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IRAN

TELECOMMUNICATIONS REPORT

INCLUDES 5-YEAR FORECASTS TO 2020

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Iran Telecommunications Report Q2 2016

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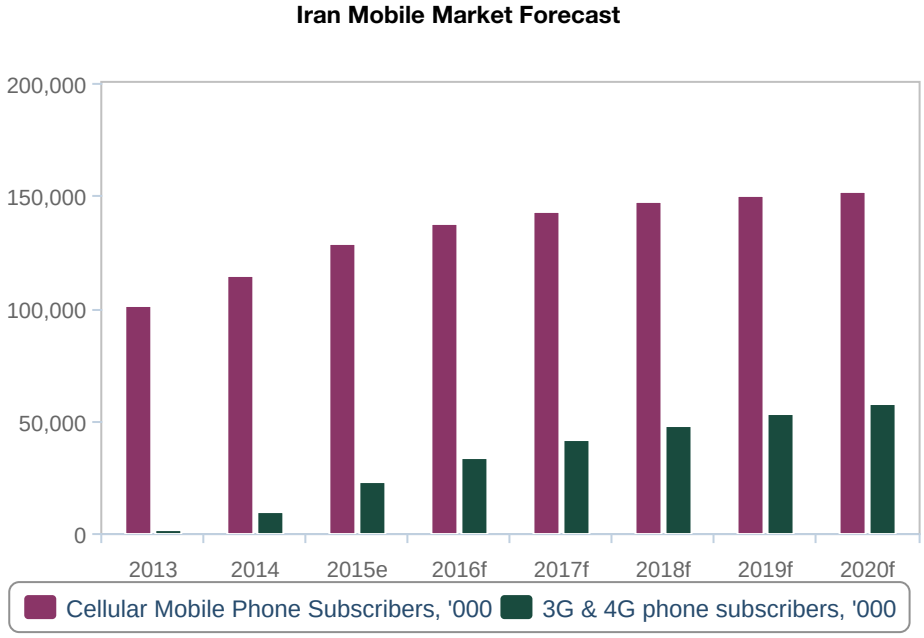
BMI Industry View

BMI View:*The removal of sanctions on Iran in January 2016 is expected to have a positive impact on the level of foreign direct investment in the country, with GDP forecast to experience rapid growth over our medium-term forecast period from 2016-2020. The mobile segment is set to continue on its strong growth trajectory due to the increased accessibility of 3G and 4G services. The wireline segment will however continue to struggle because of the growing preference for mobile solutions.*

Latest Updates & Industry Developments

- Removal of sanctions in January 2016 should encourage increased foreign direct investment into Iran, with **BMI**'s Country Risk team predicting GDP to rise from 2.9% in 2016 to 4.8% in 2020.
- Since the launch of 3G and 4G data services, the Iranian mobile market has experienced strong growth y-o-y and is expected to reach 152.0mn subscribers in 2020, up from 137.7mn in 2016.
- Growth in the wireline segment is forecast to be subdued due to increase availability of mobile services; 32.5mn fixed lines are forecast to be in service in 2020, up slightly from 30.7mn in 2016.

Lifting Of Sanctions Could Encourage Mobile Data Accessibility And Usage



e/f = BMI estimate/forecast. Source: Operators, BMI

SWOT

TELECOMS SWOT Analysis

Strengths	▪ Continued subscription growth despite high mobile penetration rate. ▪ Competition between operators driving growth and innovation. ▪ The launch of 3G and 4G services driving mobile data uptake.
Weaknesses	▪ Average customer spending levels are low. ▪ Mobile data services are subject to government censoring and filtering. ▪ Limited international investments.
Opportunities	▪ The lifting of sanctions in January 2016 should pave the way for foreign investment growth in the country. ▪ The presence of large numbers of inactive prepaid users inflates the penetration rate and masks the potential for further customer growth. ▪ High smartphone penetration and latent demand for 3G/4G services will drive subscriptions and revenue growth. ▪ Launch of advanced data services offer opportunity to operators and third-parties to develop data-centric services for consumers and enterprises. ▪ Allocation of mobile virtual network operator and wholesale wireless broadband licences offers new opportunities to foreign investors and will ensure continued development of mobile and data networks.
Threats	▪ Government controls over mobile data and internet services could limit the growth of this potentially lucrative sector. ▪ Unstable political and security environment could hinder investment in the sector from equipment manufacturers and content providers.

