access, whereas access is included in the fibre price. This means that the cost of retail access should be added to the xDSL price for comparison.

Given similarities in functionality and usage, a hypothetical monopolist currently offering copper-based broadband would be unlikely to sustain a profitable SSNIP without a sufficient number of customers switching to broadband provided over fibre for the SSNIP to be unprofitable (with the qualification that this applies only where fibre is available).

It is suggested that substitution is likely to be asymmetric due to the higher upload/download speeds available over fibre. While a customer of copper-based broadband may find fibre based broadband to be an effective substitute (subject to availability and price), the opposite is unlikely to be true.

Supply side substitution

Supply side substitution considers whether, absent SMP regulation, a hypothetical monopolist offering a broadband service over fibre would switch in response to a SSNIP to offer xDSL. Given the asymmetric demand side substitution noted above, supply side substitution would not be relevant. In any case, it would be unlikely that a supplier of fibre based broadband would switch to offer xDSL because any investment in a declining technology risks being stranded.

Conclusion

xDSL and fibre-based broadband are in the same market.

Should broadband provided over Fixed Broadband Wireless Access (FBWA) be in the same market as xDSL and fibre based broadband?

Demand side substitution

The TRC has compared product characteristics and prices, and comes to the preliminary view that sufficient customers of xDSL or fibre based broadband would find broadband provided over FBWA to be a substitute to render a SSNIP in the price of xDSL/fibre broadband unprofitable.

In terms of product characteristics, an assessment of download speeds indicates that FBWA offers are available with advertised download speeds of 4 Mbps, 6 Mbps and 8 Mbps. This overlaps with speeds available on xDSL, but not with speeds available over fibre.

The majority of FBWA offers have a maximum usage limit on data usage (compared to the often “unlimited” data allowance on xDSL), but these were typically in the range of 1000-2000GB per month, which may be comparable with ‘fair usage’ policies on xDSL.

The Exhibit VI.2 below shows the average, maximum and minimum prices for broadband tariffs (estimated monthly price⁴⁷) with tariffs grouped by technology type.

⁴⁷ Estimated monthly price is calculated by considering the price of the package over the specified term (e.g. where the offer requires a 1, 2 or 3 year commitment) including any specified connection/set-up fees and introductory offers (e.g. discounted price for the first few months). The estimated monthly price is then calculated as the price divided by the number of months in the minimum term period. If there is no minimum term specified, then we base our estimates on an assumed 18 month subscription (including connection/set-up charge and then divided by 18 to get a comparable “per month” figure), as most fixed term offers range between 1 and 2 years.

By technology type	Average monthly price(JD)	Maximum monthly price(JD)	Minimum monthly price(JD)
Broadband services provided over FBWA	19.73	30.00 (@ 8 Mbps)	8.00 (@ 150 Mbps)
Broadband services provided over xDSL ⁴⁸	16.13	21.83 (@ 24 Mbps)	11.42 (@ 24Mbps)
Broadband services provided over Fibre	39.05	66.98 (@1000Mbps) ⁴⁹	18.00 (@ 50 Mbps)

Exhibit VI.2 Comparison of broadband service pricing by access technology type [Source: Operators’ websites]

The FBWA and fibre prices include the price of retail access, while the xDSL price does not. Price comparison suggests overlaps between xDSL and FBWA, but not between FBWA and fibre broadband.

Based on product characteristics and price, the TRC considers that FBWA and xDSL are demand side substitutes. Given that xDSL and fibre are also substitutes, FBWA and fibre broadband services could be considered in the same market, through a chain of substitution if their respective pricing is constrained by substitution to xDSL.

Looking forward, there might be advancement of fixed technologies in Jordan, notably the wider range of speeds offered over xDSL and the rising number of fibre connections (particularly in dense urban areas), which could further improve the capabilities and service quality of fixed broadband relative to those provided over FBWA. However, FBWA may also continue to improve in the short term. Technological improvements in 4G LTE (and the possibility of 5G in future), might lead to improvements in spectral efficiency (reducing the need for download capacity limits) and improvements in download speeds therefore making services more comparable with the speeds obtained

⁴⁸ Note that xDSL packages are provided by Orange. These are often bundled with telephony. Therefore, to estimate the price of “standalone” broadband we deduct the price of a basic fixed plan, which is approximately 8 JD for a 1 year commitment and 7 JD for a 2 year commitment.

⁴⁹ The highest price is 66/98 JD for a 1000 Mbps offer from Orange Fixed.

over a fixed network (with some mobile operators advertising 4G speeds of up to 250 Mbps⁵⁰).

Supply side substitution

An operator currently providing FBWA would only be able to also offer xDSL or fibre broadband if it already had access to appropriate fixed infrastructure. Absent regulation, this would mean that the operator would need its own fixed infrastructure. The TRC notes that several operators already provide both xDSL/fibre broadband and FBWA broadband. For example, Umniah and Zain offer fixed broadband over fibre and also offer Fixed-LTE services.

Conclusion

The TRC's preliminary conclusion is that FBWA broadband is in the same product market as xDSL broadband and, through chains of substitution arguments, retail fixed broadband services provided over FBWA, xDSL (ADSL and VDSL) and fibre are all part of the same market. The TRC notes that if retail broadband offered over FBWA had been considered as the starting point for the analysis, the preliminary conclusion would be the same, and that retail broadband offered over FBWA, xDSL and fibre would fall within the same product market.

Are Mobile broadband services part of the same market as fixed broadband?

Demand side substitution

The TRC has considered whether mobile retail broadband services are in the same product market as fixed retail broadband services, including xDSL, fibre and FBWA.

Mobile data offered as part of a mobile subscription plan are considered in the parallel consultation on the mobile markets, and will not be discussed here. However, mobile broadband can also be purchased as a standalone retail solution. Such mobile broadband services are marketed as distinct services, separate from the cluster of mobile services, advertised as a standalone 'broadband' connection for 'personal' or

⁵⁰ Orange is advertising its 4G+ network with speeds "up to 250Mbps". See: https://www.orange.jo/en/pages/4g-plus.aspx?utm_source=orangejo&utm_medium=link&utm_campaign=homepage&utm_term=homepage&utm_content=homepage

'on-the-go' use, often accessed with the use of a dongle or "MiFi" device which allows for multiple devices to connect simultaneously.

Considering functional characteristics, retail mobile broadband services are not typically advertised with a guaranteed or promised download speed in the same way as fixed retail broadband offers over xDSL and Fibre. All packages have strict data usage caps (with the exception of one Zain offer, the highest allowance is 300 GB per month), with users facing additional prices or slower speeds if they approach or exceed their download allowance. Given the generally lower speeds and strict data caps, a user would not be likely to use mobile broadband for data intensive applications (e.g. Netflix).

The TRC has compared data allowances and subscription prices between mobile broadband and FBWA (as FBWA is likely to be the most similar fixed broadband service to mobile). Exhibit VI.3 below shows that personal, standalone mobile broadband packages tend to have a much tighter data allowance, with prices being higher than FBWA equivalents with a similar download limit.⁵¹ The exhibit clearly shows the lack of overlap in terms of product characteristics and pricing.

⁵¹ Note that this figure excludes one package offered by Zain (4G/LTE 1000) which provides a download limit of 1000 GB per month. This represents an outlier when compared to all other personal mobile broadband data offerings identified.

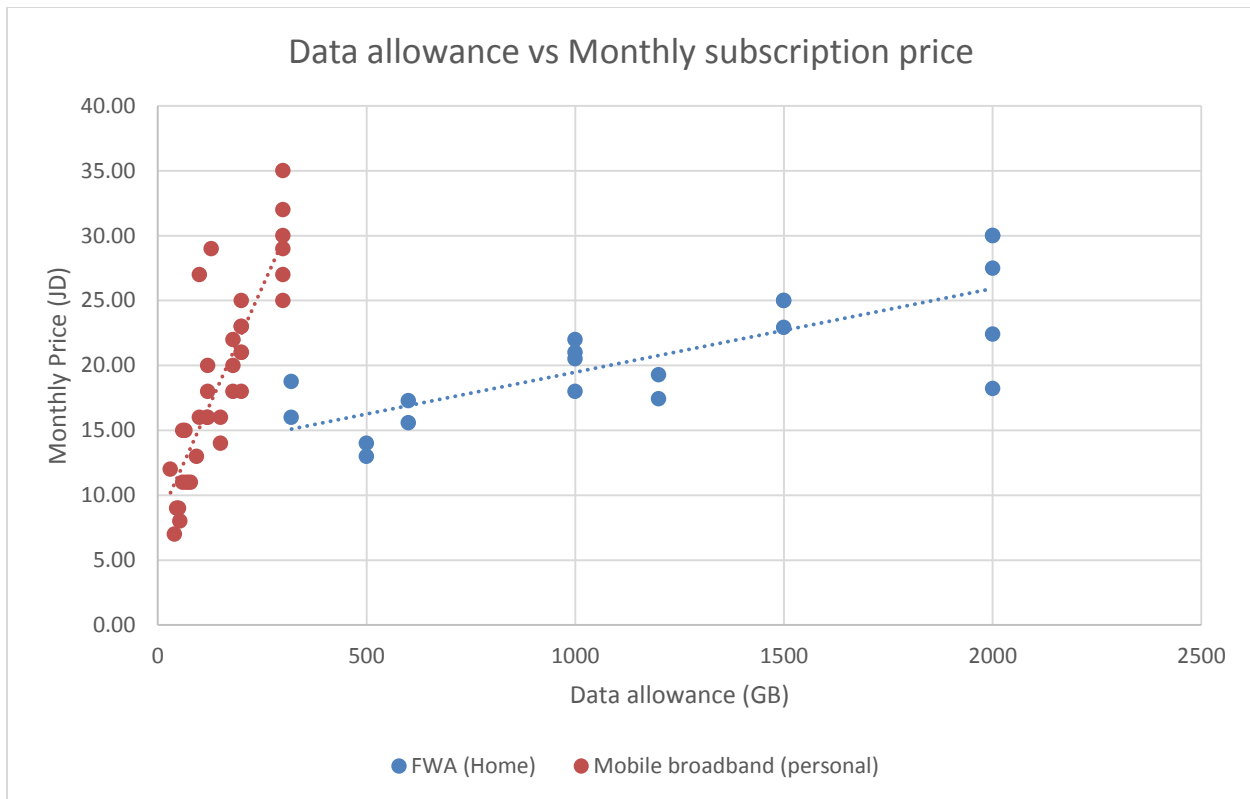


Exhibit VI.3 Comparison of data allowance and monthly subscription prices of broadband services by fixed and mobile [Source: Operators’ websites]

Overall, retail mobile broadband and fixed broadband services are typically more likely to be complementary, given the differences in service quality/speeds, caps on data usage, and the location-independence of mobile broadband.

Supply side substitution

An operator currently providing retail fixed broadband services would only be able to also offer retail mobile broadband if it already had access to sufficient radio spectrum to provide the service. Otherwise, it would not be able to begin supplying the service in the short term.

However, in practice, several operators providing fixed broadband services in the retail market also have access to mobile broadband spectrum and are providing 4G services. For example, all MNOs already offer fixed broadband over fibre as well as mobile broadband.

Conclusion

The TRC's preliminary conclusion is that mobile broadband is not in the same market as fixed broadband provided over FBWA, xDSL, and Fibre.

Should retail broadband with varying download speeds be included in the same market?

Demand side substitution

The TRC has assessed whether retail broadband services offered at different speeds fall within the same market.

Exhibit VI.4 below shows the average, maximum and minimum monthly price for (residential) broadband services⁵² provided at different speeds.

Headline speed	Average	Maximum	Minimum
<= 10 Mbps	19.32	30.00	13.00
10 Mbps < X <=30 Mbps	16.46	21.83	11.42
30 Mbps < X <=50 Mbps	24.73	28.00	18.00
50 Mbps < X <=100 Mbps	32.69	36.00	25.00
100 Mbps < X <=200 Mbps	27.30	45.00	8.00
> 200 Mbps	53.10	66.98	35.00

Exhibit VI.4 Comparison of monthly cost of residential broadband by headline advertised download speed [Source: Operators' websites]

For each broadband speed, there is an overlap with the range of costs associated with other, similar headline speeds. This result indicates that it is possible for a subscriber to switch to a faster broadband service for a similar or cheaper price. Therefore, if the

⁵² Estimated monthly price is calculated by considering the price of the package over the specified term (e.g. where the offer requires a 1, 2 or 3 year commitment) including any specified connection/set-up fees and introductory offers (e.g. discounted price for the first few months). The estimated monthly price is then calculated as the price divided by the number of months in the minimum term period. If there is no minimum term specified, then we base our estimates on an assumed 18 month subscription (including connection/set-up charge and then divided by 18 to get a comparable "per month" figure), as most fixed term offers range between 1 and 2 years.

price of a broadband product offered at one speed was to increase by a small but significant amount, customers would be able to switch to an alternative product to retain the original price or to receive a higher broadband speed at the same (higher) price. While substitution from top to bottom of the speed ranges would be unlikely, there is substitutability along the chain, and so all speeds are in the same market.

Conclusion

FBWA, xDSL and fibre broadband subscriptions at all speeds all fall into the same retail market for fixed broadband in Jordan.

Do retail broadband offerings used by business and residential customers form part of the same market?

Demand side substitution

The broadband services on offer to business and residential users are functional substitutes given that they can both be used to provide the same services to the end user. The TRC has assessed service offerings in terms of technology, speeds and, where available, pricing. Examples are included in the exhibit below:

	Tech and speed	Price per month for residential (JD)	Price per month for business (JD)
Orange Fixed	ADSL 4 Mbps	13-16	
	ADSL 6 Mbps	N/A	17-28
	ADSL 24 Mbps	11 -22	22 - 34 ⁵³
	VDSL 40 Mbps	N/A	N/A
Orange Fixed	Fibre 60	35	N/A ⁵⁴
	Fibre 100	N/A	40
	Fibre 200	41	N/A
	Fibre 300	N/A	50-70

⁵³ Orange Business ADSL offers report also providing Free caller ID and call forwarding services and “secure internet connection”.

⁵⁴ Orange Fibre also includes: “Content filtering level public service”, and “fixed line with a special number (Pro Alo 1)”. Also note “secure internet connection”.

	Tech and speed	Price per month for residential (JD)	Price per month for business (JD)
	Fibre 600	N/A	70-90
	Fibre 1000	67	
Damamax ⁵⁵	Fibre 50	26	84
	Fibre 100	36	129
	Fibre 300	46	N/A
	Fibre 500	56	N/A
V-Tel ⁵⁶	Fibre 10	N/A	40
	Fibre 25	N/A	50
	Fibre 50	N/A	60
	Fibre 100	36	N/A
	Fibre 200	N/A	N/A
	Fibre 300	N/A	N/A
JCS	Fibrelink Net 50	18 – 28	N/A
	Fibrelink Net 100	25 – 35	N/A
	Fibrelink Net 300	N/A	60-90
	Fibrelink Net 500	N/A	100-125
	Fibrelink Net 1000	35 - 45	150-175

Exhibit VI.5 Example fixed broadband offerings in Jordan [Source: Operators’ websites]

Although there may be some minor differences in terms of pricing and marketing between offers targeted at business or residential customers, there is no significant difference in products on offer, and there are options on the market that would allow a consumer to switch to an equivalent service with limited price difference.

Customers will generally choose the tariff that best meets their needs in terms of the advertised download speeds and service quality aspects, such that there may be some overlap between a residential customer buying fixed broadband services and a small business user. Although it is not likely that a customer would switch from a highest specification business package to the lowest specification residential package, the

⁵⁵ DAMAMAX residential is FTTH, DAMAMAX businesses is FTTB and then distributes the internet connection to your offices and other building tenants providing a max of 200 Mbps.

⁵⁶ V-Tel website does not make any clear distinction between pricing of retail or business fibre broadband. It states it provides business and retail offerings but only provides one price list for V-tel fibre.

services are sufficiently similar that there may be switching between them (for those offering equivalent or similar speeds) in relation to a small but significant price increase of a hypothetical monopoly provider.

Supply side substitution

A supplier offering residential broadband could easily switch to provide business broadband, and vice versa. The services are provided over the same underlying network and providers of broadband services usually offer both residential and business offerings.

Conclusion

Business and residential retail fixed broadband services do not belong to separate markets.

Are leased line services in the same market as retail broadband services?

Demand side substitution

In terms of functionality in the retail market, there is some overlap in certain product characteristics between the lower specification of leased lines and the higher specification of broadband services, particularly those aimed at business customers. There are very specific functional characteristics associated with leased lines that differentiate them from broadband services. Leased lines offer dedicated capacity, with low or no contention, higher levels of security, and higher SLAs when compared with broadband services. Where these features are valued by potential customers, it is unlikely that a leased line customer would choose to switch to broadband.

Information on pricing of retail leased lines is limited, largely because it is often bespoke to an individual customer. However, it can be assumed that the retail price for a leased line would be no lower than the cost of the required wholesale inputs, and so wholesale prices can give an indication of the price differential. For example, a wholesale “fast Ethernet” (100 Mbps) leased line terminating segment starts at around 815.6 JD/month.⁵⁷ A retail margin of 15% would translate into a retail price of 937.9 JD. This is

⁵⁷ Based on wholesale monthly rental price for leased lines trunk and terminating services. Taken from TRC, “Regulatory Decision on Charges for Fixed Interconnection Services Based on TSLRIC+ Models”, Board of Commissioners Decision No. 8-12/2017 issues on 15/10/2017.

compared to the most expensive business-broadband offer provided over fibre being around 100 JD/Month (for 500 Mbps).⁵⁸

With this difference in pricing, it is unlikely that a customer of broadband provided over retail fixed access would switch to broadband over a leased line in response to a SSNIP in retail fixed broadband – the price differential is too great.

Supply side substitution

A supplier of leased lines would not be likely to switch to providing retail broadband services over xDSL, FBWA or fibre unless it already had appropriate infrastructure.

Conclusion

Retail broadband provided over leased lines is not part of the same product market as retail broadband provided over fixed retail access.

Summary of conclusions on the relevant product market

- Broadband services provided over xDSL and fibre are in the same market;
- Broadband services provided over FBWA are part of the same market as xDSL and fibre based broadband services;
- Mobile broadband services are not part of the same market as fixed broadband (FBWA, xDSL, fibre);
- Retail broadband with varying download speeds should all be included in the same market;
- Retail broadband services used by business and residential customers are both part of the same market;
- Broadband services provided over leased lines do not belong to the same market as retail broadband services.

⁵⁸ For example, the VTEL FIBER products (which do not differentiate between residential and business offers) lists its 300 Mbps fibre service at 150JD/Month. See: http://www.vtel.jo/user_site/site/View_Article.aspx?type=2&ID=672

6.3 GEOGRAPHIC MARKET DEFINITION

There is no geographic differentiation in broadband services, and the same products are available throughout the country, limited only by the availability of alternative access platforms.

Operators generally offer national pricing. There are some exceptions,⁵⁹ and there are obligations or incentives for fixed LTE operators to provide services to some Governorates at lower prices than elsewhere in order to obtain exemption from spectrum annual fees. However, the differentiation is clearly not due to competitive pressures, because the most expensive offer is in the part of Amman where there is most provision of broadband. If differentiated pricing was a consequence of competitive pressure, it would be expected that prices would be lowest in the presence of alternative operators, not that they would be highest.

Conclusion

The geographic market for retail fixed broadband services is Jordan.

Q2 Do you agree with the TRC's preliminary conclusions regarding the relevant product and geographic market definitions for retail fixed broadband services?

6.4 SUMMARY OF PRELIMINARY RETAIL FIXED TELECOMMUNICATIONS PRODUCT AND GEOGRAPHIC MARKET DEFINITIONS

Product market	Geographic market
Retail Fixed Access & Call Origination	national
Retail Broadband	national

⁵⁹ For example, West Amman 20 JD/month; East Amman, Irbid & Zarqa 15 JD/month; other Governorates 10 JD/month. <https://eshop.orange.jo/en/internet/adsl-offers.html> 20.08 18

VII. Wholesale Local Access (WLA) market

7.1 INTRODUCTION

The previous market review did not define a single market for wholesale access, but rather wholesale markets specifically addressing retail voice calls (markets for call origination, transit and termination) and retail broadband (wholesale physical network internet access and wholesale broadband access). As discussed in the context of the retail access market, technological developments since the time of the last review suggest that it may be more appropriate to now consider a wholesale market addressing retail fixed access that is neutral in terms of the particular services accessed, and which focuses on the connection between a fixed location and the public telecommunications network. This recognises that all customers of retail fixed access can access both voice and broadband services, and that the importance of each service will vary amongst customers.

A wholesale access product which addresses the retail fixed access market as defined would be likely to consist of physical or passive infrastructure products enabling the transmission of the range of voice and internet services demanded by retail customers. It is not likely that a wholesale local access market would exist absent regulation, because providers of services over local access networks are usually vertically-integrated, and are likely to have a strong incentive to provide their own retail services, rather than supply wholesale products to other operators who would then compete against them in the retail market.

In Jordan, the only example to date of a wholesale access product is Local Loop Unbundling (LLU). Since the last market reviews, Orange has made a Reference Offer for LLU available, but no other operators have purchased the product to date. An example of another potential wholesale product addressing the retail fixed access market would be some form of wholesale line rental (WLR), which would allow the wholesale purchaser to rent the physical connection from an end-user's premises to the public telephone network, and so provide a combined access and calls (but no broadband) retail offering. (This is provided for illustration, because to date, there has been no interest shown in such a product in Jordan).

Operators with access infrastructure supply notional wholesale access to themselves in order to offer a retail fixed access product. This notional self-supply would form part of a wholesale access market where self-supply could readily be switched to provide a wholesale service for third parties.

The consideration of the wholesale market examines first of all these products that may pose a direct constraint on a hypothetical monopolist of wholesale fixed access services. A direct constraint would come from an alternative wholesale product. The assessment also takes into account products and services that may pose an indirect constraint. This could be where the presence in the retail market of a vertically-integrated operator (not considered as a direct constraint) is sufficiently strong to exert a competitive constraint on a hypothetical monopolist's pricing of wholesale access.

7.2 PRODUCT MARKET DEFINITION

LLU is considered to be the focal product, and a consideration of a wholesale access market includes the following questions:

- Would virtual unbundled local access (VULA) products provided over a fibre network fall within the wholesale local access (WLA) market?
- Would WLA products offered over an FBWA network fall within the WLA market?
- Would WLA products offered over platforms not included in the retail fixed access market fall within the WLA market?
- Would a vertically-integrated supplier pose an indirect constraint on wholesale access due to its presence in the retail market?

Would virtual unbundled local access (VULA) products provided over a fibre network fall within the wholesale local access market?