Industry Forecast

Latest Updates

- **BMI**'s Country Risk team has revised its economic growth forecast for Iran due to the lifting of sanctions in January 2016, with GDP expected to reach 2.9% in 2016, up from 0.6% in 2015.
- By 2020, we forecast mobile subscriptions to reach almost 152.0mn , with a penetration rate of 182.2%. This also takes into consideration the entry of MVNO players, expected to launch during 2016.
- **Mobile Telecommunication Company of Iran** (Hamrahe Aval)'s launch of 3G services in Q215 led to very strong growth in the segment over the first six months of commercial services. We estimate there were 23.2mn 3G/4G subscriptions at the end of 2015.
- Our broadband forecasts remain unchanged, though we maintain a positive outlook for the sector, with average annual growth of 15.5% between 2016-2020, to bring total subscriptions to 11.1mn by the end of the forecast period.

Structural Trends

Mobile

Data from **MTN Irancell** and **Mobile Telecommunication Company of Iran** (Hamrahe Aval) show that growth in Iran's mobile market has accelerated every quarter since the launch of 3G/4G services in the second half of 2014. We expect growth to remain strong, but slow to a more moderate pace throughout our forecast period from 2016- 2020. As well as continued positive impact from advanced data services, growth will be stimulated by the arrival of mobile virtual network operator (MVNO) players and allocation of new wholesale wireless broadband licences. However, as the majority of mobile subscriptions are pre-paid, it is likely that there will be periods of inactive SIM discounting, posing a downside risk to our forecast.

Although the Iranian market has faced political and economic turmoil over recent years and **BMI** is still cautious over Iran's outlook, the UN Security Council unanimous vote in July 2015 to lift the sanctions against Iran, following a deal on Iran's nuclear programme, is grounds for an optimistic outlook. **BMI**'s Country Risk team has made a slight upward revision to its economic growth forecast for Iran due to the lifting of sanctions in January 2016, forecasting real GDP growth to pick up from 0.6% in 2015, to 2.9% in 2016 and 4.2% in 2017.

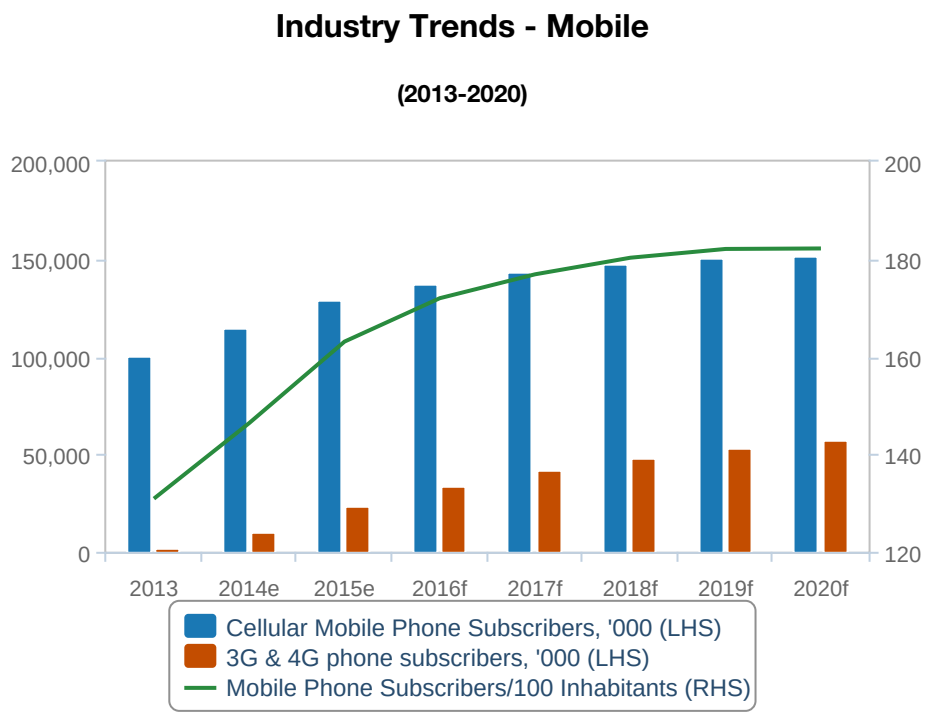
This could mean that Iran would have easier access to new mobile technology and cheaper handsets, which could add upside to the data usage. However, if Iran chooses to impose higher import taxes on consumer goods, the impact of lifting of the sanctions would be less pronounced.