VULA is an active local access service that would be available over a fibre network. In a similar way to LLU, VULA is a wholesale input that allows operators to provide downstream retail services including voice and broadband. The operator purchasing VULA has a high level of control over its retail offering, and can differentiate its products and services.

The previous market review distinguished between physical access products like LLU and non-physical or active access products like Bitstream. The roll-out of Next Generation fibre networks, and developments like VDSL vectoring, call into question the boundary between physical and non-physical access products. With a legacy copper network, LLU typically offers connection at the MDF (Main Distribution Frame), whereas Bitstream connection is provided at higher points in the network, usually at regional or national interconnection points. In a legacy network, it is therefore straightforward to identify wholesale products according to their physical and non-physical nature, and according to the network level at which access is obtained. This is less obvious with fibre networks. Depending on the network architecture, optical fibre may extend from

the MDF (or Optical Distribution Frame) to the retail subscriber's premises, and physical unbundling may not be technically or economically feasible.

The figure below illustrates the difference between access products like LLU and VULA (defined as Wholesale Local Access) and products like Bitstream (defined as Wholesale Broadband Access):

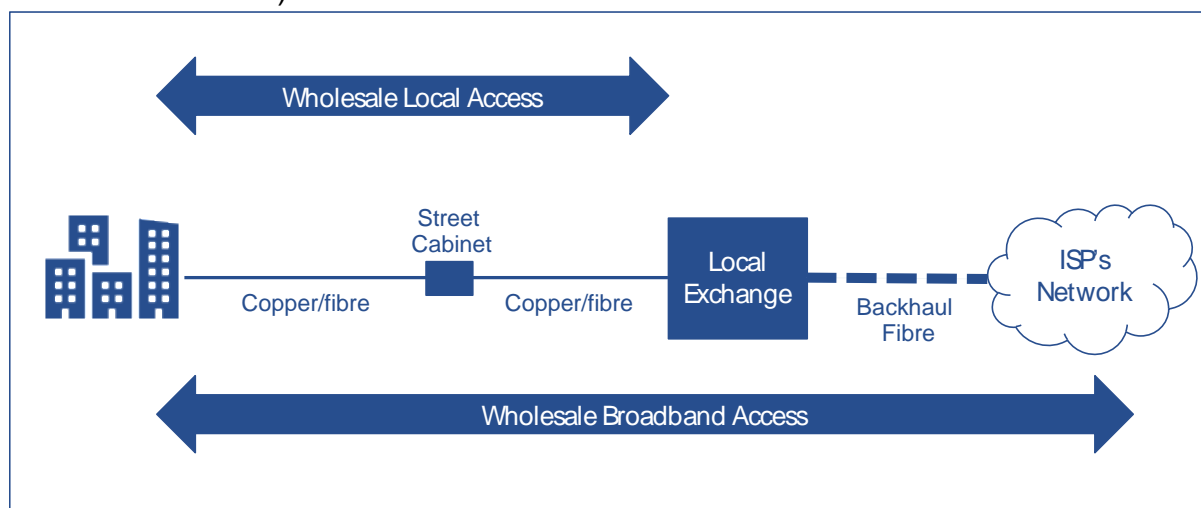


Exhibit VII.1 Wholesale Local Access and Wholesale Broadband Access distinction

[Source: DotEcon-Axon]

The TRC therefore proposes that, when considering the boundaries of the wholesale access market, the focus should be on the functionality and characteristics of the product, rather than on whether or not it can be considered to be a physical or a non-physical product. The European Commission identifies three key characteristics to help with this analysis:

- **Location of the point of handover:** differentiation where traffic is handed over locally, close to the customer or at a regional or national interconnection point;
- **Topology and core transmission features** (particularly contention): some wholesale products are contended and so limit the wholesale purchaser in what retail services can be offered
- **Flexibility:** ability of the wholesale purchaser to differentiate its retail offer.

These characteristics are considered in the substitution analysis below. The TRC notes that there is currently no VULA product available in Jordan, and so the discussion is based on a hypothetical VULA product.

Demand side substitution

A purchaser of LLU would be likely to find that VULA would be a functional substitute, where fibre is available. Generally, the customer handover point for a VULA product is similar to that of an LLU product. The wholesale purchaser has guaranteed and uncontended bandwidth, and has sufficient control over transmission capacity to offer a high degree of control in defining its retail offering. The VULA product is flexible and configurable.

The availability of higher download speeds over a fibre network means that VULA can be used to provide a broader range of services than copper-based LLU, and so substitution is likely to be one way.

Supply side substitution

Supply side substitution would involve a supplier not currently offering a VULA product entering the market in response to a SSNIP in VULA. This would be where an operator who currently had a fibre network would make a wholesale VULA product available in response to a SSNIP in VULA. The TRC considers that it is unlikely that such a wholesale product would be made available, without a regulatory obligation, in the short term and without incurring significant costs. The TRC notes also that fibre networks are currently geographically limited, and that this would limit the number of customers who could demand a VULA product.

The TRC has also considered whether self-supply of a notional VULA product should fall within the WLA market. All owners of fibre infrastructure self-supply a notional VULA product in order to offer retail services. While any constraint that could be imposed would be limited due to the limited availability of fibre networks, in principle, self-supply should be included.

Conclusion

Virtual unbundled local access (VULA) products provided over a fibre network fall within the wholesale local access (WLA) market, given demand side substitutability.

Would WLA products offered over an FBWA network fall within the WLA market?

As retail access provided over fixed LTE (FBWA) falls within the retail fixed market, the TRC has considered whether wholesale access offered over an FBWA network would fall within the WLA market. A wholesale FBWA product is currently available in Jordan,

provided by Mada Communications to Zain.⁶⁰ We understand that this allows Zain to resell Mada's FBWA offering, and so Mada and Zain compete in the retail market.

Demand side substitution

A wholesale purchaser of LLU would be likely to find wholesale products offered over an FBWA network to be a good substitute because the functionality offered would allow the purchaser to provide a similar range of retail products. However, the wholesale purchaser would be limited to areas where FBWA is available.

Supply side substitution

Supply side substitution is likely to be limited because the supply of a wholesale access product depends on the ownership and control of a fixed access network, and this entails high investment costs.

Conclusion

Based on demand side substitution, wholesale access products offered over an FBWA network should be included in the WLA market.

Would WLA products offered over platforms not included in the retail fixed access market (mobile and leased lines) fall within the WLA market?

The retail fixed access market as defined does not include access over alternative platforms including mobile and leased lines. It is the TRC's view that the reasons why it found that retail access over platforms such as mobile and leased lines were not part of the retail fixed access market apply also at a wholesale level. These reasons include a lack of functional similarity and pricing differences. To this should be added, in the case of mobile, the technical infeasibility of a wholesale variant which would be a substitute for a wholesale fixed access product.

For all of these reasons, (notional) wholesale access products offered over platforms not included in the retail fixed access and call origination market (mobile and leased lines) cannot pose a direct constraint in the wholesale access market.

⁶⁰Mada provides FBWA wholesale service to Zain based on the TRC approved interconnection agreement (amended and approved on 3rd of April 2017).

Would a vertically-integrated fixed or mobile operator pose an indirect constraint on wholesale access due to its presence in the retail market?

It is possible that retail demand side substitution to alternative network platforms in response to an increase in the price of wholesale fixed access could indirectly prevent the hypothetical monopolist from imposing a profitable SSNIP of wholesale access. For this to happen, three conditions need to be met:

- There would need to be sufficient pass through of the price increase from the wholesale to the retail level;
- Demand substitution would need to be significant to impact on the market; and
- There would need to be minimal switching to the retail arm of the hypothetical monopolist.

In considering the pass through of the price increase from the wholesale to the retail level, the TRC notes that wholesale access prices are just one element of the cost stack that makes up a retail price, and so any wholesale price increase is diluted when translated into a retail price increase. This effect is intensified because a supplier (including the hypothetical monopolist) could choose not to pass through the full wholesale price increase to the retail level. TRC data⁶¹ indicate that the LLU element of the wholesale cost stack is 25%. So, even if the supplier passed all of the price increase through to the retail customer, a SSNIP of 5-10% in the price of LLU would translate into a price increase of 1.25-2.5% at the retail level. There is currently no provision of VULA (and so no available price) in Jordan. Experience in other jurisdictions suggests that VULA accounts for a higher share of the cost stack than LLU, but is still around 45%⁶². This would translate into a price increase of 2.3-4.5% at the retail level.

The TRC's view is that switching behaviour at the retail level in response to a diluted wholesale price increase in the price of wholesale fixed access would not be sufficient to constrain the supplier of wholesale access, and that in any case, there would likely be a degree of switching to the wholesale supplier's retail arm (because it would not necessarily pass on the wholesale price increase). The TRC does not, therefore, consider that indirect constraints from vertically-integrated operators offering retail

⁶¹ Based on TRC TSLRIC model until TRC approve top down LRIC.

⁶² See, for example, ComReg "Market review: Wholesale Local Access" Document 16/96, 11 November 2016.

services on other fixed or mobile platforms need to be taken into account at this stage of the analysis.

Summary of conclusions on the relevant product market

- The market for wholesale local access (WLA) includes LLU and VULA;
- Wholesale products offered over FBWA are in the WLA market;
- Notional wholesale products offered over platforms that are not included in the retail fixed access market do not pose a direct constraint, and are not included in the WLA market; and
- Indirect constraints from the retail market from other platforms such as mobile are not sufficiently strong to warrant inclusion in the WLA market.

7.3 GEOGRAPHIC MARKET DEFINITION

LLU services are in theory available across Orange's copper network, and there is no geographic variation in functionality or pricing. VULA and FBWA services would only be available in areas where there is a fibre or FBWA network, and the inclusion of self-supply would mean that self-supply on all operators' fibre and FBWA networks could be considered to fall within the WLA market.

In the discussion of the retail FACO market, the TRC considered whether exclusive agreements between property owners/developers and telecom operators suggested that there may be sub-national geographic markets, and concluded that they did not. In considering the impact of exclusive agreements on the wholesale markets, the focus is on an operator that has a contract with a property owner/developer, such that the property owner/developer will not contract any other operators. The contracted operator would be free to engage in commercial agreements with any other operators or service providers. In practice, this is likely to mean that the contracted operator would set the prices and terms and conditions for wholesale access to inputs required for other operators to provide retail services within the exclusive area.

As with the retail market, the TRC's view is that exclusive contracts are, by their nature, transitory and cannot be seen to be associated with stable and persistent boundaries. For this reason, the TRC would not view exclusive contracts as the basis for defining a sub-national market. However, there are potential competition problems arising from an operator being able to set terms and conditions and prices for wholesale access to the area where they have an exclusive contract. These problems should not arise if the contracted operator is subject to ex ante SMP obligations imposed on a national market, because the obligations are no different within the exclusive area and outside it. For a

contracted operator who does not have ex ante SMP obligations, the setting of excessive prices or unreasonably discriminatory practices may be a competition problem – it is not the existence of an exclusive agreement that is the issue, but the behaviour of the operator. This would suggest that defining sub-national markets may be less effective in addressing the issue than considering the (*ex post*) use of competition powers.

Conclusion

The TRC's preliminary view is that the WLA product market is national in scope. While there may be some localised differences in competitive pressures, particularly with fibre roll-out, these are not considered to be sufficient to constrain the pricing of WLA services overall.

Q3 Do you agree with the TRC's preliminary conclusions regarding the relevant product and geographic market definitions for Wholesale Local Access services?

VIII. Wholesale broadband access (WBA)

8.1 INTRODUCTION

Use of retail broadband services requires that the user has an appropriate transmission channel capable of passing data in both directions, at the appropriate speed for the service, and that the retail user has a broadband service, which may be provided by the supplier of the connectivity or separately. A provider of broadband services must either build its own network infrastructure or obtain wholesale access to already existing infrastructure in order to connect to the user. Wholesale access to an incumbent's network can take place at different network levels, and allows an access seeker to replicate a larger or smaller part of the network.

In the discussion of wholesale local access, the TRC noted that full replication of the network refers to the entire access transmission channel, which is local access via the local loop. An access seeker that obtains an unbundled local loop (or purchases an equivalent wholesale fibre product such as VULA) will be able to offer a range of retail services, including switched and managed VoIP telephony as well as broadband, and will have a high degree of control over the specification and performance of its retail offerings. An access seeker that seeks a more limited replication of the incumbent's

network can access it at a higher and more central layer in the network architecture. Retail broadband services can then be provided using a wholesale Bitstream-type service, which includes the use of broadband equipment and may include some element of backhaul and handover, but excludes direct access to the local copper and/or fibre loop.

The previous market review recognised this distinction between physical network access (e.g. via LLU) and non-physical access (e.g. Bitstream) in defining two wholesale access markets addressing retail broadband:

- **“A wholesale market for the provision of physical network infrastructure access (‘wholesale physical network infrastructure access’).** This relevant product market includes the wholesale provision of fully unbundled and shared access to local loops and sub-loops at Main Distribution Frames (MDF or equivalent sites) and Street Cabinets. It also includes the self-supply of copper loops.”
- **“A wholesale market for the provision of broadband access at a fixed location (‘wholesale broadband access’).** This relevant product market includes the wholesale provision of the access link and any backhaul to all feasible access points at all speeds and contention ratios. It includes wholesale broadband access to xDSL (with handover at the DSLAM level and at BRAS level) and FBWA connections. It also includes the self-supply of xDSL, FBWA and FTTH operators.”

Since the time of the last review, technological developments (in particular the increased roll-out of fibre networks) have led to a review of the boundaries between physical and non-physical access. As discussed in section VII.7.2 above, the TRC proposes to consider the functionality of wholesale products when determining which market they belong to, rather than defining them in terms of whether they are strictly a physical or a non-physical product. This approach is in line with the EU approach, and is commonly used elsewhere.

In this review, the TRC has already proposed to define the wholesale physical network infrastructure access market as an input to retail fixed access and call origination (retail FACO). This approach recognizes that all fixed access customers are able to use voice and broadband services over their fixed connection, and that a wholesale physical product such as LLU or VULA allows the supplier to provide switched voice or managed VoIP telephony as well as broadband services. It is therefore appropriate that the wholesale local access market takes into account that, from both the demand and supply sides, products that fall within the market offer both voice and broadband services.

This section therefore considers wholesale broadband access, which is used to provide retail broadband services, rather than a range of retail services⁶³. It is important that the analysis of the wholesale broadband access market notes the presence of an upstream market, which is the wholesale local access (WLA) market, as illustrated below:

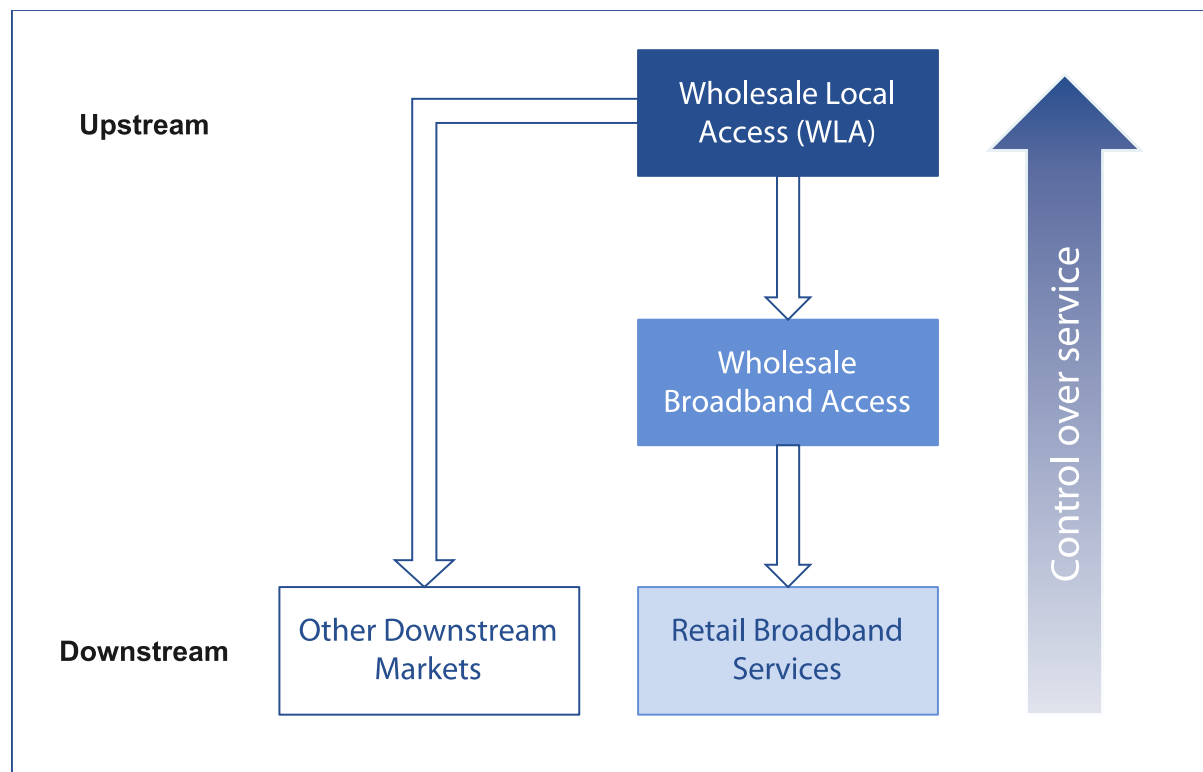


Exhibit VIII.1 The relationship between Wholesale Local Access and Wholesale Broadband Access. [Source: Axon-DotEcon]

In principle, products offered in the wholesale local access market can be used to supply a range of retail services (including broadband) and can also be used to supply wholesale products, such as Bitstream, in the downstream wholesale broadband access market.

An access seeker using a Bitstream product to provide a retail broadband service needs to consider how much of the service to the end user it will supply over its own network, and how much of the provider's network will be required. Generally, Bitstream can be provided at different handover levels, and the choice (or availability) of handover level

⁶³ While IP telephony can be offered over a Bitstream-based broadband connection, the full range of managed VoIP services (including the use of geographic numbers) may not be available.

determines the level of control that the access seeker will have over the parameters of the retail products that can be offered.

Exhibit VIII.2 below illustrates the various options for handover levels for Bitstream, which are broadly at the DSLAM, ATM or IP levels.

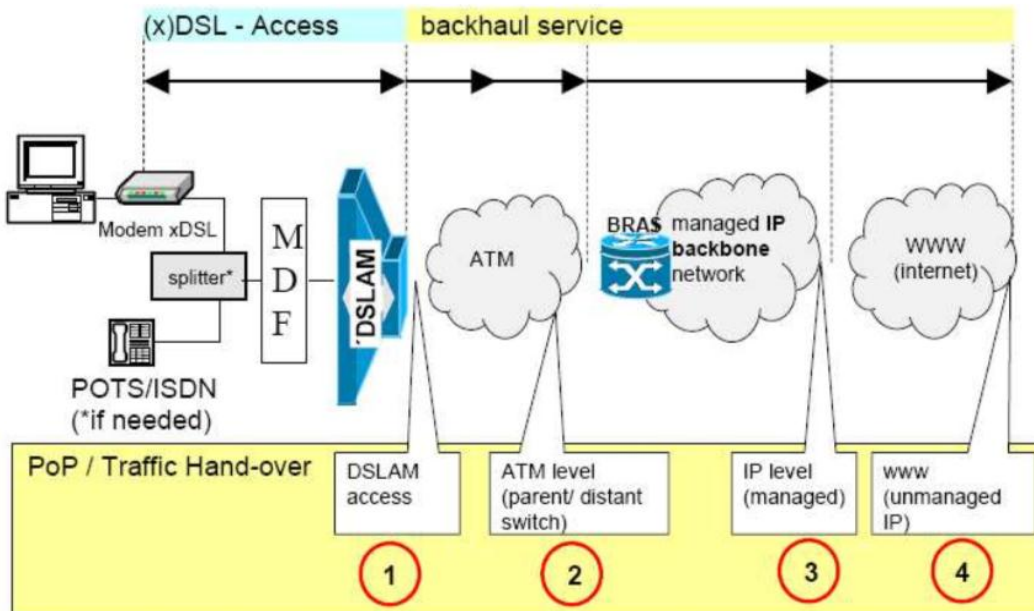


Exhibit VIII.2 Wholesale broadband Access options [Source: reproduced from Figure 3 of TELECOMMUNICATIONS REGULATORY COMMISSION, Review of Telecommunications Markets: Public Consultation Document on Fixed Broadband Markets, 15 November 2009. Original source: IRG/ERG]

In Jordan, Orange is the only provider of Bitstream. It provides Bitstream at the IP levels, but not at the ATM and DSLAM level.

8.2 PRODUCT MARKET DEFINITION

The focal product in the WBA market is copper based Bitstream, as this is the prevailing wholesale broadband access product in Jordan used to deliver retail broadband.

The assessment of the wholesale market considers first of all the strength of any direct constraints in the WBA market, and then the existence of any indirect constraints in order to determine whether the market should be broadened to include substitute products. The following questions are considered:

- Do Bitstream products offered over a fibre network fall within the WBA market?
- Do Bitstream products offered over an FBWA network fall within the WBA market?

- Would a vertically-integrated supplier pose an indirect constraint on wholesale call origination due to its presence in the retail market?

Do Bitstream products offered over a fibre network fall within the WBA market?

Bitstream provided over fibre⁶⁴ allows for higher download and upload speeds compared with copper based Bitstream.

Demand side substitution

In considering the retail market, the TRC found that there was likely to be substitution between copper and fibre based retail broadband, but that it was likely to be one way from copper to fibre, because of the higher speeds available on fibre. A similar effect would occur in the wholesale market, where an access seeker may find a fibre based Bitstream product to be a suitable substitute for copper based Bitstream, but would not be likely to find a copper based product to be an effective substitute for fibre. To date, a Next Generation fibre based Bitstream product is not available in Jordan.

Supply side substitution

An operator with a fibre network would need to self-supply a Bitstream-type product in order to offer a retail broadband service, and as such, self-supply of a Bitstream-type product over a fibre network could be considered to form part of the WBA market. However, an operator who has a fibre network but is not currently offering a WBA service on the merchant market (i.e. to other operators) would be unlikely to switch to offer a WBA service in response to a SSNIP of the WBA services in the short term and at negligible cost, because they would need to develop a wholesale product and would have little incentive or motivation to do so.

Conclusion

Bitstream over fibre networks would fall within the WBA market (based on demand side substitution possibilities and self-supply).

⁶⁴ Bitstream over fibre usually includes backhaul, whereas, with the use of a VULA product, the purchasing operator provides its own backhaul over its own infrastructure.

Do Bitstream products offered over an FBWA network fall within the WBA market?

Mada currently offers a wholesale broadband access product over its FBWA network. At present, Zain is the only purchaser of this product.

Demand side substitution

In considering the retail broadband market, the TRC found that broadband delivered over FBWA would fall within the same product market as xDSL based broadband because of functional similarities and pricing, but that substitutability would be limited to the low end of the broadband service offering. The TRC comes to a similar conclusion for the wholesale level.

Supply side substitution

Based on the experience of Mada in the market in Jordan, an operator who has an FBWA network but is not currently offering a WBA service could switch to offer a WBA service in response to a SSNIP in the short term and at negligible cost.

Conclusion

WBA products offered over FBWA would fall within the same WBA product market.

Would a vertically-integrated supplier pose an indirect constraint on wholesale access due to its presence in the retail market?

Suppliers of service on alternative platforms (such as mobile) not included in the retail fixed broadband market may not exercise a direct constraint on the pricing of WBA. However, it is possible that retail demand side substitution to alternative network platforms in response to an increase in the price of wholesale broadband access could indirectly prevent the hypothetical monopolist from imposing a profitable SSNIP on wholesale broadband access.

Following the approach to assessing indirect constraints set out earlier, in considering the pass through of the price increase from the wholesale to the retail level, the TRC notes that wholesale broadband prices are just one element of the cost stack that makes up a retail price. Consequently, any wholesale broadband price increase is diluted when translated into a retail price increase. This effect is intensified because a supplier (including the hypothetical monopolist) could choose not to pass through the full wholesale price increase to the retail level. TRC data indicate that the Bitstream

element of the wholesale cost stack is 61%. So, even if the supplier passed all of the price increase through to the retail customer, a SSNIP of 5-10% in the price of LLU would translate into a price increase of approximately 3-6% at the retail level.

Given differences in functionality and pricing in the retail market discussed in section VI.6.2, the TRC's view is that switching behaviour at the retail level in response to a diluted wholesale price increase would not be sufficient to constrain the supplier of wholesale broadband access. In any case, there would likely be a degree of switching to the wholesale supplier's retail arm (because it would not necessarily pass on the wholesale price increase).

The TRC does not therefore consider that indirect constraints need to be taken into account at this stage of the analysis. However, it will consider again the impact of broadband offered over alternative platforms in the competition assessment.

Summary of conclusions on the relevant product market

- The market for wholesale broadband access (WBA) includes Bitstream type products delivered over copper and fibre networks
- Wholesale products offered over FBWA are part of the WBA market
- Indirect constraints from alternative platforms (such as mobile) in the retail market are not sufficiently strong to warrant their inclusion in the WBA market.

8.3 GEOGRAPHIC MARKET DEFINITION

There is no geographic variation in Orange's xDSL Bitstream product or its pricing, and no geographic variation in Mada's FBWA wholesale broadband access product. The same products are sold at the same price throughout Jordan. At present, there is no fibre based Bitstream product available.

While there are geographic limitations to the extent of any constraint on Bitstream that could be imposed by wholesale products in the WBA market offered over other platforms, such as fibre or FBWA, these limitations are to do with network roll-out, which does not constitute a stable boundary, indicative of a separate geographic market. Orange's market share of the WBA market is in excess of 70%, and this is the case across the whole country in areas where there is both fibre and FBWA and in areas where there is not.

Conclusion

The scope of the geographic market is national.

Q4 Do you agree with the TRC's preliminary conclusions regarding the relevant product and geographic market definitions for Wholesale Broadband Access services?

IX. Wholesale fixed voice call termination (FVCT)

9.1 INTRODUCTION

In order for a voice call to be made successfully, wholesale interconnection services are required to convey voice calls between different points on the telephone network. This is illustrated in Exhibit IX.1 below, where the calling and called party are on different operator networks:

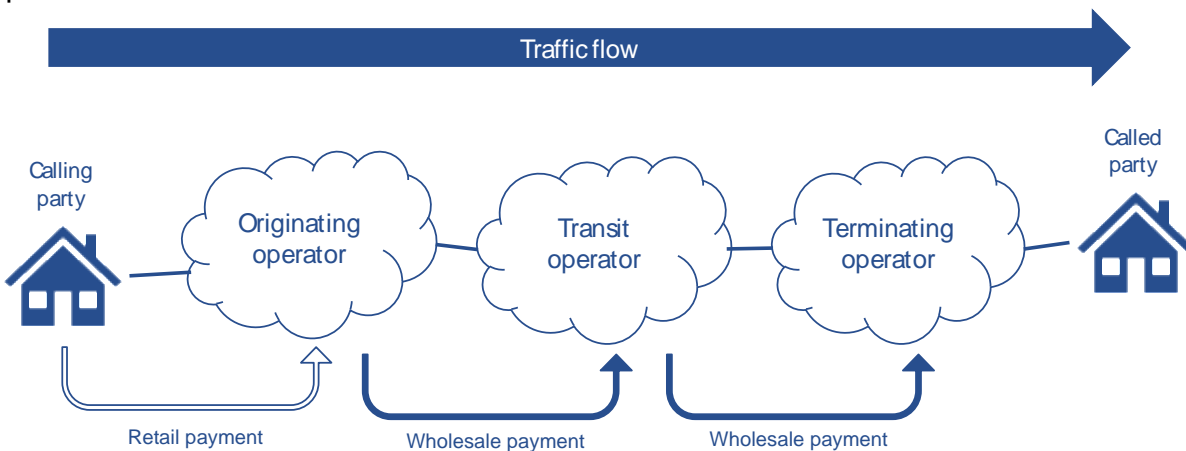


Exhibit IX.1 Traffic and revenue flows involved in interconnection for voice calls [Source: DotEcon-Axon]

The wholesale components of interconnection include origination, transit and termination services. Together, these services ensure the interconnectivity of networks allowing the supply of calls to end-users.

Fixed call termination services are required so an operator can ensure its customers are able to make calls to end-users of other interconnected operators, whereas fixed call origination services are necessary for an operator to offer telephony services to end-users, potentially including the self-supply of wholesale origination to the operator's own

customers, and the provision of wholesale services such as CS/CPS or Number Traffic Translation Origination (NTTO) services. Where the originating and terminating networks are not directly interconnected, transit services are necessary to ensure end-to-end connectivity.

Due to the Calling Party Pays (CPP) principle, termination is the least replicable element of interconnection services.

9.2 PRODUCT MARKET DEFINITION

All fixed operators are responsible for terminating calls to their network. The focal product is therefore wholesale fixed voice termination of calls to end-users on a particular operator's fixed network. The assessment considers first of all the strength of any direct constraints in the market, in order to determine whether the market should be broadened to include substitute products. This analysis includes:

- Whether a single relevant market for voice call termination exists across all fixed networks, or/and across individual fixed networks;
- Whether fixed call termination and mobile call termination fall within the relevant market(s) for call termination;
- Whether voip call termination should be included in the same market;
- Whether wholesale termination for calls to end-users and calls to service providers fall within the same relevant product market; and
- Whether vertically-integrated operators may pose an indirect constraint.

Does the relevant market for voice call termination exist across all fixed networks, or/and across each individual number instead of individual fixed networks?

Demand side substitution

All fixed 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. The wholesale price of termination is set by the called party network and must be paid for by the calling party network⁶⁵.

⁶⁵ Under the CPP regime, the called party is not charged for termination of a call to a geographic number and therefore, end-users are generally not sensitive to the termination fee charged by the operator to whom they are subscribed.

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.

Supply side substitution

Given that all fixed operators are responsible for terminating calls to their own 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, it is simply not possible for an alternative supplier to switch to providing termination services on the network where wholesale termination rates have experienced a SSNIP.

Conclusion

There are no demand or supply side substitutes to fixed call termination on a network. The relevant market is limited to calls terminated on each fixed terminating operator's network.

Should VoIP call termination be included in the same market?

At the retail level, the TRC defined managed VoIP calls to be in the same retail market as switched voice calls. This was because of similar functionality.

Demand side substitution

There are no demand side substitutes to the termination of a voice call, irrespective of how that call originates. Control by the terminating fixed network operator over its own number range is exclusive – an operator has a monopoly over the termination of calls to its own number range, and so to the users of these numbers. Where a VoIP call terminates on a number controlled by a fixed operator, that call would fall within the same market, regardless of its origination. In practice, this would likely apply only to managed VoIP services, which are often associated with geographic numbers, while unmanaged VoIP services are normally not.

Supply side substitution

There are no VoIP-related supply side substitutes for wholesale call termination on a fixed network.

Conclusion

Wholesale termination of managed VoIP calls falls within the same market as wholesale termination of switched voice calls.

Are fixed call termination and mobile call termination in the same market?

Demand side substitution

A wholesale purchaser of fixed termination services would not find mobile termination to be a good substitute because the purchaser would be unable to terminate calls on the end user's fixed number.

Supply side substitution

There are no supply side substitutes for fixed call termination.

Conclusion

Fixed call termination and mobile call termination wholesale services should be considered in separate markets.

Is the wholesale termination of calls to end-users part of the same market with that for the termination of calls to service providers?

Calls to fixed end-users are calls to geographic numbers and are terminated by the network operator controlling the termination point (i.e. the network operator of the called party). Calls to service providers are typically calls to non-geographic numbers. In Jordan, there are currently a number of different types of non-geographic voice traffic calls, including calls for "Auto Freephone", "Local Fee Call", "National Fee Call", calling cards, and premium rate services.

Demand side substitution

Termination services for calls to end-users and calls to service providers are acquired by originating operators. A SSNIP on the termination rate for calls to end-users would not be met with a shift by the originator to only purchase wholesale termination to service-providers, as this would mean that it would not be possible for its consumers to make calls to end-users of the terminating network. Wholesale termination for calls to

end-users and calls to service-providers are likely to be complements from the perspective of the originating operator.

Calls to fixed end-users (calls to geographic numbers) are terminated by the network operator controlling the termination point (i.e. the network operator of the called party). The calling party originating operator must pay the termination costs (CPP). Under this regime, end-users are generally not sensitive to the termination fee charged by the operator to whom they are subscribed, as the called party is not charged for termination of a call to a geographic number.

Therefore, a SSNIP on the termination rate does not influence the called party to switch supplier. Consequently, there are limited competitive constraints on the terminating operator. In contrast, for calls to service providers, the wholesale termination rate may affect the price paid by the service provider for accepting the call (for example, in the case of freephone services and shared cost services where the service provider contributes to the cost of the call, that might be influenced by the termination rate), and therefore the demand for termination services from the provider of wholesale termination. However, in the TRC's view, while the competitive constraints may be different, the low volumes⁶⁶ of such calls limit the competitive constraints they are exposed to.

Supply side

On the supply side, a fixed operator providing wholesale termination services to end-users could switch to providing termination services for calls to service-providers hosted on its network.

Conclusion

The wholesale termination of calls to end users and calls to service providers fall within the same market.

⁶⁶ Response to the data request showed that in 2017, less than 1% of call volume is accounted for by calls to service providers.

Would a vertically-integrated fixed or mobile operator pose an indirect constraint on wholesale access due to its presence in the retail market?

An indirect constraint in the market for wholesale voice call termination would arise if retail customers of alternative services switched away from fixed voice calls in response to a SSNIP in wholesale fixed voice call termination. The TRC proposed that, in the retail market, alternatives such as mobile and unmanaged VoIP calls are not sufficient substitutes to warrant their inclusion in the same retail market as fixed voice calls, and this would limit the number of retail customers who would be likely to switch⁶⁷.

In considering potential indirect constraints, the TRC noted earlier⁶⁸ the need to consider the proportion of the price of the retail service accounted for by the price of the wholesale input, because an increase in the price of the wholesale input would be diluted when passed through to the retail level. In the wholesale fixed call termination market, it can be assumed that the regulated price for wholesale fixed voice call termination is a competitive price, but there is no visible retail price because retail calls are ‘free’ to the retail customer – they are always bundled with retail access. Thus if we take Orange Fixed’s basic retail access and calls bundle as an example, it is priced at JOD 12.26 per month and includes unlimited domestic calls. The regulated price for wholesale call termination is 7.2 fils/minute in 2018, but on a glidepath to 3 fils/minute by 2021. Even a full SSNIP of 5-10% would still be a very small part of the retail customer’s overall access and calls bundle, and would be unlikely to generate switching behaviour that would constrain the pricing behaviour of a hypothetical monopolist.

Summary of conclusions on wholesale fixed termination

- There are no demand or supply side substitutes to call termination on a fixed network;
- All terminating operators have a 100% market share. This holds true regardless of the retail market definitions;

⁶⁷ 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 2014 recommendation.

⁶⁸ See the discussion in section 3.2.

- Whilst the market could be defined with reference to the termination of calls to an individual fixed number, fixed operators are unable to differentiate between individual called numbers (to their own network) when setting termination rates, so the defined market should relate to calls terminated on each Fixed Operator Network (with a different market for each fixed operator).
- Fixed call termination and mobile call termination belong to different markets;
- Managed VoIP termination is part of the wholesale fixed termination market;
- The wholesale termination of calls to end users and calls to service providers fall within the same market.
- Indirect constraints by vertically-integrated fixed or mobile operators in the retail market are not sufficiently strong to warrant inclusion in the wholesale fixed termination market.

9.3 GEOGRAPHIC MARKET DEFINITION

Wholesale fixed termination services are national in scope. Competitive conditions for wholesale fixed voice termination services are homogenous across the whole of Jordan. Therefore, the market is national for Jordan.

Q5 Do you agree with the TRC’s preliminary conclusions regarding the relevant product and geographic market definitions for Wholesale Fixed Voice Call Termination services?

X. Wholesale fixed voice call origination (FVCO)

10.1 INTRODUCTION

The defined retail FACO market includes voice call origination, on the basis that it is not possible for a retail customer to purchase fixed access and calls separately. However, in considering the wholesale markets that address the retail markets, the TRC proposes that wholesale fixed access and wholesale call origination should be treated separately.

Under the previous market reviews, the relevant wholesale call origination market was defined to include: “*the wholesale provision of fixed call origination through CS/CPS and NTT0 services for all types of calls (including calls to end-users and calls to service providers) and the self-supply of fixed call origination for all types of calls (including calls to end-users and calls to service providers)*”.

Orange provides call origination services to its own retail operation (self-supply), using its copper network inputs. Orange could readily switch to providing call origination services to other operators, given, for example, that a Reference Offer for CS/CPS is already in place. Therefore, Orange's self-supply of call origination should be included in the wholesale FVCO market.

The retail FACO market includes fixed access and calls provided over FBWA and fibre networks. There is a wholesale service available over FBWA networks, and wholesale call origination would form part of this service and fall within the same market as self-supply over the copper network. Self-supply of a wholesale FBWA service would then also fall within the same market. Call origination over a fibre network that would address the defined retail market would be call origination associated with managed VoIP. At present, no wholesale product is available in the market, but self-supply of a notional wholesale call origination product would be included in the market.

Wholesale call origination could be provided in Jordan using CS/CPS or Number Traffic Translation Origination services (NTTO). To date, there has been no take-up of CS/CPS. Elsewhere, CS/CPS is a fairly rapidly declining market. For example, in the EU, the Commission commented in its 2014 Recommendation on the decrease of "stand-alone" CPS.⁶⁹ In Europe, this has been a consequence of the increase of Wholesale Line Rental (WLR), allowing alternative operators to provide both access and call origination services together (based on PSTN). However, there is no similar WLR product in Jordan, and so CS/CPS is the only potential wholesale offering addressing the provision of retail switched calls. Given the broad trend towards all-IP networks, the TRC does not believe that there will be demand for CS/CPS during the lifetime of this review.

NTTO services for call origination include prepaid calling cards used to provide non-geographic services and international calls. Most operators currently offer these services, and there is a separate dedicated number range. At present, operators offering NTTO services are subject to symmetric obligations (i.e. different from the ex ante SMP obligations), primarily designed to address consumer protection concerns.

⁶⁹ "Commission Staff Working Document – Explanatory Note accompanying the document Commission Recommendation on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services."

10.2 PRODUCT MARKET DEFINITION

The focal wholesale call origination product is Orange's self-supply. The boundaries of the wholesale call origination market are considered below in terms of:

- Whether all kinds of calls comprising the wholesale call origination function to end-users and to service providers form part of the same relevant product market;
- Whether a relevant single product market for wholesale call origination exists across all fixed networks, or only separately, across each individual network; and
- Whether a vertically-integrated supplier would pose an indirect constraint on wholesale call origination through its presence in the retail market.

Are all call types part of the same wholesale FVCO market?

Demand side substitution

On the demand-side, potential CS/CPS and NTT0 operators both require wholesale call origination services for individual calls between end-users or between end-users to service providers. Origination of individual calls to particular end-users and those to a service provider are not functionally substitutable through a wholesale origination of calls to other end-users or service providers.

However, CS/CPS and NTT0 operators will demand wholesale call origination for all types of calls (including local, long distance and international calls to fixed end-users and national and international calls to mobile end-users), and calls to service providers so they can offer the full bundle of call services to retail customers.

Wholesale demand is therefore for a bundle of services, covering all call types.

Supply side substitution

The required wholesale inputs for providing origination services for calls to all types of numbers are functionally the same. Therefore, call origination to all call types falls within the same market.

Conclusion

There is a single wholesale market for FVCO for all call types.

Does the relevant product market for wholesale call origination exist across all fixed networks, or across each individual network?

Unlike with wholesale termination services, the purchaser of wholesale origination does not need to connect to each and every operator separately in order to provide a retail service for calls to all numbers. It can choose to purchase wholesale origination services from any operator offering the service. Therefore, wholesale origination services from different operators can be substitutes.

As a result, the market can be defined with respect to all fixed networks (not on each individual fixed network as was required with termination).

Would a vertically-integrated supplier pose an indirect constraint on wholesale call origination due to its presence in the retail market?

No operator other than Orange offers fixed switched voice calls, and according to the response to the TRC's data request, the use of managed VoIP services is still fairly limited. Wholesale products offered over FBWA and self-supply of wholesale call origination services that would address the retail FACO market as defined are already included within the wholesale call origination market, so they are already considered as a potential direct constraint.

The TRC has considered the extent to which an alternative vertically-integrated operator could pose an indirect constraint on wholesale call origination. To exercise an indirect constraint, a vertically-integrated operator on a platform not already considered as a direct constraint (e.g. mobile) would need to have a significant presence in providing retail calls, such that sufficient retail customers would switch away from retail fixed calls in response to a SSNIP, and prevent a hypothetical monopolist wholesale local access supplier from profitably sustaining an increase in wholesale prices.

Following the methodology described earlier, the analysis needs to determine the impact of a wholesale call origination price increase on the retail price of call origination. It can be assumed that the regulated price for wholesale fixed voice call origination is a competitive price, but there is no visible retail price because retail calls are "free" to the retail customer – they are always bundled with retail access. Taking Orange Fixed's basic retail access and calls bundle as an example, it is priced at JOD 12.26 per month and includes unlimited domestic calls. The regulated price for wholesale call origination is 7 fils/minute for CS, and 9.2 fils/minute for CPS. Even a full SSNIP of 5-10% would still be a very small part of the retail customer's overall access and calls bundle, and would be unlikely to generate switching behaviour that would constrain the pricing

behaviour of a hypothetical monopolist (not least given that mobile calls have already been judged to be an insufficient substitute for fixed).

Summary of conclusions on wholesale fixed voice origination:

- The market includes self-supply of wholesale call origination services for all retail calls in the FACO retail market as defined;
- There is a single market for wholesale fixed origination to all call types;
- The market does not need to be defined separately for each individual fixed operator (in contrast to termination) because the purchaser of wholesale origination services does not need to connect to each and every operator separately. It can choose to connect to any provider of wholesale origination or vertically integrated fixed network operator;
- Indirect constraints are not sufficiently strong to warrant inclusion in the market, because the price of wholesale call origination makes up a very small part of the retail price.

10.3 GEOGRAPHIC MARKET DEFINITION

The retail FACO market was found to be a national market, and the wholesale markets addressing that market are also likely to be national in scope. Given the very low level of any direct or indirect constraints, the conditions of competition are similar across the whole country. There is some competitive pressure from the FBWA wholesale product, but this is limited, both because the availability of FBWA services is limited, and because the market share of the FBWA wholesale product is very small in the merchant market.

Conclusion

The geographic market is national, i.e., the whole territory of Jordan.

Q6 Do you agree with the TRC's preliminary conclusions regarding the relevant product and geographic market definitions for Wholesale Fixed Voice Call Origination services?

XI. Wholesale fixed transit

11.1 INTRODUCTION

Transit services include the transmission or routing of calls within an operator's network, ultimately for the purposes of procuring termination on that network, and the routing and conveyance of calls between two different networks providing a link between the point-of-interconnection in the originating network and the point-of-interconnection in the terminating network (but not including the origination or termination services). The services may be self-supplied, and will also be used by operators who are not directly interconnected to other operators that their customers will want to call.

Transit services may be used to convey national and international traffic originating in Jordan. The TRC has jurisdiction over transit within Jordan. For the avoidance of doubt, transit within Jordan includes transit up to and including international gateways. There cannot be a gap between the end of the wholesale transit product and the international gateway – a wholesale transit service must allow the purchaser to access international connectivity.

Origination, transit and termination are complementary inputs into the provision of call services at the retail level, because all three elements are required to complete a fixed call. Therefore, the specification of call origination and termination implicitly defines the scope of transit. The boundaries of transit services are defined by the boundaries of origination and termination services.

Orange provides transit to its own retail operation (self-supply) as well as to other operators. Orange could readily switch from self-supply to providing additional wholesale transit services to other operators, and so its self-supply should also be part of the wholesale transit market. The transit of all calls included in the retail FACO market should be included in the wholesale transit market, and so the wholesale supply and self-supply of transit of switched and managed VoIP calls over copper, fibre and FBWA networks all fall within the wholesale fixed transit market.

It is the TRC's view that a technologically-neutral approach is appropriate, and so transit should include both circuit switched and IP based traffic. The TRC has already proposed that wholesale call origination via managed VoIP would fall within the wholesale call origination market, largely because the move to IP would be a technical upgrade and replacement of existing switched FACO products, and the same reasoning applies to wholesale transit.

11.2 PRODUCT MARKET DEFINITION

The most prevalent wholesale transit product is Orange's transit, supplied both to its retail operation and to other operators, and that is considered as the focal product.

In defining the boundaries of the wholesale transit market, the following questions are considered:

- Whether transit services for different call types fall with the same market (for example, Fixed (geographic) vs mobile transit; Fixed (geographic) vs non-geographic);
- Whether national transit services fall in the same market at international transit services;
- Whether a relevant product market for wholesale transit exists across all fixed networks, or across each individual network;
- Whether leased lines would be a substitute for wholesale transit;
- Whether a vertically-integrated supplier would pose an indirect constraint on wholesale transit due to its presence in the retail market.