Our 3G historical data and forecasts reflect **RighTel**'s weaker than expected performance throughout 2013, followed by the launch of 3G/4G services by MTN in 2014. We estimate there were around 9.9mn 3G subscriptions in Iran at the end of 2014, which we estimate to grow to more than 23mn by the end of 2015, boosted by Hamrahe Aval's entry into the market.

MTN Irancell is the only operator that reports average revenue per user (ARPU) on a regular basis and therefore forms the basis of our estimates and forecast. We believe the operator, which reports steady ARPU growth in local currency terms, has maintained above average ARPUs owing to its vast experience in launching advanced mobile data services and accompanying data-centric services, as well as its more concentrated presence in wealthy urban areas, compared to Hamrahe Aval's further reach into underserved, rural areas. We forecast market ARPU to fall over the coming years as competition and price caps weigh on ARPU.

On the competition side, Iran has opened a tender for MVNOs, which we expect to launch services during 2016, and the government has also announced plans to issue wholesale wireless broadband licences, which will bring more competition to the 3G/4G market. Meanwhile, in December 2014 the Iranian government imposed maximum limits on how much operators can charge for their data, with a maximum tariff of IRR0.5 per KB for post-paid data and IRR0.75 per KB on pre-paid price plans.

In addition, the lifting of sanctions from 2016 and the influx of new companies hoping to capture new investment opportunities poses an upside risk to our ARPU forecasts, particularly towards the latter years as many economic benefits will take a few years to truly emerge.



e/f = BMI estimate/forecast. Source: BMI, operators

Wireline Voice & Broadband

BMI has a bearish outlook for the Iranian fixed-line sector, as increased competition in the mobile market has the potential to lower prices and make mobile voice more competitive. This development could result in a trend of fixed-to-mobile substitution in terms of subscriptions and usage. Continued investments announced by incumbent **Telecommunications Company of Iran** (TCI) and a lack of competition should mean the fixed-line market continues to show some growth in the short term but we believe this trend will reverse over the medium term.