Are transit services the same for all call types?

Demand side substitution

Demand for transit is derived from the retail fixed voice call made to a specific number type. For a call to a specific number type (for example to a fixed geographic number), transit to another number type (for example to a mobile number or service provider/non-geographic number) is not a substitute. Therefore, there is unlikely to be effective demand-side substitution between transit services to different number types in response to a SSNIP on transit services to any one call type. Purchasers of transit for one type of call might not be able to switch to another transit provider (in response to a SSNIP) if, in this hypothetical scenario, there is a monopoly provider of transit services for that type of call.

However, in order to provide a comprehensive service offering to a retail customer, an operator that needs wholesale inputs (i.e. needs to purchase transit services) will require a bundle of transit services. Therefore, the wholesale demand for transit to different call types is likely to be complementary.

Supply side substitution

An operator without any existing capacity or interconnection links would not be able to switch to providing these services in a short time period, as they would be required in order to be able to establish a direct interconnection with many different operators.

Supply of transit to each among different call types uses a common network infrastructure. Therefore, there is likely to be supply-side substitutability between transit services for calls to different number types. Furthermore, there may be economies of scope associated with providing transit services to several different call types (given that they share the same network infrastructure). An existing provider of transit services for one type of call could easily switch to also providing transit services for another type of call (given that it will already have the necessary network capacity and interconnection links) in response to a SSNIP on transit for that type of call.

Conclusion

There is a single wholesale transit market for all call types.

Does a single relevant product market for wholesale transit exist across all fixed networks, or only across each individual network?

Unlike with wholesale termination services, the purchaser of wholesale transit does not need to connect to each and every provider of transit services in order to provide a retail service for calls to all numbers. It can choose to purchase wholesale transit services from any operator offering the service and transit services from different operators will be substitutes.

Therefore, the market can be defined with respect to all fixed networks (and not separately, for each individual fixed network, as required with termination).

Are leased lines a substitute for wholesale transit?

Leased lines would involve an operator establishing a direct connection between two fixed points for the conveyance of calls.

Demand side substitution

There are significant functional differences between leased lines and wholesale transit. Leased lines are generally a passive connection between two points, while transit services are active, and provided over the top of a network, conveying calls between multiple points. These functional differences are translated into differences in pricing.

Transit prices are generally based on a per minute or per call fee, while leased lines involve a connection fee, then a rental charge.

The TRC's view is that an access seeker with considerable traffic between two specific points may find that a leased line would be an alternative approach, but that leased line and transit services cannot normally be seen as functional substitutes.

Supply side substitution

A supplier of leased lines may consider switching to supply wholesale transit in response to a SSNIP, but only where the supplier already had leased lines infrastructure in place. No operator in Jordan other than Orange has a ubiquitous network over which it could offer wholesale transit, so alternative supply would necessarily be limited, and this would limit the level of any constraint. The supply of leased lines can be seen as upstream from the supply of transit.

Conclusion

Leased lines are not in the same product market as wholesale transit services.

Indirect constraints

To exercise an indirect constraint, a vertically-integrated operator on a platform not already considered as a direct constraint (e.g. mobile) would need to have a significant presence in providing retail calls, such that sufficient retail customers would switch away from retail fixed calls in response to a SSNIP, and prevent a hypothetical monopolist wholesale transit supplier from profitably sustaining an increase in wholesale prices.

Following the methodology described earlier, it can be assumed that the regulated price for wholesale fixed transit is a competitive price to which a SSNIP applies. However, there is no visible retail price because retail calls are "free" to the retail customer – they are always bundled with retail access. If we take Orange Fixed's basic retail access and calls bundle as an example, it is priced at JOD 12.26 per month and includes unlimited domestic calls. The regulated price for wholesale domestic transit is 1.3 fils/minute, and 1.5 fils/minute for international transit. Even a full SSNIP of 5-10% (without the dilution expected on pass through to the retail level) would still be a very small part of the retail customer's overall access and calls bundle price, and would be unlikely to generate switching behaviour that would constrain the pricing behaviour of a hypothetical monopolist.

Summary of conclusions on wholesale transit:

- The wholesale transit market includes transit services to all call types;
- Self-supply is also part of this market;
- There is a single market for both domestic and international transit services;
- The market is not constrained to individual operator networks (as was the case for call termination), as there is scope for multiple transit providers who each have the necessary interconnections. An operator would have a choice over which transit provider it chose, or use multiple different transit operators for different calls. Therefore, the market for transit services is not network-specific;
- Leased lines are not part of the wholesale transit market.

11.3 GEOGRAPHIC MARKET DEFINITION

The retail FACO market was found to be a national market, and the wholesale markets addressing that market are also likely to be national in scope. Given the very low level of any direct or indirect constraints, the conditions of competition are similar across the whole country.

Conclusion

The market for wholesale transit is national in scope.

Q7 Do you agree with the TRC’s preliminary conclusions regarding the relevant product and geographic market definitions for Wholesale Fixed Transit services?

11.4 SUMMARY OF PRELIMINARY WHOLESALe FIXED TELECOMMUNICATIONS PRODUCT AND GEOGRAPHIC MARKET DEFINITIONS

Product market	Geographic market
Wholesale Local Access	national
Wholesale Broadband Access	national
Wholesale Fixed Voice Call Termination	national
Wholesale Fixed Voice Call Origination	national

Wholesale Fixed Transit	national
-------------------------	----------

XII. Markets susceptible to ex ante regulation

12.1 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 fixed telecommunications 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 XIII for those markets identified as being susceptible to ex ante regulation.

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

12.2 A MARKET FOR WHOLESALE LOCAL ACCESS (WLA)

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
<ul style="list-style-type: none"> • Service depends on ownership of an access network. • Presence of strong economies of scale, scope and density in establishing access networks. • Entry into the market through building own infrastructure requires significant levels of investment & large sunk costs. • Barriers to entry are high. 	<ul style="list-style-type: none"> • No wholesale access products currently in market. LLU available following regulatory obligation, but not implemented. VULA is not offered at present. • May be provided by operators who have invested in alternative networks and who have infrastructure in place. However, there may be little commercial incentive to do so. • Whilst investment in alternative networks has been strong in (parts of) Amman, there is limited alternative investment elsewhere. • Thus, in many areas wholesale access will only be available from Orange Fixed. 	<ul style="list-style-type: none"> • As a key upstream input for competitors at the retail level, refusal to supply or discriminatory pricing could have immediate damaging consequences for access seekers. • Ex post application of competition law is likely to be too slow to address these concerns effectively.

High and persistent barriers to entry

Control over local access infrastructure is an essential pre-requisite for offering wholesale local access. The market for wholesale local access is characterised by the presence of strong economies of scale, scope and density and entry into the market requires significant levels of investment, largely in the form of sunk costs (costs which would be largely irrecoverable if the entrant decided to, or is forced to, exit the market).

Economies of scale and density and high sunk costs raise significant barriers to entry for any operator considering roll-out of a new local access network capable of supporting the provision of wholesale local access services.

Lack of a trend towards competition

Competition for wholesale local access can only come from those operators who have their own access infrastructure. Further, at present, the only wholesale access product (theoretically available) is local loop unbundling (LLU), which can be provided only over the copper network. Orange Fixed is the only network capable of providing LLU, but no such access has been offered in Jordan, as the related remedy imposed following the previous market review has not been implemented.

As other network operators roll-out their own network, operators other than Orange Fixed may be able to offer wholesale local access (for example, through VULA to a fibre network). However it is questionable whether they would have a commercial incentive to do so in the absence of any regulatory requirements to provide access. Furthermore, at present, investment in alternative networks has only taken place in parts of Amman.

Most areas outside Amman may only be served by Orange Fixed. Thus Orange Fixed will have complete control over the provision of wholesale local access. Therefore, the TRC considers that the market is not presently competitive and, given the high barriers to entry, does not expect any significant change in the conditions of competition over the course of this review.

Taking self-supply into account, the market shares will be the same as for retail fixed access i.e. those operators who are providing retail FACO over their own access infrastructure. Note that this approach takes the broadest possible definition of the wholesale local access market.

The table below shows the number of access connections in the fixed access market, as a physical connection, for each operator in Jordan. This includes PSTN, ISDN, fibre, and FBWA. For ISDN, the data is for channels rather than lines or subscribers, as this is a more realistic representation of access paths. On this basis, the market shares are:

Market shares	2015	2016	2017
Orange Fixed	[<NO %]	[NO %]	[NO %]
Zain	[NO %]	[NO %]	[NO %]
Batelco	[NO %]	[NO %]	[NO %]
Al-Nayi	[NO %]	[NO %]	[NO %]

Market shares	2015	2016	2017
Damamax	[NO %]	[NO %]	[NO %]
Jordan European Internet services	[NO %]	[NO %]	[NO %]
V-tel	[NO %]	[NO %]	[NO %]
Umniah	[NO %]	[NO %]	[NO %]
Mada	[NO %]	[NO %]	[NO %]
	100.0%	100.0%	100.0%

Exhibit XII.1 Retail FACO market shares

Whilst Orange Fixed has lost some market share over the previous three years with the main increase coming from Umniah’s FBWA services, Orange Fixed continues to have a large share of the market. It is unlikely that alternative operators providing and self-supplying wholesale local access could increase their market shares sufficiently over the lifetime of this review to a level that would allow them to effectively compete.

Therefore, the TRC considers that there is a lack of a trend towards effective competition in this market over the lifetime of this review.

Insufficiency of ex-post intervention alone

In the absence of any ex ante regulation, a dominant operator might engage in anti-competitive practices that would erect or reinforce barriers to entry that would protect its dominant position against potential, or actual, entrants. For example, where there is insufficient competition for the provision of wholesale local access services, and absent ex ante regulation, the dominant provider may be able to refuse access, or provide access on discriminatory terms such that it could limit competition in the relevant retail market. Whilst the ex post application of competition law might be sufficient to correct for market failures in some instances, it is case-specific and is unlikely to satisfy the need for frequent, timely and anticipatory intervention required to address the anti-competitive behaviour of a dominant operator.

Therefore, the TRC considers that ex post competition law intervention would not be sufficient to address all market failures and abuses of a dominant position.

Conclusion

The TRC’s preliminary conclusion is that the Wholesale Local Access market meets all of the three criteria, and so is susceptible to ex ante regulation.

12.3 A MARKET FOR WHOLESALE BROADBAND ACCESS

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
<ul style="list-style-type: none"> • Access to infrastructure is an essential pre-requisite for offering wholesale broadband services. The provision of WBA therefore requires an access channel to the retail customer • Investing in (competing) access networks is unlikely to occur given that investment costs are sunk, and there are strong scale economies. • There are currently no wholesale access products (e.g. LLU) available, so the only upstream products from WBA are self-supplied 	<ul style="list-style-type: none"> • All wholesale broadband services currently provided as Bitstream (provided by Orange Fixed) or wholesale FBWA (Mada) • No alternative upstream wholesale products other than self-supply. Unlikely to change to a material extent in the lifetime of this review 	<ul style="list-style-type: none"> • In the absence of retail market competition, and upstream wholesale inputs, refusal to supply or discriminatory pricing may have immediate damaging consequences for access seekers. • Competition law likely to be insufficient to address these concerns effectively.

High and persistent barriers to entry

Access to infrastructure and the existence of a channel to the end user is an essential pre-requisite for offering wholesale broadband services. This could be either through the ownership of a fixed access network, or through the purchase of an upstream wholesale input such as LLU or VULA. Entry into the market requires significant levels of investment, largely in the form of sunk costs (costs which would be largely irrecoverable

if the entrant decided to, or is forced to, exit the market). Given the absence of LLU and VULA, this applies also to the purchase of upstream wholesale inputs.

Economies of scale and density and high sunk costs raise significant barriers to entry for any operator considering roll-out of a new local access network capable of supporting the provision of a wholesale broadband service.

Lack of a trend towards competition

Competition for the provision of wholesale broadband services can only come from those operators who have their own access infrastructure, or who can buy a wholesale upstream input.

At present, the main wholesale access product offered in the market in Jordan is Bitstream access and Orange Fixed is the only network offering this product. Mada is providing an alternative wholesale broadband access service to Zain allowing it to provide a retail FBWA offer.

Orange Fixed had at least [X<NO %] market share for wholesale broadband services in 2017. As other network operators roll out their own network, operators other than Orange Fixed may be able to offer wholesale broadband services (for example, competing Bitstream services over their network). However, it is unlikely that they would have a commercial incentive to do so in the absence of any regulatory requirements to provide access.

At present, investment in alternative networks has only taken place in parts of Amman. Most areas outside Amman may only be served by Orange Fixed. Thus Orange Fixed will have complete control over the provision of wholesale broadband services.

The introduction of LLU or VULA could change the conditions of competition because both of these products could be used to offer a WBA service in addition to a range of retail services. However, it is unlikely that they would be made available absent a regulatory obligation, and even if required as a consequence of this review, given the time needed to develop and implement this service, it is unlikely that there would be a significant enough impact within the review lifetime to alter the TRC's preliminary conclusions.

Therefore, the TRC considers that at present the market is not competitive. Given the high barriers to entry, the TRC does not expect there to be any significant reduction in Orange Fixed competitive advantage over the course of this review.

Insufficiency of ex post intervention alone

Where there is insufficient competition for the provision of wholesale broadband services, the dominant provider may be able to refuse access or provide access of discriminatory terms such that it could limit competition in the relevant retail market. The ex post application of competition law rules is case-specific and cannot satisfy the need for frequent, timely and anticipatory intervention.

Therefore, the TRC considers that ex post competition law intervention may not be sufficient to address all market failures and abuse of dominant position.

Conclusion

The TRC’s preliminary conclusion is that the market for Wholesale Broadband Access meets all of the three criteria, and it is therefore susceptible to ex ante regulation.

12.4 A WHOLESALE MARKET FOR FIXED VOICE CALL TERMINATION

For the reasons described below, we provisionally conclude that this market is susceptible to ex-ante regulation.

Entry barriers	Market structure trend	Sufficiency of Competition Law
<ul style="list-style-type: none">• Every fixed operator controls access to its subscribers via wholesale fixed voice call termination.• No other operator can provide call termination for calls on any network other than its own.• There are unavoidable, technical barriers to entry for any alternative operator to provide wholesale termination services to another	<ul style="list-style-type: none">• Under the calling party pays principle (CPP) there is no competitive pressure on terminating operators to lower termination fees.• Each fixed 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 undermined.• There is no trend towards effective	<ul style="list-style-type: none">• 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.

fixed operator	competition in this market.	
----------------	-----------------------------	--

High and persistent barriers to entry

All fixed 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. The price of termination is set by the called party network and must be paid for by the calling party network.

Barriers to entry are structural and technological, and every fixed network operator has absolute termination bottleneck control over its fixed customers.

Lack of a trend towards competition

Each fixed network operator 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.

The TRC concludes 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. The TRC considers 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 market for wholesale voice call termination on individual fixed networks meets all of the three criteria and is susceptible to ex-ante regulation.

12.5 A WHOLESALE MARKET FOR FIXED CALL ORIGINATION

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
<ul style="list-style-type: none"> • The market for wholesale fixed call origination is characterised by the presence of strong economies of scale, scope and density in access networks. • Control over local access infrastructure is an essential pre-requisite for offering wholesale fixed call origination services. • Where an operator decides to enter the market via direct access, it would require significant investments and large sunk cost • it is unlikely that an operator would provide wholesale fixed call origination services absent regulation 	<ul style="list-style-type: none"> • This market would include those calls made using NTT0 (calling card) services and would also include self-supply of fixed voice call origination. • Remedies (CS/CPS) put in place following the previous review have not been implemented, and are unlikely to be implemented in lifetime of this review • Combining the call volumes reported for NTT0 calling cards and self-supply, in 2017, Orange Fixed held a [%<NO %] market share 	<ul style="list-style-type: none"> • Ex post application of competition law alone would be insufficient to control market power in this market.

High and persistent barriers to entry

The market for wholesale fixed call origination is characterised by the presence of strong economies of scale, scope and density in access networks. Control over local

access infrastructure is an essential pre-requisite for offering wholesale fixed call origination services. Where an operator decides to enter the market via direct access, it would require significant investments and large sunk cost. Therefore, barriers to entry are high and persistent.

Lack of a trend towards competition

This market would include those calls made using NTTO (calling card) services and would also include self-supply of fixed voice call origination. Combining the call volumes reported for NTTO calling cards and self-supply, the market shares of firms in this market have been evolving as follows:

Market shares	2015	2016	2017
Orange Fixed	[NO %]	[NO %]	[NO %]
Zain	[NO %]	[NO %]	[NO %]
Batelco	[NO %]	[NO %]	[NO %]
TE Data Jordan	[NO %]	[NO %]	[NO %]
Orange Data – Jordan Data Communications	[NO %]	[NO %]	[NO %]

Exhibit XII.2 Market shares of fixed voice call origination (by volume of originating minutes)

Orange Fixed has well over [NO %]share of the market and this has been increasing overtime. The share of other players based on calling card volumes (TE Data Jordan and Orange Data – Jordan Data communications)], has been falling due to the decline in calling card call volumes.

Orange Fixed has a very strong position] in the market (based on self-supply of fixed wholesale origination services) and that even if Orange, Zain and Batelco all decided to offer a wholesale product on the merchant market it is difficult to expect Orange’s significant role in this market would decline to the point that the market could be considered competitive.

Insufficiency of ex post intervention alone

It is unlikely that ex post competition law would be sufficient to address the persistent structural problems in this market,

Conclusion

The TRC's preliminary conclusion is that the market for wholesale fixed voice call origination meets all of the three criteria and is susceptible to ex ante regulation.

12.6 A WHOLESALE MARKET FOR TRANSIT SERVICES

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
<ul style="list-style-type: none">• Strong economies of scale, scope and density in network requirements.• Investment is sunk, as for local access networks.• Entry barriers may be higher on "thin routes" (due to high fixed costs)• However, less pronounced in the face of traffic growth (allowing the sharing of fixed costs over larger traffic volumes).	<ul style="list-style-type: none">• Orange Fixed is the main provider of transit services in Jordan.• Zain is present in the transit market, but Orange still makes up for a large majority of transit, with Zain only making up a small proportion ([NO %] of total domestic transit traffic in 2017).• Geographically ubiquitous transit services may depend on incumbent provided transit services (given the significant entry barriers on thin routes).	<ul style="list-style-type: none">• As a key requirement for operators to be able to provide call services to all numbers (all networks), refusal to supply or discriminatory pricing would have immediate damaging consequences for those seeking wholesale transit.• Competition law is likely to be ineffective in addressing these concerns.

High and persistent barriers to entry

This market is characterised by the presence of strong economies of scale, scope and density in network requirements. Network investment would be significant for anyone wishing to become a nationwide supplier of wholesale transit services, as this would

require a nationally ubiquitous network and interconnection agreements with all domestic operators. The investments, particularly in the physical network, are likely to be sunk (i.e. the costs will not be recoverable upon exit from the market). Therefore, entry barriers are high.

It might be that entry could be focused on some key routes (e.g. if it was clear that there was significant traffic between two points or between two operators such that entry might be attractive). Where there are very high traffic volumes, the large upfront fixed costs can be shared over larger traffic volumes. However, entry barriers will be particularly high on “thin” routes where traffic flows are much smaller.

Lack of a trend towards competition

Orange Fixed is the main provider of transit services in Jordan. Zain is present in the market, but only accounts for a small proportion of domestic transit volumes (1% of total traffic in 2017). Orange Fixed accounts for the large majority of transit volumes in Jordan. The figure below shows the trends in market shares for wholesale transit services (in terms of total transit traffic volumes) between 2015 and 2017:

[Graph omitted]

Exhibit XII.3 Total transit traffic evolution

The figure above shows that, for domestic transit, in 2017 Orange Fixed is responsible for [X<NO %] of wholesale transit (by volumes). The decline in Zain’s share of domestic transit comes as a result of the closure of an MVNO that used to operate on its network (Friendi), with Zain previously recording MVNO traffic as transit.

Whilst Zain has a larger share of international transit than of domestic, Orange Fixed was responsible for the transit of over [X<NO %] of all traffic (by volumes) in 2017. Despite some market presence by Zain, Orange Fixed is currently the only operator with a nationwide network and interconnection agreements with almost all domestic operators. This, together with Orange Fixed’s significant market share means that this market is not likely to be effectively competitive over the period of this review.

Insufficiency of ex post intervention alone

In the absence of any ex ante regulation, a dominant operator might engage in anti-competitive practices that would erect or reinforce barriers to entry and would protect its dominant position against potential, or actual, entrants. For example, where there is insufficient competition for the provision of wholesale transit services, the dominant provider may be able to refuse to supply or provide supply of discriminatory terms such

that it could limit competition in the relevant retail market. Whilst the ex post application of competition law might be sufficient to correct market failures in some instances, it is case-specific and unlikely to satisfy the need for frequent, timely and anticipatory intervention required under anti-competitive behaviour of a dominant operator.

Therefore, the TRC considers that ex post competition law intervention may not be sufficient to address all market failures and abuse of dominant position.

Conclusion

The TRC’s preliminary conclusion is that market for wholesale transit services meets all of the three criteria and is susceptible to ex ante regulation.

12.7 A RETAIL MARKET FOR FIXED ACCESS AND CALL ORIGINATION (FACO)

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
<ul style="list-style-type: none"> • Presence of strong economies of scale, scope and density in telephone networks • Entry into the market through building own infrastructure requires significant levels of investment & large sunk costs • Entry could take place through wholesale fixed access remedies if in place and if effective. • There is currently no take up of wholesale products associated 	<ul style="list-style-type: none"> • Unlikely that wholesale access remedies will be implemented and make a material impact in lifetime of this review • Competition only from alternative infrastructure providers • Despite some evidence of roll-out of competing physical networks (mainly in particular areas of Amman and Irbid), it is unlikely that these 	<ul style="list-style-type: none"> • In the absence of any ex ante regulation, a dominant operator might engage in entry deterring practices that would erect or reinforce barriers to entry that would protect its dominant position against potential, or actual, entrants.

<p>with fixed access, and this is the case for copper and fibre based access.</p> <ul style="list-style-type: none"> • Only LLU access is (theoretically) available in Jordan, but has not been implemented effectively. Therefore, wholesale access is not effective. • Entry barriers are high 	<p>alternative operators will increase their market shares over the lifetime of this review to a sufficient degree to compete effectively against Orange Fixed.</p>	
--	---	--

High and persistent barriers to entry

In the absence of any ex ante remedies (at retail or wholesale level), control over local access infrastructure is an essential pre-requisite for offering retail FACO services. The market for retail FACO is characterised by the presence of strong economies of scale, scope and density and entry into the market requires significant levels of investment, largely in the form of sunk costs (costs which would be largely irrecoverable if the entrant decided to, or is forced to, exit the market).

Economies of scale and density and high sunk costs raise significant barriers to entry for any operator considering roll-out of a new local access network capable of supporting the provision of retail FACO.

However, barriers to entry to this market would be lower if there is effective regulation at the wholesale level that would allow new entrants to enter the retail market without the need for their own access infrastructure. Whilst local loop unbundling (LLU) was proposed for this purpose in the previous market review, it has not been implemented effectively and there has been no take up. Therefore, to date there has been no effective wholesale access products that would allow entry into the retail market for FACO without building an alternative network infrastructure.

Lack of a trend towards competition

In the absence of take-up of LLU or any other wholesale access input in Jordan, competition for retail FACO can only come from those operators who have their own access infrastructure.

The table below shows the number of access connections in the fixed access market, as a physical connection, for each operator in Jordan. This includes PSTN, ISDN, fibre, FBWA. For ISDN, the data is for channels rather than lines or subscribers, as this is a more realistic representation of access paths. On this basis the market shares are:

Market shares	2015	2016	2017
Orange Fixed	[NO %]	[NO %]	[NO %]
Zain	[NO %]	[NO %]	[NO %]
Batelco	[NO %]	[NO %]	[NO %]
Al-Nayi	[NO %]	[NO %]	[NO %]
Damamax	[NO %]	[NO %]	[NO %]
Jordan European Internet services	[NO %]	[NO %]	[NO %]
V-tel	[NO %]	[NO %]	[NO %]
Umniah	[NO %]	[NO %]	[NO %]
Mada	[NO %]	[NO %]	[NO %]
	100.0%	100.0%	100.0%

Exhibit XII.4 Retail FACO market shares

Orange Fixed has lost some market share over the previous three years, with the main increase coming from Umniah's FBWA services. However, Orange Fixed continues to have a large share of the market. It is unlikely that alternative operators providing FACO services could increase their market shares sufficiently over the lifetime of this review to a level that would allow them to effectively compete against Orange Fixed for the provision of wholesale FACO.

Insufficiency of ex post intervention alone

The ex post application of competition law is case-specific and cannot satisfy the need for frequent, timely and anticipatory intervention required under anti-competitive behaviour of a dominant operator. For example, in the absence of any ex ante regulation, a dominant operator might engage in behaviour that would erect or reinforce barriers to entry, thus protecting its dominant position against potential, or actual, entrants and potentially resulting in worse outcomes for consumers.

The TRC considers that ex post competition law intervention may not be sufficient to address all market failures and abuse of dominant position.

Conclusion

The TRC’s preliminary conclusion is that the retail market for fixed access and call origination (FACO) meets all of the three criteria and is susceptible to ex-ante regulation.

12.8 A RETAIL MARKET FOR FIXED BROADBAND 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
<ul style="list-style-type: none"> • In the absence of any regulatory intervention, entry into the market through building own infrastructure requires significant levels of investment and large sunk costs • Entry barriers may be lowered where entry can take place through wholesale broadband access remedies (if in place and if effective). 	<ul style="list-style-type: none"> • Detailed assessment not needed if wholesale broadband access remedies are effective. • Furthermore, in recent years we have also seen an increased roll-out of competing physical networks observed including the rise of competing FBWA and Fibre. • Operators with control of these physical networks can provide competing retail fixed broadband services. 	<ul style="list-style-type: none"> • Potentially not relevant if the market fails one of the first two criteria. • If the market is competitive or tending towards competition, then it might be sufficient to leave interventions to ex post competition law. • This would be sufficient where there are no predictable or preventable market failures that could be better addressed by ex ante regulation.

High and persistent barriers to entry

Once a customer has an access channel, they can buy a broadband service, either from the operator who provides the access connection, or from an alternative provider. Therefore, a supplier of retail fixed broadband services needs to either own, or be able to obtain wholesale access to, a transmission channel to its customer.

To provide retail broadband services directly to the customer over its own transmission channel, as with fixed access, entry into the market will require significant levels of investment, largely in the form of sunk costs (costs which would be largely irrecoverable if the entrant decided to, or is forced to, exit the market). Economies of scale and density and high sunk costs raise significant barriers to entry for any operator considering the construction of a new local access network capable of supporting the provision of retail broadband services.

However, barriers to entry to this market would be lower if there is effective regulation at the wholesale level that would allow new entrants to the retail market. The relevant wholesale access product is Bitstream access, which is currently in place and, in 2018, [NO %] of retail broadband connections were providing over a service using Bitstream access as a wholesale input. This suggests that the current Bitstream service may be effective and has lowered entry barriers to this market.

Lack of a trend towards competition

Orange (combining Orange Fixed and Orange Data) has nearly [NO %] of the retail market.

Retail Services	Orange Fixed	Zain	Al-Nayi	Damamax	Jordan European	Orange Data	TE Data Jordan	V-Tel	Umniah	Batelco	Mada
ADSL	[NO %]	[NO %]	-	-	-	[NO %]	[NO %]	-	[NO %]	-	-
VDSL	-	-	-	-	-	-	-	-	-	-	-
FTTH	[NO %]	[NO %]	-	[NO %]	[NO %]	-	-	[NO %]	[NO %]	-	-
FTTB	-	-	-	[NO %]	-	-	-	[NO %]	[NO %]	-	-
FBWA	-	-	-	-	-	-	-	-	[NO %]	-	[NO %]
Total share	[NO %]	[NO %]	-	[NO %]	[NO %]	[NO %]	[NO %]	[NO %]	[NO %]	-	[NO %]

Exhibit XII.5 Market share by volume – 2018 (% share of access lines)

The TRC notes the increasing market share of retail broadband provided over alternatives to xDSL, in particular fibre and FBWA. Overall, it considers that the market is effectively competitive, but only in the presence of wholesale regulation.

Insufficiency of ex-post intervention alone

If the market is competitive or tending towards competition, then it might be sufficient to leave interventions to ex post competition law. This would be sufficient where there are no predictable or preventable market failures that could be better addressed by ex ante regulation.

Conclusion

The TRC's preliminary conclusion is that the retail market for broadband services does not meet all of the three criteria. Therefore, this market is not susceptible to ex ante regulation.

12.9 SUMMARY OF PRELIMINARY THREE CRITERIA ASSESSMENTS

Market	Susceptible to ex ante regulation?
Wholesale Local Access	yes
Wholesale Broadband Access	yes
Wholesale Voice Call Termination	yes
Wholesale Voice Call Origination	yes
Wholesale Transit	yes
Retail market for FACO	yes
Retail market for broadband services	no

Q8 Do you agree with the TRC's preliminary conclusions regarding the wholesale fixed telecommunications markets found to be susceptible to ex ante regulation?

Q9 Do you agree with the TRC's preliminary conclusions regarding the retail fixed telecommunications markets found to be susceptible to ex ante regulation?

XIII. Competition assessment

13.1 INTRODUCTION

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

- Wholesale Local Access;
- Wholesale Broadband Access;
- Wholesale Fixed Voice Call Termination;
- Wholesale Fixed Voice Call Origination;
- Wholesale Transit; and
- Retail FACO.

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 market for broadband services was found not to be susceptible to ex ante regulation, for the reasons discussed in section XII.12.8. Therefore, this defined market will not be considered further in the analysis.

13.2 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 presence of any barriers to entry or expansion).

However, the number of firms alone does not provide a sufficient indication of competitiveness. For example, there may be many firms in the market, 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 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 is only one firm in an industry, that firm will have 100% market share, and the Herfindahl-Hirschman Index (HHI) will 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.

13.3 WHOLESALE LOCAL ACCESS

The market defined for wholesale local access (WLA) includes (but is not limited to) LLU, VULA and wholesale products offered over FBWA.

Existing competition

Given the absence of LLU and VULA services in the market at present, hypothetical market shares are based on the inclusion of vertically-integrated operators. This takes the broadest possible view of the market, and considers the number of retail access connections as a physical connection for each operator in Jordan. This includes PSTN, ISDN, fibre, and FBWA. For ISDN, the data is for channels rather than lines or subscribers, as this is a more realistic representation of access paths.

On this basis, there were nine operators in this market at the end of 2017, and their market shares are calculated and shown in the exhibit below. As can be seen, Orange Fixed had a market share of [X72.4%] in 2017. Using 2017 market share figures, the TRC calculates a HHI of over 5650, showing a very high level of concentration.

Market shares	2015	2016	2017
Orange Fixed	[XNO %]	[NO %]	[NO %]
Zain	[NO %]	[NO %]	[NO %]
Batelco	[NO %]	[NO %]	[NO %]
Al-Nayi ⁷⁰	-	-	[NO %]
Danamax	[NO %]	[NO %]	[NO %]
Jordan European Internet services	[NO %]	[NO %]	[NO %]
V-tel	[NO %]	[NO %]	[NO %]
Umniah	[NO %]	[NO %]	[NO %]
Mada	[NO %]	[NO %]	[NO %]
	100.0%	100.0%	100.0%

Exhibit XIII.1 Retail FACO market shares [Responses to data request]

⁷⁰ Al Nayi began operating in 2017

Whilst Orange Fixed has lost some market share over the previous three years, at the same time as an increase coming from Umniah's FBWA services, the TRC notes that Orange Fixed continues to have a large share of the market. The [X<NO %] market share of Orange Fixed is well in excess of the [X<NO %] threshold for the presumption of dominance established by Article 8(b) of the Competition Safeguards. The TRC notes also that, even when combining the market shares of those operators that may be considered to be affiliated, no operator other than Umniah has a market share in excess of [X<NO %] and three operators have shares below [X<NO %] which results in a high HHI of about 5700.]

It is unlikely that alternative operators providing and/or self-supplying wholesale local access could increase their market shares sufficiently over the lifetime of this review to a level that would allow them to effectively compete with Orange Fixed or constrain its power.

Potential competition

Barriers to entry (and expansion) in this market are high, making it difficult for other (potential) competitors to build a position strong enough to compete with Orange. Such barriers arise from the **significant (and sunk) fixed costs** associated with building an access network. Orange Fixed has the benefit of **economies of scale, scope and density** (Competition Safeguards, Article 8(c), Numbers 3, 9 and 5) and its network will not be easily replicated. For example, Orange Fixed's ownership of a ubiquitous copper network means it already has poles on which new fibre infrastructure can be delivered, and this gives it a considerable advantage (in terms of both investment cost and time taken to roll out fibre) over potential competitors who would need to build a new access network.

Despite the rising share of FBWA services, and the increased coverage, there are significant barriers to entry and expansion for this technology too. These barriers would include, for example, the availability and cost of spectrum.

Other factors that are particularly relevant in this market include that fact that Orange Fixed is **highly vertically integrated**, and is **active on all relevant markets across the value chain**. The existence of different Orange affiliates, operating in different market segments, does not affect this conclusion, as these affiliates are all under common ownership and control, thus constituting a single economic entity for the

purposes of competition.⁷¹ The high degree of vertical integration means that Orange is the dominant operator in the provision of WLA products, and at the same time a major competitor in the associated retail markets.

Orange Fixed provides retail access and call origination, as well as other services (such as retail broadband) using its access network. Orange's **ubiquitous access network** also contributes to its significant **retail customer base**. (Competition Safeguards, Article 8(c), Number 10 and Competition Safeguards, Article 8(c), Number 8).

Countervailing buying power:

With the exception of wholesale access via FBWA, Orange is the only potential provider of wholesale local access, and no wholesale products are active in the market. Therefore, there is no potential for countervailing buyer power.

Preliminary Conclusion on SMP

Orange Fixed is the operator with SMP in the market for Wholesale Local Access.

⁷¹ As mentioned in footnote 9 of the TRC's 2009 Public Consultation Document on Fixed Broadband Markets, "[w]here individual operators are affiliated with one another by reason of common ownership, such operators shall be deemed to constitute a single economic entity for the purposes of the market review process, as they will by necessary implication be adopting a common course of strategic commercial behaviour in relation to the relevant market in question."

13.4 WHOLESALE BROADBAND ACCESS

Existing competition

At present, two wholesale broadband services products are offered commercially in the market. Orange Fixed offers a Bitstream access product, and Mada is providing a wholesale broadband FBWA service to Zain allowing it to provide a retail FBWA offer.

As the total number of active FBWA broadband connections in the retail broadband market was [XNO %] in 2018, this represents an upper bound on the number of lines under the wholesale agreement. Comparing this against Orange Fixed provision of [XNO] Bitstream lines, Orange Fixed had *at around* [NO%] market share for merchant market wholesale broadband services in 2018.

However, taking the widest possible market for wholesale broadband services (i.e. including self-supply) then market shares by number of active subscriber lines are as in the exhibit below and Orange (fixed and data combined) still has nearly 52% share in 2018:

Market shares	2015	2016	2017	2018
Orange Fixed + Orange Data	[NO %]	[NO %]	[NO %]	[NO %]
Zain	[NO %]	[NO %]	[NO %]	[NO %]
Al-Nayi ⁷²	[NO %]	[NO %]	[NO %]	-
Danamax	[NO %]	[NO %]	[NO %]	[NO %]
Jordan European Internet Services co	[NO %]	[NO %]	[NO %]	[NO %]
V-Tel	[NO %]	[NO %]	[NO %]	[NO %]
Umniah	[NO %]	[NO %]	[NO %]	[NO %]
Mada	[NO %]	[NO %]	[NO %]	[NO %]
TE Data Jordan	[NO %]	[NO %]	[NO %]	[NO %]
Batelco	[NO %]	[NO %]	[NO %]	-

Exhibit XIII.2 Wholesale broadband access market shares by number of active subscriber lines [Source: Response to data request]

[X] Whilst Orange's share has been declining in recent years (particularly between 2016 and 2018) and the market share of Umniah has been increasing, Orange's share (by

⁷² Al Nayi began operating in 2017

subscriber lines) of [X<NO %] is still above the threshold for the presumption of dominance established by Article 8(b) of the Competition Safeguards. Umniah's share is above [X<NO %] which, according to Article 8(b)(2) of the Competition Safeguards suggests that Umniah too may be dominant, if certain additional conditions are met (i.e., if it has the ability to control and affect the activity of the market, based on factors including, but not necessarily limited to, the Impact Factors listed in Article 8(c) of the Competition Safeguards). However, the TRC notes that this takes the broadest possible view of the market for WBA, and that Umniah's market share is based on self-supply, and so reflects its retail market position. Umniah does not offer a wholesale service, and in the TRC's view, it is not likely to have the incentive or motivation to do so. For this reason, it should not be considered to be dominant in the wholesale market.

For completeness, the TRC has also considered market shares by revenues. However, it is acknowledged that using revenues from the retail market is an imperfect measure of effective wholesale revenues. Despite this caveat, market shares by revenue indicate that [X<Orange still has a market share well in excess of [X<NO%

Market shares	2015	2016	2017	2018
Orange Fixed + Orange Data	[NO %]	[NO %]	[NO %]	[NO %]
Zain	[NO %]	[NO %]	[NO %]	[NO %]
Al-Nayi ⁷³	[NO %]	[NO %]	[NO %]	[NO %]
Danamax	[NO %]	[NO %]	[NO %]	[NO %]
Jordan European Internet Services co	[NO %]	[NO %]	[NO %]	[NO %]
V-Tel	[NO %]	[NO %]	[NO %]	[NO %]
Umniah	[NO %]	[NO %]	[NO %]	[NO %]
Mada	[NO %]	[NO %]	[NO %]	[NO %]
TE Data Jordan	[NO %]	[NO %]	[NO %]	[NO %]
Batelco	[NO %]	[NO %]	[NO %]	[NO %]

Exhibit XIII.3 Wholesale broadband access market shares by revenues [Source: Response to data request]

Potential competition

Barriers to entry or expansion in this market are high, making it difficult for other (potential) competitors to compete against Orange and, to a lesser extent, Umniah

⁷³ Al Nayi began operating in 2017

(Article 8(c), Numbers 13 and 14 of the Competition Safeguards). Orange Fixed enjoys significant benefits of **economies of scale, scope and density** (Competition Safeguards, Article 8(c), Numbers 3, 9 and 5) and its **ubiquitous copper network** cannot be easily replicated. Orange as a single economic entity enjoys the advantage of an already-existing customer base for xDSL retail broadband which can be migrated to fibre based retail broadband with lower costs and over a faster time period than could be offered by other or potential competitors.

Furthermore, Orange is a fully **vertically integrated entity** (Competition Safeguards, Article 8(c), Number 10) with Orange Fixed providing WBA and Orange Data providing retail broadband. As these two affiliates are under common ownership and control, they constitute a single economic entity for competition purposes.

While other operators self-supply wholesale broadband services over their own infrastructure (notably fibre providers), they remain reliant on Orange's Bitstream product outside their areas of geographical coverage. In the TRC's view, this is likely to be the case during the lifetime of this review.

Countervailing buying power:

The largest customer of Orange's wholesale broadband service is Orange Data, and no other customer purchases a significantly high volume of wholesale broadband services to allow it to exercise countervailing buyer power (Competition Safeguards, Article 8(c), Number 6).

Preliminary Conclusion on SMP

Orange Fixed is the SMP operator in the market for Wholesale Broadband Access.

13.5 WHOLESALE FIXED VOICE CALL TERMINATION

Existing competition

All operators that can terminate voice calls have a 100% market share for the termination of calls on their own networks. Therefore, their market share is well in excess of 50%, the threshold for the presumption of dominance established 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 Fixed Network Operator is an outright monopolist in the termination of calls to its own subscribers. An individual fixed network operator's monopoly position is not contestable – no other supplier could provide termination services on another operator's network. There is a lack of actual and potential competition (Competition Safeguards, Article 8(c), Number 12).

The TRC recognises that, in some cases, consumers will be able to substitute voice calls provided through 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.

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. However, it may be possible that other fixed operators, mobile operators or end users could exercise countervailing buyer power (see Competition Safeguards, Article 8(c), Number 6).

Other operators cannot credibly threaten to refuse to interconnect in response to high termination rates, as they know they will stand to lose significant users if their network does not provide access to all fixed line operators. Furthermore, they have a general duty to interconnect under existing Interconnection Instructions⁷⁴.

For end users, given the "calling party pays" (CPP) principle, there is no way to constrain the power of the terminating operator, unless they were 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 operator on whose network the call originates.

Preliminary Conclusion on SMP

All operators that terminate fixed voice calls have SMP for termination on their own networks.

⁷⁴ Telecommunications Regulatory Commission, Interconnection Instructions, 5 January 2005.

In particular:

- **Orange Fixed** is an SMP operator in the market for wholesale fixed voice call termination of calls to the Orange Fixed network.
- **Batelco** is an SMP operator in the market for wholesale fixed voice call termination of calls to the Batelco network.
- **Any other** operator terminating, now or within the review period, voice calls on its fixed network is an SMP operator in the market for wholesale fixed voice call termination of calls to its individual fixed network.

13.6 WHOLESALE FIXED VOICE CALL ORIGINATION

Existing competition

Although CS/CPS was mandated in the last market review, there has been no take-up of this type of wholesale call origination product. There is some use of wholesale call origination for international calls via calling cards. Exhibit XIII.4 below shows the broadest possible market, including the call volumes reported for NTT0 calling cards and Orange's self-supply of wholesale call origination self-supply. The market shares of firms in this market have been evolving as follows:

Market shares	2015	2016	2017
Orange Fixed	[NO %]	[NO %]	[NO %]
Zain	[NO %]	[NO %]	[NO %]
Batelco	[NO %]	[NO %]	[NO %]
TE Data Jordan	[NO %]	[NO %]	[NO %]
Orange Data – Jordan Data Communications	[NO %]	[NO %]	[NO %]

Exhibit XIII.4 Wholesale fixed voice call origination market shares (by call volumes)

[Source: Response to data request]

In 2017, Orange Fixed had a share of [NO %] That of other players whose share is built on calling card volumes (TE Data Jordan and Orange Data – Jordan Data communications), has been falling due to the decline in calling card call volumes.

For completeness, the TRC has also considered market shares by revenues. However, it is acknowledged that using revenues from the retail market is an imperfect measure of effective wholesale revenues. Despite this caveat, market shares by revenue are

broadly consistent with the volume share figures and show that Orange still has a significant market share of well over [NO %]:

Market shares	2015	2016	2017
Orange Fixed	[NO %]	[NO %]	[NO %]
Zain	[NO %]	[NO %]	[NO %]
Batelco	[NO %]	[NO %]	[NO %]
TE Data Jordan	[NO %]	[NO %]	[NO %]
Orange Data – Jordan Data Communications	[NO %]	[NO %]	[NO %]

Exhibit XIII.5 Wholesale fixed voice call origination market shares (by revenues) [Source: Response to data request]

Potential competition

Orange’s share of the market has been over [NO %] for the last three years, and is increasing, while the share of calls associated with calling cards has been declining. The context for this is an overall market for traditional switched fixed calls that has been declining. In the TRC’s view, this trend is likely to continue, and is consistent with experience world-wide.

Therefore, while the market may structurally be susceptible to ex ante regulation, due primarily to Orange’s very high share of call origination minutes, the TRC does not consider that there will be any demand for wholesale call origination services in the lifetime of this review. The contraction in the generation of switched voice call origination minutes is intensified by the increasing use of OTT alternatives (particularly for international calls). It is likely that OTT alternatives have also impacted on the decreasing use of calling cards.

The TRC’s view is therefore that there is unlikely to be demand for wholesale call origination services, and so extremely unlikely that there would be competitive supply of wholesale call origination services. Given the assessment that there will be no wholesale call origination services (other than those associated with calling cards) the TRC does not find any operator to have SMP: it would be disproportionate to find SMP in the provision of a service for which there is no market demand. Any issues associated with the declining supply of calling cards should be dealt with either through the TRC’s competition powers or through consumer protection measures.

Preliminary Conclusion on SMP

No operator has SMP in the market for wholesale voice call origination.

13.7 WHOLESALE TRANSIT

Existing competition

At the end of 2017, there were two providers of wholesale transit services in Jordan. Zain accounts for a small proportion of transit volumes ([<[NO %]] of total traffic and [<[NO %]] of domestic traffic in 2017). Orange Fixed is the main provider of transit services in Jordan, accounting for the rest.]

The figure below shows the trends in market shares for wholesale transit services (in terms of total transit traffic volumes) between 2015 and 2017:

[Graph omitted]

Exhibit XIII.6 Total transit market shares (by traffic volumes) [Source: Responses to data request]

For domestic transit, in 2017 Orange is responsible for [<[NO %]] of wholesale transit (by volumes). The decline in Zain's share of domestic transit is largely the result of the closure of an MVNO that used to operate on its network (Friendi), with Zain previously recording MVNO traffic as transit. Whilst Zain has a larger share of international transit than it does for domestic transit, Orange was responsible for transit of over [<[NO %]] for all traffic (by volumes) in 2017.

The TRC has also assessed market share by revenue, as shown below.

Market shares	2015	2016	2017
Orange Fixed	[NO %]	[NO %]	[NO %]
Zain	[NO %]	[NO %]	[NO %]
Total	100.0%	100.0%	100.0%

Exhibit XIII.7 Total transit market shares (by transit revenue) [Source: Responses to data request]

By revenue, market share figures are broadly similar to shares by volume, with Orange having a market share of over [X] [NO %] in 2017.

Orange's share of total transit volumes and revenues has been relatively stable over the past three years. A share of over [NO %] is well above the threshold for the presumption of dominance established by Article 8(b) of the *Competition Safeguards*. The HHI also indicates a very high concentration.

Potential competition

Barriers to entry (and expansion) in this market are high, making it difficult for other (potential) competitors to build a position strong enough to compete with Orange. As a result, actual and potential competition is weak (see also Competition Safeguards, Article 8(c), Numbers 13 and 14).

High barriers to entry in this market are a result of the following factors:

- Wholesale transit is an **essential facility**, which is essentially controlled by Orange Fixed as the only operator with implemented interconnection agreements with almost all domestic operators in Jordan. (See also Competition Safeguards, Article 8(c), Number 2).
- There are substantial benefits to Orange Fixed in terms of **economies of scale, scope and density** (Competition Safeguards, Article 8(c), Number 9) and its network will **not be easily replicated**.
- No operator would be in a position to provide wholesale transit services of such variety and with the same geographical scope as Orange Fixed due to its nationwide fixed telephony network (**ubiquitous network effects** – see Competition Safeguards, Article 8(c), Number 3).
- Orange is **vertically integrated**, and is active on all relevant markets across the value chain. Orange provides retail access and call origination, as well as other

services (such as retail broadband) using its access network. Orange's ubiquitous access network also contributes to its significant retail customer base. (Competition Safeguards, Article 8(c), Number 10) and (Competition Safeguards, Article 8(c), Number 8).

- **Countervailing buying power:** Orange is the sole wholesale provider with the ability to offer a ubiquitous transit service connecting all network operators in Jordan. Alternative operators could not credibly threaten to respond to a price increase from Orange via self-build or switching to alternative providers for the provision of a significant portion of their transit needs (see Competition Safeguards, Article 8(c), Number 6).

Preliminary Conclusion on SMP

Orange Fixed is the operator with SMP in the market for wholesale transit services.

13.8 RETAIL FACO

Existing competition

In the absence of take-up of LLU in Jordan, competition for the provision of retail FACO can only come from those operators who have their own access infrastructure.

The defined market for retail FACO includes access and call origination, and these services are always sold together. The assessment assumes the broadest possible market for the number of access connections as a physical connection, for each operator in Jordan. This includes access via PSTN, ISDN, fibre, and FBWA. For ISDN, the data is for channels rather than lines or subscribers, as this is a more realistic representation of access paths.

On this basis, there were nine potential players in this market at the end of 2017, and their market shares (for the calls element of the service) by traffic volumes are displayed in the exhibit below:

Market shares	2015	2016	2017
Orange Fixed	[NO %]	[NO %]	[NO %]
Zain	[NO %]	[NO %]	[NO %]
Batelco	[NO %]	[NO %]	[NO %]
Al-Nayi ⁷⁵	-	-	[NO %]
Danamax	[NO %]	[NO %]	[NO %]
Jordan European Internet services	[NO %]	[NO %]	[NO %]
V-tel	[NO %]	[NO %]	[NO %]
Umniah	[NO %]	[NO %]	[NO %]
Mada	[NO %]	[NO %]	[NO %]
Total	100.0%	100.0%	100.0%

Exhibit XIII.8 Retail FACO market shares by traffic volumes [Source: Responses to data request]

Market shares by retail voice call origination revenues (including calling cards) are shown in the exhibit below:

Market shares	2015	2016	2017
Orange Fixed + Orange Data	[NO %]	[NO %]	[NO %]
Zain	[NO %]	[NO %]	[NO %]
Danamax	[NO %]	[NO %]	[NO %]
Jordan European Internet Services co	[NO %]	[NO %]	[NO %]
V-Tel	[NO %]	[NO %]	[NO %]
Umniah	[NO %]	[NO %]	[NO %]
Mada	[NO %]	[NO %]	[NO %]
Batelco	[NO %]	[NO %]	[NO %]

Exhibit XIII.9 Retail FACO market shares by revenues [Source: Response to data request]

By both measures of market share, Orange Fixed has lost some market share over the previous three years, while the market share of Umniah's FBWA services has increased. However, Orange Fixed continues to have a large share of the market. The [X<[NO %]] market share (by origination traffic) and the [X<[NO %]] market share (by origination revenues) of Orange Fixed is well in excess of [X<[NO %]], the threshold for the presumption of dominance established by Article 8(b) of the *Competition*

⁷⁵ Al Nayi began operating in 2017

Safeguards. In addition, only Umniah has a market share above [X<[NO %]], and three operators have market shares of less than [X<[NO %]]

The TRC considers it unlikely that alternative operators could increase their market shares sufficiently over the lifetime of this review to a level that would allow them to effectively compete with Orange Fixed or constrain its power.

Potential competition

In the absence of effective wholesale obligations on wholesale local access and wholesale voice call origination, the retail market for fixed telephony access is still characterised by the presence of strong **economies of scale, scope and density** in access networks (Competition Safeguards, Article 8(c), Numbers 3 and 9). This, together with the high sunk costs associated with roll-out of a nationwide telephony access network significantly raise the **barriers to entry** for any operator wanting to provide retail fixed telephony access services (Competition Safeguards, Article 8(c), Number 14).

In addition, Orange Fixed is by far the largest Jordanian fixed network telephony operator in terms of national coverage, network capacity and access to capital markets/financial resources (Competition Safeguards, Article 8(c), Numbers 1 and 7). This would not be easily replicated by potential entrants.

Orange is a fully **vertically integrated** entity (Competition Safeguards, Article 8(c), Number 10) that controls the full value chain for narrowband services, and is active on all relevant markets across the value chain, which allows it to bundle products or services (Competition Safeguards, Article 8(c), Number 8). For example, Orange provides retail access and call origination, as well as other services (such as retail broadband) using the access network, over its own infrastructure.

The existence of different Orange affiliates, operating in different market segments, does not affect this conclusion, as these affiliates are all under common ownership and control, thus constituting a single economic entity for the purposes of competition.⁷⁶

⁷⁶ As mentioned in footnote 9 of the TRC's 2009 Public Consultation Document on Fixed Broadband Markets, "[w]here individual operators are affiliated with one another by reason of common ownership, such operators shall be deemed to constitute a single economic entity for the purposes of the market review process, as they will by necessary implication be adopting a common course of strategic commercial behaviour in relation to the relevant market in question."

In the market definition, the TRC found that voice calls delivered over OTT alternatives were not a sufficiently strong substitute to warrant inclusion in the FACO market. However, it recognises the increasing volume of OTT voice calls, and the corresponding decrease in the volume of traditional switched voice calls. The TRC proposes that this recognition should be reflected when considering remedies in the FACO market.

Countervailing buying power

Given the lack of available options for retail purchasers, they cannot readily switch to an alternative supplier, and all options are geographically limited. Therefore, individual end-users are unlikely to be able to exert countervailing buyer power sufficiently strongly so as to constrain Orange Fixed in a manner that would generate competitive market outcomes (see Article 8(c), Criterion Number 6 of the Competition Safeguards).

Preliminary Conclusion on SMP

Orange Fixed is the SMP operator in the market for retail Fixed Access and Call Origination (FACO).

13.9 SUMMARY OF PRELIMINARY SMP FINDINGS

Relevant Market	SMP Operator
Wholesale local access	Orange Fixed
Wholesale broadband access	Orange Fixed
Wholesale fixed call termination	All operators for termination on their own fixed network
Wholesale voice call transit	Orange Fixed
Wholesale fixed call origination	No SMP
Retail fixed access and call origination	Orange fixed

Q10 Do you agree with the TRC’s preliminary conclusions regarding the competition assessment and SMP findings in the wholesale fixed markets?

Q11 Do you agree with the TRC’s preliminary conclusions regarding the competition assessment and SMP findings in the retail fixed markets?

XIV. Proposed remedies

14.1 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 wholesale and retail leased lines 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.

14.2 WHOLESALE LOCAL ACCESS (WLA)

Review of existing remedies

Remedies imposed after previous review:

- Access
 - Access to fully unbundled and shared access to local loops (LLU) and sub-loops (SLU), upon reasonable request, at each feasible location (MDF or equivalent)
 - Access to associated facilities and services, specifically collocation (dedicated or, if not feasible, co-mingling, adjacent and distant)
 - Offering capability for migration between LLU/SLU/WBA
 - Interference Management Plan
- Transparency:
 - Reference Offer (RO)
 - Publication of information on SMP operator's website (location and size of sites, KPIs, pricing for LLU)
 - Information, upon request and subject to possible confidentiality agreement, on location of MDFs, cable length, power and space availability, cable entry points and characteristics, and results of any xDSL tests
- Non-discrimination:
 - For all access-related inputs (e.g. provisioning and service management)
 - Onus on SMO operator to monitor compliance via regularly updated KPIs and a Wholesale Customer Relations Management (WCRM) system
- Accounting separation:
 - For provisioning of LLU, with certain annual financial statements and

relevant supporting information. Further public consultation to follow, prior to implementation, on accounting rules and reporting formats

- Price control:
 - Cost-based top-down LRIC pricing
 - Full specification of obligation to be developed by the TRC, and be the subject of public consultation prior to implementation

Issues in implementation of existing remedies

An SMP operator in the wholesale access market may be insulated from the need to innovate and improve efficiency, so limiting the development of new technologies. An SMP operator could also decide to withhold investment where it has control over key inputs necessary for other operators to offer a retail service, and so delay or impede the development of competition. Delays in the development of an LLU product in Jordan indicate such inefficiency or inertia.

Another particular type of competition problem in the wholesale access market is the ability of an SMP operator to leverage its market power into related downstream markets. As a vertically-integrated, single economic entity, Orange would be able to affect competitive conditions in a number of related retail markets that depend on the existence of a physical access connection to an end user. Vertical leverage could include refusal to supply a wholesale product, or to introduce unreasonable delays in the development and/or supply of new products. Orange's delays in developing an LLU offer provide examples of this type of behaviour.

Access upon reasonable request

Experience of implementing access remedies indicates delays introduced by Orange in responding to access requests, and indeed delaying at all stages of the process. The current obligation should be strengthened in order to provide guidance on the TRC's expectations on how the process of initiating an access request should work.

The current access obligation is not a generic obligation that applies to all products and services in the (previous) Wholesale Physical Network Infrastructure Access (WPNIA) market, but applies only to LLU and SLU. There is thus no extension of the obligation to consider a fibre-based equivalent of LLU. This means that the remedy, as it stands, does not provide for the possibility of any additional products in the market, and is not future-proof.

Since the time of the last review, Orange has produced a Reference Offer for LLU. However, there has been no take-up of this service. In the TRC's view, it is unlikely that there will be demand for LLU now or in the future, because, as a copper-based access product, the product is coming to the end of its life.

The TRC has considered whether the access obligation should include the possibility of obliging access to Civil Engineering Infrastructure (CEI). CEI could include, amongst other things, access to ducts and poles; ingress and egress points; and chambers. Where CEI is not available, access could be required to dark fibre. Access to Orange Fixed's CEI would allow another operator to use as much of its own infrastructure as possible, which allows it to have a high degree of control over its product and service offerings. In addition, access to Orange Fixed's CEI would be a means of supporting efficient network roll-out, because the replication of infrastructure build would be reduced, and unnecessary build costs would be removed.

Non-discrimination

The current obligations apply only to LLU and SLU, and not to any future products that may be introduced or developed for the WLA market.

The current obligation has a specific focus on the prohibition of discrimination in the timing of LLU provision, and does not consider other types of discrimination that may be manifested. It is not clear from the obligation what behaviour is actually prohibited.

Transparency

The current obligations apply only for LLU and SLU, and not to any future products that may be introduced or developed for the Wholesale Local Access market.

There is a general lack of clarity around what information is to be made available and when, and this leaves room for manipulation by the SMP operator. For example, Orange, as a designated SMP operator, could launch retail products using WLA inputs which other operators could not match, because no wholesale equivalent has been made available. This information asymmetry should be addressed in the transparency obligation.

In particular, the processes are currently unclear concerning the sequencing of the notification to the TRC of any new products and changes to existing products, and the

dissemination of this information to licensees. This applies both to price and non-price terms and conditions.

Accounting separation

The current obligations apply only to LLU and SLU, and not to any future products that may be introduced or developed for the WLA market.

Although the obligation states that Orange is to produce separated accounts, and refers to further consultation on rules and reporting formats, accounting separation has not been implemented, i.e. Orange has not provided accounting information to the TRC.

Cost accounting and price control

The current obligations apply only to LLU and SLU, and not to any future products that may be introduced or developed for the WLA market.

A top-down accounting system has been approved, and there is an obligation that prices are to be cost-based. TRC has published regulated prices to be applied should an LLU product be introduced. While a continuing obligation that prices are to be cost-based would address competition problems associated with excessive wholesale pricing, such an obligation would not prevent Orange as a single economic entity from squeezing the margin between its regulated wholesale products and its retail products, so that a similarly efficient operator may not be able to offer a competitive retail product, even one based on a regulated wholesale input.

Proposed remedies

Access upon reasonable request

The scope of the current obligation should be expanded so as to require that Orange Fixed should provide access, upon reasonable request, **to all products and associated facilities** that fall within the market for Wholesale Local Access (WLA), thus including (but not limited to) LLU, SLU, VULA and wholesale products offered over FBWA. This, more broadly defined, scope is required to ensure that the obligation is future-proof, and can be applicable to future products that fulfil the same functions as any existing products in the WLA market.

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 thus be on the SMP operator (Orange Fixed) to justify refusal of access request, as unreasonable, and

not on the access seeker to justify acceptance. Annex 3 provides an indicative outline of the steps involved in dealing with an access request.

The implementation of this approach means that Orange Fixed would not be required to produce, as part of a supporting transparency obligation, a Reference Offer for any and all new products in the WLA market in advance of demand. However, it should be noted that the provision of a new product to Orange's own downstream operation would render any access request for the same product by definition reasonable and hence necessarily acceptable by Orange.

Even with the general access obligation as described, there should be obligations relating to a **requirement to make available specific products** should they be the subject of a reasonable access request. The TRC proposes that two categories of product should be included at this stage:

- An access obligation including (but not limited to) VULA⁷⁷, and
- An obligation to provide access to Civil Engineering Infrastructure (CEI), such as poles and ducts, as well as (when access to CEI is unavailable for economic, technical or capacity reasons) dark fibre, if it is reasonably available.

The TRC considers that there is no need to specify that LLU should be made available. In the event that an operator does decide to request LLU, this could in any event be considered as an access request, even if the product is not specifically mandated.

The TRC further proposes that **additional conditions** should be attached to the access obligation, including the following:

- Orange Fixed should be required to negotiate in good faith with access seekers.
- Orange Fixed should consider and conclude access requests in a way that is fair, reasonable and timely.
- Orange Fixed should not withdraw access to any product or associated facility without the prior approval of the TRC. For the avoidance of doubt, this also applies to the withdrawal of a product or ceasing provision of the service in a particular geographic area.

⁷⁷ Virtual Unbundled Local Access is an active product that provides Bitstream-type access in a similar way to local physical access. VULA enables interconnection at local level and supports a range of services.

Non-discrimination

The TRC proposes that a non-discrimination obligation should apply to all products and associated facilities in the WLA market. The obligation should be similar to the one in place today and make clear that Orange Fixed is not to unduly discriminate between operators and/or between operators and its own downstream operations in terms of, for example, provisioning times and service management.

The TRC has considered how it expects Orange Fixed to demonstrate that it is not discriminating. It is proposed that Orange should be required to provide a **Statement of Compliance** with its 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 4. A demonstration of non-discrimination could entail information about product/service performance (for example, in the form of **regularly updated KPIs**), and could entail the provision of specific financial information. For this reason, the non-discrimination obligation would be supported by transparency and accounting obligations, and these are discussed further below.

Taking into consideration the absence of a Wholesale Customer Relations Management system today, the TRC does not intend that its creation be included, once again, as a stand-alone ex ante remedy. Instead, the matter can be adequately covered in the minimum required content of any Reference Offers.

Transparency

Transparency requirements should support the access obligation and the non-discrimination obligations as set out above. This would mean that transparency obligations will apply to all products and associated facilities in the Wholesale Local Access market.

More specifically, the transparency requirement means that **Orange Fixed should publish a Reference Offer for any WLA product or service it provides to any other operator**, as a consequence of the latter's reasonable request or for any other reason.

There should be an obligation that Reference Offers should be kept up-to-date and be produced as soon as a product is made available in the wholesale market, subject to advance notification as described below. ROs will be subject to TRC approval, even if the associated access service has been already accepted by an operator requesting it.

The TRC proposes that the specific **obligation to maintain a Reference Offer for LLU/SLU can be removed**. As explained above, there has been no demand for this product up till now, and it is unlikely that there will be demand in future for a copper-based access product. However, should such demand arise, it could be dealt with under the proposed reasonable access request approach.

The current obligation that the SMP operator has to make publicly available and keep up to date an **SLA** for each product should be maintained for any wholesale products provided to another operator upon the latter's request or any other reasons. SLAs are subject to TRC approval.

Transparency remedies should be developed to provide clarity on the **process for introducing new products** to the market. The TRC proposes that Orange should notify operators at least 6 months prior to the launch of a new wholesale product. The notification should include technical specifications and proposed prices. Orange should provide an additional 1 month's notice to the TRC (i.e. the TRC should be notified 7 months prior to the launch of a new wholesale product). This additional month is to allow the TRC to verify that Orange's Fixed proposals comply with their regulatory requirements. As there is likely to be variance in the level of detail associated with different products, the TRC should be able to vary the time required for its initial assessment, and the time required for Orange Fixed to notify other operators.

The transparency obligation should also set out a mechanism for dealing with **change to existing products**. The TRC proposes that operators should be informed 3 months prior to changes coming into effect, and that an additional 1 month's notice should be provided to the TRC (i.e., the TRC would be notified 4 months before changes come into effect).

Price changes should not require an extensive prior notice period. If the changes are solely related to price, the notice period should be one month before coming into effect, with an additional one month prior notification to the TRC (i.e. the TRC should be notified two months before price changes come into effect).

A transparency obligation would require Orange Fixed to provide information to the TRC on a set of Key Performance Indicators (KPIs). The purpose of the KPIs will be to demonstrate that Orange is compliant with its 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

An obligation that Orange Fixed 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 submitted.

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 thus proposes that there should be an obligation, applying to all products and associated facilities in the Wholesale Local Access market, for Orange Fixed to 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 be directly relevant 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.

Cost accounting and price control

Orange Fixed should continue to maintain a suitable top-down cost accounting system, as specified by the TRC.

The current obligation to maintain appropriate **cost-based prices** based on the top down LRIC model should be retained, and should apply to all products and associated facilities in the WLA market. 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). The appropriate cost standard should continue to be forward-looking long-run incremental costs (FW-LRIC).

The TRC has considered whether it is appropriate to impose a cost-based pricing obligation on all products in the WLA market. While it accepts the principle that wholesale prices should be oriented towards the cost of supply, it recognises that, in the case of fibre FTTx products, a cost orientation obligation is not necessarily appropriate at this time. The TRC notes experience in other jurisdictions, particularly within the EU, where the EC's 2013 Non Discrimination Recommendation⁷⁸ explains that, due to demand uncertainty in the roll-out of Next Generation Access networks, and uncertainty regarding potential costs and revenues, operators may be allowed pricing flexibility and a cost orientation obligation may not be appropriate. However, the 2013 Recommendation does set out strict non-discrimination criteria. This is to guard against excessive wholesale and retail pricing. Under the EU approach, the conditions that should be applied by a regulator deciding not to impose regulated wholesale prices on fibre products in the wholesale local access market include:

- Imposition of Equivalence of inputs (Eoi), which includes a roadmap for implementation, and the definition of KPIs and SLAs;
- Where Eoi has not been implemented, obligations of technical replicability; and
- An Economic Replicability Test, following an approach set out by the EU.

The EU approach makes the non-imposition of cost-oriented pricing conditional on the finding that fibre pricing is constrained by either a cost-based legacy product constituting a 'copper anchor', or by retail services provided over alternative infrastructure.

The TRC notes that the EU approach to forbearing from the imposition of cost-based pricing on fibre access products is conditional on a range of other obligations being imposed, and this is due to concern over excessive wholesale pricing in the absence of

⁷⁸ Commission Recommendation on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment, 11.09.2013

regulated pricing. Indeed, several European countries which initially did not impose cost-based pricing on fibre have now introduced regulated prices, at least for some fibre access products, because the SMP operator set its prices at a level deemed to be anti-competitive⁷⁹.

The TRC proposes that **there should be a specific exclusion of FTTx services from the cost orientation obligation at this time**, but that the TRC should retain the right to monitor prices, and to take action in the event of excessive wholesale pricing without having to conduct another market review. However, the TRC should take account of the conditions identified in the EC 2013 Recommendation, in particular measures to ensure technical replicability, measures to support the non-discrimination obligation (including KPIs), and the specification of a margin squeeze obligation.

With this in mind, the TRC proposes that there is a need for a distinct obligation **not to cause a margin squeeze between:**

- Wholesale products in the WLA market and wholesale products in downstream wholesale markets. This could apply, for example, to the pricing of a WLA product and the pricing of Bitstream; and
- Wholesale products in the WLA market and downstream retail products.

For those WLA products subject to an obligation that wholesale prices should be cost-based, the obligation not to cause a margin squeeze will ensure that an appropriate margin is maintained that allows competitors to purchase a cost-based wholesale input and offer a viable retail product while covering their appropriate costs. For FTTx products, where the TRC's preliminary view is that these would not be subject to an obligation that wholesale prices should be cost-based, the obligation not to cause a margin squeeze would address Orange's Fixed's ability and incentive to leverage its power from the WLA market to downstream wholesale and retail markets, and so potentially foreclose market entry and/or expansion by competitors.

The TRC expects that the design of appropriate margin squeeze tests would include the following considerations:

⁷⁹ See for example Ofcom, "WLA Market Review: Markets, Market Power Determinations and Remedies", 28 March 2018

- Standard to be used (for example, this could be Equally Efficient Operator (EEO), Similarly Efficient Operator (SEO), or Reasonably Efficient Operator (REO));⁸⁰
- Cost base (for example, LRIC; LRIC+; ATC)
- Identification of wholesale and retail products to be included in the test
- Product versus portfolio approach;⁸¹
- Treatment of bundles.

The details of the implementation of margin squeeze obligations would be subject to further specification by the TRC.

Q12 Do you agree with the TRC's preliminary proposals for remedies in the Wholesale Local Access market?

⁸⁰ EEO and SEO use the costs of the SMP operator, with the SEO modifying the SMP operator's costs to take account of scale and cost differences faced by an alternative operator. REO models the costs of a hypothetical alternative operator.

⁸¹ The TRC could require that every product individually must pass the margin squeeze test, or could require that the test may be passed by a category (portfolio) of products. This may vary according to the market.

14.3 WHOLESALE BROADBAND ACCESS

Review of existing remedies

Remedies imposed after previous review:

- Access upon reasonable request:
 - Provision of wholesale broadband access at all feasible access points, including Handover at DSLAM and (national plus optional regional) BRAS level
 - No withdrawal of existing wholesale broadband access services without TRC's approval
 - Offering option of with/without DSL-only
 - Access to associated facilities and services, including collocation insofar as feasible
 - Offering capability for migration between different wholesale broadband access (WBA) and WBA/LLU
- Transparency:
 - Reference Offer (RO)
 - Publication of information on SMP operator's website (location of MDF sites and BRAS level sites, and number of addressable end-users, KPIs, WBA prices)
 - Information, upon request and subject to possible confidentiality agreement, on location of access sites, copper local loop lengths, power and space availability, cable entry points and characteristics, and results of any xDSL tests
- Non-discrimination:
 - For all access-related inputs (e.g. provisioning and service management)
 - Onus on SMO operator to monitor compliance via regularly updated KPIs and a Wholesale Customer Relations Management (WCRM) system
 - Advance notification to TRC of new wholesale and retail products (prohibition of margin squeeze)
- Accounting separation:
 - For provisioning of WBA services, with certain annual financial statements and relevant supporting information. Further public consultation to follow,

prior to implementation, on accounting rules and reporting formats

- Price control:
 - Cost-based top-down LRIC pricing
 - Full specification of obligation to be developed by the TRC, and be the subject of public consultation prior to implementation

Issues in implementing current remedies

Particular competition problems that are likely to arise in the Wholesale Broadband Access market are to do with the ability and incentive of the SMP operator to engage in excessive pricing, inefficiency and inertia, and leverage. Orange's incentive to engage in anti-competitive behaviour is, to some extent, constrained in this market because the biggest purchaser of Orange's wholesale product is one of its affiliates. However, other operators do depend on Orange's wholesale product, and depend on being able to access this product on non-discriminatory terms and conditions. Absent regulation, Orange would have the ability to deny access to Bitstream, while continuing to supply its downstream operation. It could increase prices for Bitstream while absorbing such increases due its own vertical integration.

Absent regulation, Orange would face limited competitive pressure to innovate. For example, at present there is no Bitstream product available over fibre, but only over copper.

There is currently an obligation that Orange's prices for IP capacity are to be cost based. The TRC has addressed potential bottlenecks in access to international gateways in the wholesale markets for transit and for dedicated capacity. The TRC's view is that, while access services, such as transit and leased lines, fall within the markets defined in the review, services carried over these access options (including IP capacity) do not fall within the defined markets. The current imposition of cost-based pricing on IP capacity should therefore be withdrawn.

Access upon reasonable request

The current remedy is assumed to apply only to the copper network of Orange, although this is not explicit in the Decision. In any event, there are no specific provisions for Bitstream access over the fibre network.

In practice, only IP stream level (bitstream 3) access is being provided. Furthermore, the SMP operator's obligation to offer naked DSL has not been implemented. This raises the question as to whether these obligations should be maintained, in their present or a modified form.

Non-discrimination

Implementation of this obligation is work-in-progress and focuses on timing. There may be good reasons for it to also encompass quality parameters.

Accounting separation

Orange Fixed has not yet provided the required separated accounting information. As is the case for other markets, implementation of the accounting separation obligations poses a significant challenge.

Other

The Decision provided that, for a transitional period, Orange Fixed (the SMP operator) should maintain the provisioning of its backhaul service and include it in its RO. During that same period, it should also continue to offer cost-based prices for retail ADSL connections as approved by the TRC. This period would come to an end as soon as more than 95% of alternative operators' customers can be shown to be buying broadband Internet access as a bundled service. After that transitional period, the above obligations imposed on Orange Fixed on backhaul and retail ADSL connections would cease to apply. The conditions set out in the transitional arrangements have been met, and so the obligation that Orange should offer cost based prices for retail ADSL should be withdrawn.

Proposed remedies

Access upon reasonable request

The TRC proposes that the current obligation should be maintained and its scope set out in more detail. Orange Fixed should provide **access to wholesale broadband service** products and associated facilities. Such access should include, but not be limited to, specific products (so as to remain future-proof), namely:

- Bitstream access to Orange's Fixed copper, network at all feasible access points, including Handover at DSLAM and (national plus optional regional) BRAS level;
- Bitstream access (FTTC/FTTH-based) to Orange's fibre network;

- Co-location and backhaul services, in connection with Bitstream access;
- Offering capability for migration between products in the wholesale broadband services market (e.g. Bitstream) and products in the upstream Wholesale Local Access Market (e.g. VULA);
- Interconnection services⁸²;
- Offering a choice with/without DSL-only.

Access to such broadband services and products should be provided **upon reasonable request and on fair, reasonable and timely terms and conditions**.

The TRC notes that the inclusion in the access obligation of a requirement to provide access to associated facilities such as co-location and backhaul (in connection with Bitstream services) would provide a basis for the TRC to deal with any claims of denial of access to these services.

The assumption will be that access requests will be reasonable and must thus be accepted. The **onus will thus be on the SMP operator** (Orange Fixed) to justify a refusal of access request, as unreasonable, and not on the access seeker to justify acceptance. Annex 3 provides an indicative outline of the steps involved in dealing with an access request.

Orange Fixed should **not withdraw** any wholesale broadband access or service facility without the prior approval of the TRC. For the avoidance of doubt, this also applies to the withdrawal of WBA from a geographic area.

Non-discrimination

The TRC proposes that a non-discrimination obligation should apply to all products and associated facilities in the Wholesale Broadband Services market. The obligation should make clear that Orange Fixed is not to unduly discriminate between operators and/or between operators and its own downstream operations within the same single economic entity in terms of, for example, provisioning times and service management. Non-discrimination should apply also to qualitative parameters (e.g. QoS, information made available).

⁸² Interconnection services for Bitstream are physical and/or logical connectivity between networks to enable the handover of traffic. They could include, for example, In-Building Handover, In-Span Handover.

Taking into consideration the absence of a Wholesale Customer Relations Management system to date, the TRC proposes that the matter can be adequately covered in the minimum required content of any Reference Offers.

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 4. A demonstration of non-discrimination could entail information about product/service performance (for example, in the form of **regularly updated KPIs**), and could entail the provision of specific financial information. For this reason, the non-discrimination obligation would be supported by transparency and accounting obligations, and these are discussed further below.

Transparency

The transparency requirement should support the access obligation and the non-discrimination obligations as set out above. This would mean that transparency obligations will **apply to all products and associated facilities in the WBA market**, and will not be limited to the specific WBA products mentioned above.

More specifically, the transparency requirement means that Orange Fixed should maintain and keep updated its **current Reference Offers for Bitstream**. **In addition, it should publish a Reference Offer** (i) on the WBA products and services mentioned above (subject to a reasonable access request), as well as on any (ii) other WBA product or service it provides to any operator, as a consequence of the latter's reasonable request or for any other reason. Annex 5 sets out an indicative list of minimum requirements.

- Transparency remedies should be also developed to provide clarity on the **process for introducing new WBA products** to the market. The TRC proposes that Orange Fixed should notify operators at least 6 months prior to the launch of a new WBA product. The notification should include technical specifications and proposed prices. Orange Fixed should provide an additional 1 month's notice to the TRC (i.e. the TRC should be notified 7 months prior to the launch of a new WBA product). This additional month should allow the TRC to verify that Orange's proposals comply with their regulatory requirements, particularly as regards the prohibition of a margin squeeze. As there is likely to be variance in the level of detail associated with different products, the TRC should be able to vary the time required for its initial assessment, and the time required for Orange Fixed to notify other operators.

- The transparency obligation should also set out a mechanism for dealing with **change to existing WBA products**. The TRC proposes that operators should be informed 3 months prior to changes coming into effect, and that an additional 1 month's notice should be provided to the TRC (i.e., the TRC would be notified 4 months before changes come into effect).
- **Price changes** should not require an extensive prior notice period. If the changes are solely related to price, the notice period should be one month before coming into effect, with an additional one month prior notification to the TRC (ie the TRC should be notified two months before price changes come into effect).

The **existing transparency obligations concerning the publication of specified information on the SMP operator's website** (i.e. location of MDF sites and BRAS level sites, and number of addressable end-users, WBA prices) and the requirement to provide information, upon request and subject to possible confidentiality agreement, on the location of access sites, copper local loop lengths, power and space availability, cable entry points and characteristics, and results of any xDSL tests, should be maintained, unless such information is already included in the RO.

A transparency obligation would require Orange Fixed to provide information to the TRC on a set of **Key Performance Indicators (KPIs)**. The purpose of the KPIs will be to demonstrate that Orange Fixed is compliant with its 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

An obligation that Orange 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 submitted.

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. 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 be directly relevant for assessing compliance.

The TRC thus proposes that there should be an obligation, applying to all products and associated facilities in the WBA market, for Orange Fixed to provide **relevant accounting information as specified by the TRC**. The detailed specification of the relevant accounting information will follow in further TRC documentation, after the adoption of the TRC's decision.

Cost accounting and price control

Orange Fixed should continue to maintain a suitable top-down cost accounting system, as specified by the TRC.

The current obligation to maintain appropriate **cost-based prices** should be retained and should apply to all products and associated facilities in the WBA market. 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). The appropriate cost standard should continue to be forward-looking long-run incremental costs (FW-LRIC).

The TRC proposes that there is a need for a distinct obligation **not to cause a margin squeeze between** wholesale products in the WBA market and downstream retail products. The approach to margin squeeze testing in the WBA market will be similar to that described for the WLA Market in section 14.2 above. The details of the

implementation of margin squeeze obligations will be subject to further specification by the TRC.

Q13 Do you agree with the TRC's preliminary proposals for remedies in the Wholesale Broadband Access market?

14.4 WHOLESALE FIXED CALL TERMINATION

Review of existing remedies

Remedies imposed after previous review:

- Access:
 - Each designated licensee operating in this market must provide call termination services upon reasonable request.
 - Specifically, Orange Fixed must provide both local and single call termination. Orange Fixed must also provide double call termination once this service becomes technically feasible.
 - All designated licensees must provide 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).
- Transparency:
 - Each designated Licensee must publish specified information on its website in relation to wholesale fixed call termination provision, which must include matters such as the location and characteristics of interconnection sites and wholesale prices.
 - In addition, Orange Fixed must publish a Reference Offer (RO) – publishing terms and conditions and prices for the provision of fixed call termination.
 - Orange Fixed should also develop a Wholesale Customer Relations Management (“WCRM”) system to facilitate the transfer of information to alternative operators and the TRC.
- Non-discrimination:
 - An obligation on all designated licensees not to discriminate on price or non-price terms thereby offering equivalent conditions, prices, and quality in equivalent circumstances.
 - Each designated Licensee must monitor compliance with the non-discrimination and transparency obligations by measuring its KPIs, and provide the relevant information to interconnected parties and to the TRC.
- Accounting separation:
 - Orange fixed must provide a separate set of accounts for fixed call termination services, in order to reflect the performance of the wholesale

business, as if it were being operated as a separate business.

- This includes financial statements for mobile termination with a profit and loss (P&L) statement and a mean capital employed (MCE) statement, and all relevant supporting information.
- Price control:
 - Cost based FW-LRIC pricing

Issues in implementing current remedies

Access

The remedies imposed following the last review include some that are symmetric and apply to all operators, and some that apply only to Orange Fixed. The additional access remedy that applies to Orange Fixed is a specific requirement to provide local/single/double call termination services on reasonable request.

There is some overlap between remedies imposed on the foot of the last market reviews, and the terms and conditions included in the Interconnection Instructions. For example, the requirement to provide access to termination is already governed by Paragraph 57 of the Interconnection Instructions, which states that “[a]ll Licensees shall be required to provide Traffic termination services to all other Licensees”.

There have been instances of refusal to supply termination services, which would seem to contravene both SMP obligations and those of the Interconnection Instructions.

Transparency

The last review obliged all operators to publish terms and conditions for call termination provision. In addition, Orange Fixed was obliged to publish a Reference Offer, subject to further specification and approval by the TRC. The TRC has since approved a Reference Offer prepared by Orange Fixed.

Non-discrimination

Despite the obligations, no designated licensee has shared relevant KPIs with TRC to demonstrate its compliance with the non-discrimination obligations.

Accounting separation

An obligation to produce separated accounts applied only to Orange Fixed. The obligation refers to further consultation on the specific accounting rules and reporting formats and the publication requirements. The principles are now approved by TRC, yet the obliged licensee, Orange Fixed, has not provided separated accounts to the TRC.

Price control

A price control obligation was applied to all SMP operators, supported by an obligation of cost accounting. All SMP operators are obliged to charge cost-oriented prices for termination. 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). A top-down accounting system has been approved. An LRIC model has been constructed and TRC has published the regulated prices to be applied for fixed voice call termination.⁸³

Proposed remedies

Access upon reasonable request

The TRC proposes that the current obligations should broadly be maintained. All SMP operators should be obliged to offer access upon reasonable request to wholesale fixed voice call termination and associated facilities.

In addition, Orange Fixed should have a specific obligation to offer access to local and single call termination services upon reasonable request. There is no need for a specific requirement for Orange Fixed to provide double tandem termination.

In addition to maintaining 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;

⁸³Telecommunications Regulatory Commission, Regulatory Decision on Charges For Fixed 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**.

Annex 3 provides an indicative outline of the steps involved in dealing with a request for access to transit services.

Non-discrimination

All SMP operators should be subject to an obligation not to discriminate between operators, and between other operators and their own downstream operation. The current obligation refers to equivalence in equivalent circumstances of terms, prices and quality.

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 4. 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 as set out above. This would mean that transparency obligations will apply to all products and associated facilities in the WBA market.

The TRC proposes that the current remedies imposed on all SMP operators to publish terms and conditions should be maintained. In addition, Orange Fixed should be obliged to maintain and keep up-to-date its RO, as approved by the TRC. An indicative minimum list of contents is provided for reference in Annex 6.

Taking into consideration the absence of a Wholesale Customer Relations Management system to date, the TRC proposes that the matter can be adequately covered in the minimum required content of any Reference Offers.

The transparency obligation should also set out a mechanism for dealing with **change to existing termination services**, and related terms and conditions. The TRC proposes that operators should be informed 3 months prior to changes coming into

effect, and that an additional 1 month's notice should be provided to the TRC (i.e. the TRC would be notified 4 months before changes come into effect).

Changes relating exclusively to **price** should require less prior notice. The TRC proposes that changes to price should be notified to operators one month before coming into effect, and to the TRC one month before that (ie two months before coming into effect).

The TRC will maintain an option to vary these time periods.

A transparency obligation would require Orange Fixed to provide information to the TRC on a set of **Key Performance Indicators (KPIs)**. The purpose of the KPIs will be to demonstrate that Orange Fixed is compliant with its 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

An obligation that Orange Fixed 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 submitted.

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. 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 be directly relevant for assessing compliance.

The TRC thus proposes that there should be an obligation, applying to all products and associated facilities in the market for trunk segments of TI leased lines and in the market for terminating segments of TI leased lines, for Orange Fixed to **provide relevant accounting information as specified by the TRC**. The detailed specification of the 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.

The current obligation on all SMP operators 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 LRIC model has been constructed to allow TRC to calculate these costs, and TRC has published the regulated prices to be applied for national fixed call termination.⁸⁴ As per the 2017 Regulatory Decision on Charges for Fixed Interconnection, the regulated rates for fixed national call termination are shown in the exhibit below:

Rate per minute (fils)	2018	2019	2020	2021
Blended	7.2	5.8	4.4	3.0

Exhibit XIV.1 Regulated rates for fixed national call termination as per the 2017 Regulatory Decision on Charges for Mobile Interconnection⁸⁵

⁸⁴Telecommunications Regulatory Commission, Regulatory Decision on Charges For Fixed Interconnection Services Based On TSLRIC+ Models, Board of Commissioners Decision No. 8-12/2017 issued on 15/10/2017

⁸⁵ Source: Annex A of Telecommunications Regulatory Commission, Regulatory Decision on Charges For Fixed Interconnection Services Based On TSLRIC+ Models, Board of Commissioners Decision No. 8-12/2017 issued on 15/10/2017]

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 smoothen the impact of this Decision on the market. In case the market review situation or the regulation justifies it, the TRC is able to revise the rates when needed. Setting the glide path as TRC has done allows for a reduction in wholesale FTRS 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.

Therefore, the TRC proposes that **FTRs should continue to be regulated as cost based on modelling costs from the LRIC model** and as laid out in the 2017 decision. However, there should be provisions in place for a review of FTRs once the target of 3.0 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.

Q14 Do you agree with the TRC's preliminary proposals for remedies in the Wholesale Fixed Voice Call Termination market?

14.5 WHOLESALE MARKET FOR TRANSIT SERVICES

Review of existing remedies

Remedies imposed after previous review

- Access upon reasonable request:
 - Provision of wholesale transit service in response to reasonable access demands by other operators. Onus on dominant operator to justify refusal on the basis of objective criteria.
 - Provision of access to associated facilities (e.g., collocation and infrastructure sharing) and services in relation to wholesale transit service, in response to access demands by other operators.
 - Not withdrawing, without the TRC's prior approval, the access in relation to wholesale transit service which the SMP operator has already granted.
- Transparency:
 - Orange Fixed to publish RO, with minimum list of items provided in Annex 1 of the decision
 - Orange Fixed to publish specified information on its website in relation to wholesale transit provision, which must include matters such as the location and characteristics of interconnection sites and wholesale prices, as may be further specified by the TRC.
 - Orange to develop WCRM system
- Non-discrimination:
 - Orange Fixed may not discriminate between the internal and external provisioning of transit services, whether in price or non-price terms.
 - Orange Fixed to monitor compliance via KPIs, and provide this information to interconnected parties and the TRC
- Accounting separation
 - Description of financial information to be provided by Orange Fixed, on an annual basis, principles approved. Further consultation on rules and reporting formats
- Price control
 - Orange Fixed to charge cost based prices, based on FW-LRIC, full specification to be applied by the TRC

Issues in implementation of existing remedies

Specific competition problems in the wholesale transit market are often to do with the advantage that the SMP operator has in owning a ubiquitous network. This is because other operators may replicate some transit routes (ie those that have the highest traffic volumes) but are unlikely to be able to replicate most transit routes. There are significant sunk costs involved in being able to offer transit services.

Absent regulation, the SMP operator would have the ability and incentive to price its transit services excessively. Having already incurred its sunk costs, the SMP operator would have a cost advantage when offering transit services. It would have the ability and motivation to charge other operators (except for its own downstream affiliates) excessively high prices for transit.

Absent regulation, the SMP operator could create a 'ransom strip' between its wholesale transit product and international gateways. This means that the SMP operator could leave a gap between its wholesale transit service and connectivity to international capacity, and could deny access and/or price excessively to bridge this gap. The potential for such a competition problem has been recognised in the definition of the wholesale transit market, which includes transit service up to and including international gateways. This means that traffic for international destinations would be carried to the point of handover to international carriers.

Transparency

The RO has not yet been approved by the TRC.

Non-discrimination

The KPIs have not been implemented.

Accounting separation

Orange Fixed has not submitted separated accounts.

Proposed Remedies

Access upon reasonable request

The TRC proposes that the current access obligation should be maintained. Orange Fixed should continue to be required to offer **access to transit services and associated facilities, upon reasonable request and on fair, reasonable and timely terms and conditions**. The assumption will be that requests for transit services will be reasonable and must thus be accepted. The onus will thus be on the SMP operator (Orange Fixed) to justify a refusal of such a request, as unreasonable, and not on the transit service seeker to justify acceptance. Annex 3 provides an indicative outline of the steps involved in dealing with a transit services request.

Orange should **not withdraw** any transit services without the prior approval of the TRC.

Non-discrimination

The TRC proposes that the existing non-discrimination obligations for this market should be maintained and continue to apply for all transit-related inputs of Orange Fixed, both between operators and between Orange's downstream operations within the same single economic entity and other operators. Non-discrimination should apply to both quantitative and qualitative parameters.

Having considered how the SMP operator will demonstrate that it is not discriminating, the TRC proposes that it 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 4. 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 as set out above. This would mean that transparency obligations will apply to all products and associated facilities in the wholesale transit market.

Orange Fixed should continue to **maintain a RO** with the content as specified in the previous review. An indicative list of minimum contents is provided in Annex 6.

Taking into consideration the absence of a Wholesale Customer Relations Management system to date, the TRC proposes that the matter can be adequately covered in the minimum required content of any Reference Offers.

The transparency obligation should also set out a mechanism for dealing **with change to existing transit services**, and related terms and conditions. The TRC proposes that operators should be informed 3 months prior to changes coming into effect, and that an additional 1 month's notice should be provided to the TRC (i.e., the TRC would be notified 4 months before changes come into effect).

Changes relating exclusively to price should require a shorter period of prior notice. The TRC proposes that changes to price should be notified to operators one month before coming into effect, and to the TRC one month before that (ie two months before coming into effect).

The TRC should maintain an option to vary these time periods.

A transparency obligation would require Orange Fixed to provide information to the TRC on a set of **Key Performance Indicators (KPIs)**. The purpose of the KPIs will be to demonstrate that Orange Fixed is compliant with its 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

An obligation that Orange Fixed 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 submitted.

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. 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 be directly relevant for assessing compliance.

The TRC thus proposes that there should be an obligation, applying to all products and associated facilities in the market for trunk segments of TI leased lines and in the market for terminating segments of TI leased lines, for Orange Fixed to provide **relevant accounting information as specified by the TRC**. The detailed specification of the relevant accounting information will follow in further TRC documentation, after the adoption of the TRC's decision.

Cost accounting and price controls

Orange Fixed should continue to maintain a suitable top-down cost accounting system, as specified by the TRC.

The current obligation to maintain appropriate **cost-based prices** based on the top down LRIC model should be retained, and should apply to all products and associated facilities in the wholesale transit market. 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).

Q15 Do you agree with the TRC's preliminary proposals for remedies in the Wholesale Transit market?
--

14.6 RETAIL FACO

Review of existing remedies

Remedies imposed after previous review:

- Non-discrimination
 - Obligation to offer equivalent conditions, terms and prices in equivalent circumstances
 - specific reference to equivalence of provisioning times and service management
 - Specification of per second billing, no set-up fee, no minimum duration
 - Obligation to offer SLAs, with compensation for non-compliance
 - Obligation not to unreasonably bundle in a way that leads to margin squeeze or predatory pricing
 - Pre-notification to TRC of bundles, with process for Orange to declare conformity with regulatory principles, and TRC to seek further information. Reference to right of TRC to use of competition powers when bundle has been in market for one month
- Separate accounting for access and domestic calls
- Price controls and cost accounting
 - Price cap on connection and monthly fees for PSTN and ISDN;
 - Price cap on domestic calls; calls to mobile; calls to SPs
- Obligation to establish suitable top down cost accounting system

Issues in implementing current remedies

Absent regulation, an SMP operator could price its retail services excessively. There are currently no wholesale access products addressing the retail FACO market, so the only constraint on Orange comes from access and call origination supplied over alternative infrastructure, such as FBWA. While the TRC found that FBWA should be included in the same market as access and call origination provided over Orange's network, it does not yet provide a sufficient constraint on Orange's market power.

As a vertically-integrated operator, Orange could leverage its power from the wholesale access market into the retail access and call origination market.

Considering issues to do with the implementation of current remedies, the process for assessing bundles could be clearer. The current process provides for a pre-notification screening by TRC, and refers to further specification of regulatory principles to be developed separately.

While there is an obligation that Orange should provide separated accounts for retail access and retail domestic calls, no accounting information has been provided to the TRC.

The last review provided for price caps on retail access and retail domestic calls. This was a continuation of a pre-existing obligation. To date, retail price caps have not been implemented.

Proposed remedies

Non-discrimination

The TRC proposes that Orange Fixed should continue to be subject to an obligation not to discriminate unduly between its retail customers, and should offer equivalent services, including terms, conditions and prices, in equivalent circumstances. The specific obligations regarding non-discrimination in terms of provisioning times and service management should be maintained.

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 4. 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

The TRC proposes that **Orange Fixed should publish its terms and conditions**, including prices, for retail fixed access and retail fixed calls services on its website.

Orange Fixed should continue to offer **SLAs** with appropriate compensation for failure to meet the agreed terms.

The TRC proposes that the specific **requirement that Orange Fixed should use per second billing, with no set up fee, should be withdrawn**. In the TRC's view, this becomes less relevant when most calls are included in bundle. However, to protect against Orange Fixed unreasonably increasing the prices for out-of-bundle calls (for example, for calls to premium rate numbers, or some international calls) the TRC proposes to introduce a safeguard cap that Orange should not increase the price of calls in real terms.

Orange⁸⁶ should continue to be subject to an **obligation not to unreasonably bundle**. This obligation should protect the retail customers from being compelled to buy elements of a bundle that are not necessary, or that they don't actually want. The obligation should also recognise that a competition problem associated with bundling is cross-subsidy, particularly between products in regulated and unregulated markets. In order to address this, the obligation could specify that those elements of a bundle that are not in regulated markets (and therefore not subject to a cost orientation obligation) should not be offered below cost.

The TRC proposes that, as part of the implementation of remedies, the TRC will further specify, in a separate document, the information it requires to **assess bundles, and the test that will be applied**. In the Decision, an obligation will be put in place that sets out the overall requirement not to unreasonably bundle, and **Orange should notify the TRC at least four weeks before a bundle is launched**. The time could be varied by the TRC.

The TRC proposes to maintain the right to **examine any bundle after launch**, using its competition powers.

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. 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 be directly relevant for assessing compliance.

⁸⁶ Note that all references to Orange apply to Orange Fixed and also to its affiliates in a single economic entity

The TRC thus proposes that there should be an obligation, applying to all products and associated facilities in the retail FACO market, for Orange Fixed to provide **relevant accounting information as specified by the TRC**. The detailed specification of the relevant accounting information will follow in further TRC documentation, after the adoption of the TRC's decision.

Cost accounting and price control:

.Orange Fixed should continue to be subject to an obligation to maintain an appropriate cost accounting system.

The TRC does not propose to maintain an obligation to impose **price caps** on retail access or retail domestic calls. The TRC notes that wholesale regulation is being strengthened in the Wholesale Access Market, and should there be a reasonable request for wholesale access products, measures are in place to ensure that these will be provided in compliance with a suite of remedies. The TRC recognises that there is a risk that Orange Fixed could price excessively for retail access and/or retail calls. However, although there is a price cap in place now, it has not been implemented, and Orange Fixed has not unreasonably increased its retail prices during the lifetime of the last review.

The TRC notes also that, particularly for retail fixed calls, this is a market in decline, and one that is increasingly constrained by alternative calls options such as mobile and OTT. At present, Orange Fixed offers bundles where calls are 'free', and so a price cap would not be proportionate. As indicated above, the TRC proposes that a simple safeguard cap should be introduced on out-of-bundle calls, so that the price is not increased in real terms ie retail price index (RPI) – 0

For all of these reasons, the **TRC proposes to withdraw the price caps**, but will maintain a watch on prices so that it can intervene if required.

Q16 Do you agree with the TRC's preliminary proposals for remedies in the retail Fixed Access and Call Origination market?

Annex 1: Consultation questions

1. Do you agree with the TRC's preliminary conclusions regarding the relevant product and geographic market definitions for retail FACO services?
2. Do you agree with the TRC's preliminary conclusions regarding the relevant product and geographic market definitions for retail fixed broadband services?
3. Do you agree with the TRC's preliminary conclusions regarding the relevant product and geographic market definitions for Wholesale Local Access services?
4. Do you agree with the TRC's preliminary conclusions regarding the relevant product and geographic market definitions for Wholesale Broadband Access services?
5. Do you agree with the TRC's preliminary conclusions regarding the relevant product and geographic market definitions for Wholesale Fixed Voice Call Termination services?
6. Do you agree with the TRC's preliminary conclusions regarding the relevant product and geographic market definitions for Wholesale Fixed Voice Call Origination services?
7. Do you agree with the TRC's preliminary conclusions regarding the relevant product and geographic market definitions for Wholesale Fixed Transit services?
8. Do you agree with the TRC's preliminary conclusions regarding the wholesale fixed telecommunications markets found to be susceptible to ex ante regulation?
9. Do you agree with the TRC's preliminary conclusions regarding the retail fixed telecommunications markets found to be susceptible to ex ante regulation?
10. Do you agree with the TRC's preliminary conclusions regarding the competition assessment and SMP findings in the wholesale fixed markets?
11. Do you agree with the TRC's preliminary conclusions regarding the competition assessment and SMP findings in the retail fixed markets?
12. Do you agree with the TRC's preliminary proposals for remedies in the Wholesale Local Access market?
13. Do you agree with the TRC's preliminary proposals for remedies in the Wholesale Broadband Access market?

14. Do you agree with the TRC's preliminary proposals for remedies in the Wholesale Fixed Voice Call Termination market?
15. Do you agree with the TRC's preliminary proposals for remedies in the Wholesale Transit market?
16. Do you agree with the TRC's preliminary proposals for remedies in the retail Fixed Access and Call Origination market?

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 Exhibit XIV.2 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 XIV.2 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 Exhibit XIV.3 below.

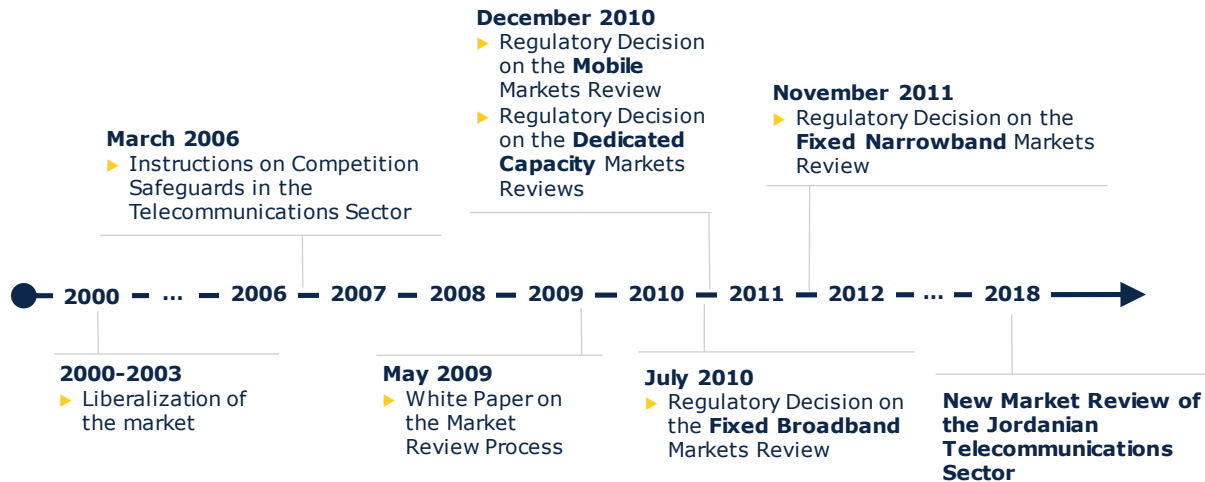


Exhibit XIV.3 Main milestones of the background context of this Project [Source: Axon Consulting and DotEcon]

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: Access Requests

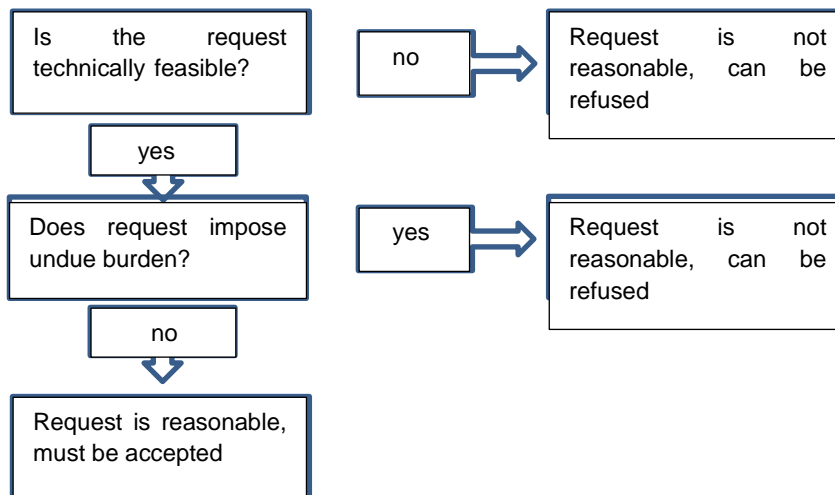
The purpose of this Annex is to elaborate on the issues that may arise in the implementation of a reasonable access request. The TRC expects to continue to further specify how access requests are to be treated as part of the implementation of eventual Decisions following the market reviews. This Annex therefore constitutes initial guidance.

According to the White Paper,

'The obligation to provide access on reasonable request obliges a dominant operator to offer access to certain elements of its network to alternative operators enables the latter to compete on retail markets or downstream wholesale markets'⁸⁷.

The approach proposed in the consultation is that the imposition of an access obligation on an SMP operator would oblige the operator to meet *all* reasonable requests for access, unless it can demonstrate that it is not technically or economically feasible to do so. The qualification is required because it would not be proportionate to oblige an operator to meet requests which are not technically and/or economically viable.

The key steps in assessing whether an access request is reasonable are shown below.



⁸⁷ White Paper, Section 5.1

The first test is that the subject of the request must be technically feasible, and must not threaten network integrity. The request must be for a product or associated facility that is actually in the SMP operator's power to provide. The assessment of technical viability could include considering the nature of the type of interconnection and access involved, and/or the capacity available.

The second test is the burden which the request would impose on the SMP operator. For an access request to be considered reasonable, the request needs to provide evidence of sufficient demand to cover development costs or a willingness of the requesting operator to accept a level of risk. The initial investment by the SMP operator should be taken into account.

As a general principle, the SMP operator should reasonably expect a fair return on any necessary investments it has made which are associated with the supply of the product at a price the requesting operator is willing to pay. This could mean, for example, that where the SMP operator would incur significant development costs in supplying a product for which the demand is uncertain, the requesting operator should take on an appropriate level of risk, perhaps by committing to a level of demand at a price which would justify investment, or by the specification of a pricing structure based on forecast demand.

A properly functioning product development process is important for the introduction and expansion of wholesale products. Uncertainty with regard to the content timing of product introduction or changes creates uncertainty in the market, and can also increase costs for all players. The TRC is aware that previous attempts to encourage wholesale products have been beset by a lack of transparency and by undue delays.

The TRC considers that the following steps should form part of the process for making and responding to an access request.

- Access request for a new product, or a change to an existing product, in a market where an operator has an obligation to provide access upon reasonable request. The access request can come from a licensee and/or from the SMP operator's own downstream operation or affiliates.
- Confirmation in writing from the SMP operator that an access request has been received
- Initial assessment by the SMP operator on whether or not the access request falls within its scope
- Identification by the SMP operator of information needed from the applicant to enable it to carry out the technical feasibility test, and to assess the level of burden that meeting the request would entail. This requires safeguarding commercially sensitive information, and eliminating any frivolous applications.
- Confirmation from the SMP operator to the applicant whether or not the access request is accepted. If not, full reasons must be given for the refusal.

- Provision by the SMP operator of detailed description of the relevant product to be developed. (This will form part of the Reference Offer)
- Indicative timetable for development up to product launch
- Indicative pricing

The TRC notes that the access request and treatment of the request is a negotiation between two operators, and the TRC's involvement is limited to any instances of dispute at any stage in the process. The TRC will also consider attaching time limits to each stage of the process of making and responding to an access request, should the process not be carried out in a timely manner.

Annex 4: 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 5: Minimum list of items to be addressed in a Reference Offer for Wholesale Broadband Access

The following constitutes the minimum list of items to be included in the Reference Wholesale Broadband Access Offer:

1. Conditions for wholesale broadband access
 - Network elements to which access is offered (IP handover at national level; IP handover at regional level; handover at DSLAM level)
 - Locations of points-of-presence for the various wholesale broadband access options and technical conditions related to wholesale broadband access, including the technical characteristics of the twisted metallic pair in the local loop (average length of loops by access site, distribution of loop lengths per access site, number of cable distributors or equivalent facilities connected to a MDF, etc.)
 - Quality of service differentiation related to the various wholesale broadband access options
 - Ordering, migration (between WBA options and between WBA and LLU access) and provisioning procedures, usage restrictions
2. Collocation services
 - Information on the designated operator's relevant sites
 - Collocation options at the sites indicated (including physical collocation and, as appropriate, distant collocation and virtual collocation)
 - Equipment characteristics: restrictions, if any, on equipment that can be co-located
 - Security issues: measures put in place by notified operators to ensure the security of their locations
 - Access conditions for staff of competitive operators
 - Safety standards
 - Rules for the allocation of space where collocation space is limited
 - Conditions for beneficiaries to inspect the locations at which physical collocation is available, or sites where collocation has been refused on grounds of lack of capacity
3. Information systems
 - Conditions for access to the designated operator's operational support systems, information systems or databases for pre-ordering, provisioning, ordering, maintenance and repair requests and billing
4. Supply conditions

- Lead time for responding to requests for supply of services and facilities, fault resolution, procedures to return to a normal level of service, and quality of service parameters
 - Standard contract terms, including, where appropriate, compensation provided for failure to meet lead times
 - Prices or pricing formulae for each feature, function and facility listed above
5. Service Level Agreement for the offered services (for ordering and fault resolution)

Annex 6: Minimum list of items to be addressed in Reference Interconnection Offer

The following constitutes the minimum list of items to be included in the Reference Interconnection Offer (RIO).

1. Conditions required in order to obtain access to interconnection services:
 - Network elements to which access is being offered:
 - Information concerning the locations of physical access sites, including information about Points-of-Interconnection
 - Quality of service
 - Technical conditions
 - Ordering, migration and provisioning procedures
 - Capacity forecasting and future network planning
2. A list of relevant services:
 - Call termination
 - Call origination
 - Transit
3. Collocation services
 - Information on the designated operator's relevant sites
 - Collocation options at the sites indicated (including physical collocation and, as appropriate, distant collocation and virtual collocation)
 - Equipment characteristics: restrictions, if any, on equipment that can be co-located
 - Security issues: measures implemented by notified operators to ensure the security of their locations
 - Access conditions for the staff of competitive operators
 - Safety standards
 - Rules for the allocation of space where collocation space is limited
 - Conditions for beneficiaries to inspect the locations at which physical collocation is available, or sites where collocation has been refused on grounds of lack of capacity
4. Information systems

- Conditions for access to the designated operator's operational support systems, information systems or databases for pre-ordering, provisioning, ordering, maintenance and repair requests and billing
5. Supply conditions
- Lead times for responding to requests for supply of services and facilities, fault resolution, procedures to return to a normal level of service, and quality of service parameters
 - Standard contract terms, including, where appropriate, compensation provided for failure to meet lead times
 - Prices or pricing formulae for each feature, function and facility listed above
6. Service Level Agreement(s) for the offered services (for ordering and fault resolution)

Annex 7: Glossary

The technical terms defined below are used in the Consultation Document.

Access to the unbundled local loop: Allows an alternative operator to use the unbundled copper loop of the designated operator to offer services directly to end users, including broadband Internet access and voice telephony. Access to the unbundled local loop comprises fully unbundled and shared access.

ADSL (Asymmetric Digital Subscriber Line): A digital technology that allows data to be transmitted over the local copper loop in both directions, and where data transmission rates in the downstream direction are substantially higher than in the upstream direction.

Associated facilities: The facilities associated with the provision of access to the unbundled local loop and wholesale broadband broadband access, notably collocation, cable connections and relevant information technology systems.

Associated services: Associated services can include secure access, power, lighting, ventilation, heating, cooling, and alarms such as smoke and fire detection.

Backhaul: Connection from the first access node (for example, the local exchange) to the core network.

BRAS: Broadband Remote Access Server, A BRAS routes the traffic to and from the DSLAM on an Internet service provider's network.

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

Broadband connection: The access link provided to an end-user (“retail broadband connection”) or an operator, if supplied as an integral part of a wholesale broadband access offer. Broadband connections include xDSL, FBWA and FTTH connections.

Collocation: The provision of physical space and technical facilities necessary to accommodate and connect the relevant equipment of an alternative operator seeking access. Co-location includes co-mingling.

Co-mingling: A type of co-location where an alternative operator's equipment is located in the same area as the dominant provider houses its own equipment, without a permanent barrier between the respective sets of equipment.

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

FTTH: Fibre-to-the-home. A fibre based local access technology for delivering broadband services.

Distant collocation: Distant collocation would be provided by one or more LLU operators in premises suitable for the housing of their DSLAM equipment and located as close to the MDF site as is practically possible to minimise the length of tie cables. All support services and other facilities in the distant collocation will be provided by the LLU operator(s).

Designated Operator: Licensed Operator to provide public telecommunications services that has been designated by TRC as being dominant in a market susceptible to ex ante regulation.

DSLAM: Digital Subscriber Line Access Multiplexer. Connects the data traffic coming in over copper lines and passes them on to the backbone network by using multiplexing techniques.

Fully unbundled access to the local loop: The provision to an alternative operator of access to the local loop or to the sub-loop of the Designated Operator authorising the use of the full frequency spectrum of the twisted metallic pair.

Integrated Service Digital Network – Basic Rate Access (ISDN-BRA): A telephony system used for digital transmission of voice and data over PSTN networks. The basic ISDN line has several additional features compared to PSTN lines, namely (i) the simultaneous usage of two telephony channels (the end-user can use two telephony lines in parallel); and (ii) the provision of data rate connectivity up to 64kpbs (or 128kpbs in case both channels are used for data connections)

Integrated Service Digital Network – Primary Rate Access (ISDN-PRA): A telephony system which consists of 30 voice channels (the end-user could use 30 telephony lines in parallel), and provides data rate connectivity up to 2Mbps.

Interference Management Plan: A spectrum management plan for controlling interference, caused by cross talk, within a copper access network. The Interference Management Plan enables alternative operators to deploy services in a predictable and reliable manner. It is specified by a list of Power Spectrum Density masks applicable at a number of defined points in the access network.

Local loop: The physical twisted metallic pair circuit connecting the network termination point at the subscriber's premises to the Main Distribution Frame (MDF) in the serving local exchange or equivalent facility in the fixed public telephone network.

Local sub-loop: A partial local loop connecting the network termination point at the subscriber's premises to a concentration point or to a specified intermediate access point in the fixed public telephone network.

Plain Switched Telephony Network (PSTN): A telephony system which allows end-users to make and receive calls (one telephony channel per PSTN line), while also providing data rates of up to 34kbps.

Retail fixed broadband Internet access: The bundled service provided to an enduser consisting of the fixed broadband connection and the Internet connectivity. The connection element of the retail broadband Internet access may be an xDSL, FBWA and FTTH connection.

Retail Internet access (subscription): The provision of Internet connectivity to an end-user.

Shared access to the local loop: The provision to an alternative operator of access to the local loop or sub-loop of the designated operator, authorising the use of the non-voice band frequency spectrum of the twisted metallic pair for the provision of broadband services; the local loop may continue to be used by the Designated Operator to provide the telephone service to the public.

Wholesale broadband access (WBA): Wholesale product consisting of two distinct elements, namely, broadband origination on the access links, on the one hand, and any backhaul necessary to allow interconnection with the alternative operator, on the other. Wholesale broadband access allows an alternative operator to offer retail broadband Internet access to end-users with a smaller amount of infrastructure investment compared to unbundled local loops.

Wholesale customer relations management (WCRM) system: An electronic system for managing an operator's interactions with wholesale customers. It involves using technology to organize, automate, and synchronize business processes - principally wholesale sales activities, customer service, and dealing with fault reports and technical support. Access to the WCRM system allows a regulator to monitor compliance with the non-discrimination obligation.

Wholesale physical network infrastructure access (WpNIA) at a fixed location: A wholesale service provided to an alternative operator that comprises access to passive infrastructure such as fully unbundled or shared access to local loops and sub-loops, as well as ducts and poles.

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

xDSL (Digital Subscriber Line): A family of technologies, capable of transforming local copper loops into high-speed digital lines, and supporting advanced services such as broadband Internet access and video-on-demand. Variants of xDSL include ADSL (Asymmetric Digital Subscriber Line), VDSL (Very high bit rate Digital Subscriber Line) and SDSL (Symmetric Digital Subscriber Line).