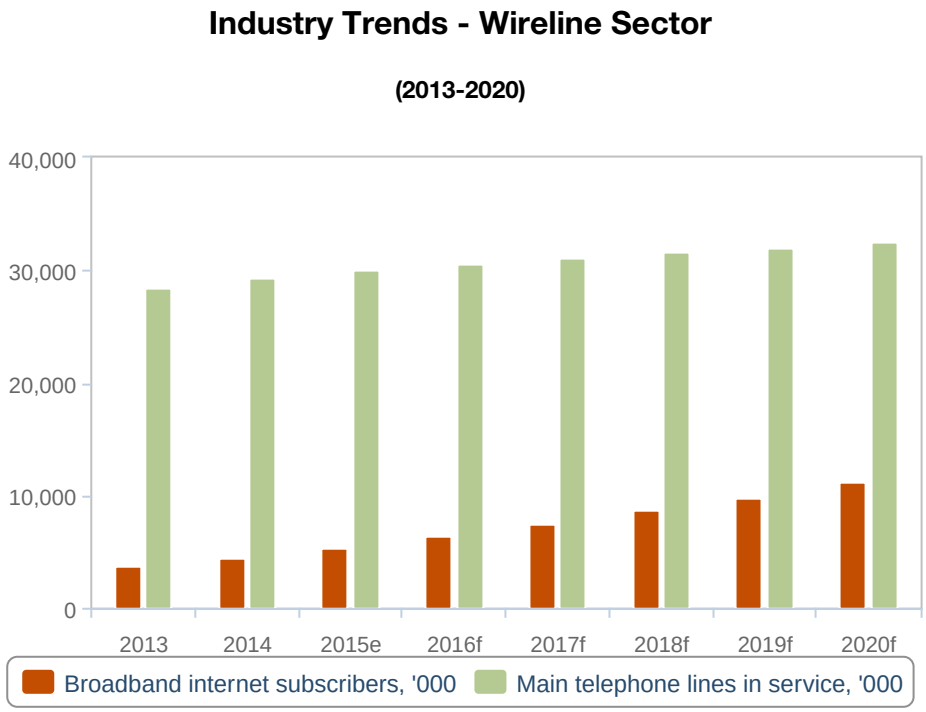
Considering Iran's high mobile penetration rate, the continued growth of the country's fixed-line sector is unusual in a regional and global context, with growth rates higher than 3% since 2011, and we suspect growth has been sustained by incumbent operator TCI's commitment to deploying fixed-line infrastructure in rural areas. However, recent statements have indicated the operator's increasing focus on its mobile networks, which indicates a slowdown in growth in the fixed-line in line with our forecasts. Over our

forecast period from 2016-2020, we expect the market to grow at an average rate of 1.6% and reach 39.0% penetration, with 32.5mn fixed lines in service.

BMI estimates the Iranian broadband market increased by 22.7% in terms of subscriptions in 2014 to reach a total of 4.5mn subscriptions, with growth rates in sharp decline as low base effects diminish. We expect growth will remain robust over the medium term, forecasting average annual growth of 15.5% 2016-2020, with the total number of subscriptions expected to reach 11.1mn for a penetration of 13.3% by the end of 2020.

Iran's low broadband penetration rates are caused by the high cost of internet access and the underlying bandwidth. However, Iran also has a highly regulated internet sector and it is possible that various forms of government control serve to further discourage individuals from acquiring their own internet subscription. Services such as e-education, e-governance and e-health may help to benefit rural communities and would boost broadband penetration rates while Iran's incumbent telecoms operator is also investing in the deployment of a high-capacity fibre network.

The introduction of 3G and 4G services will be the major driver of growth in broadband connections, especially now that both leading operators have launches services and are investing heavily in expanding networks nationally. The government's plan to introduce wholesale wireless broadband services into the market also supports our view of mobile becoming the dominant access technology over the long term. As in most emerging markets, we expect consumers to favour mobile access, due to the lower cost of smartphones and tablets compared to PCs, and the possibility of buying smaller data packages.



e/f = BMI estimate/forecast. Source: BMI, operators

Table: Telecoms Sector - Historical Data & Forecasts (Iran 2013-2020)

	2013	2014	2015	2016f	2017f	2018f	2019f	2020f
Main telephone lines in service, '000	28,462.4	29,316.2	30,049.1	30,650.1	31,120.1	31,586.8	32,050.0	32,509.3
Main Telephone Lines/100 Inhabitants	36.9	37.5	38.0	38.3	38.4	38.6	38.8	39.0
Cellular Mobile Phone Subscribers, '000	100,965.7	114,410.0	129,054.5	137,701.1	143,209.2	147,505.5	150,455.6	151,960.1
Mobile Phone Subscribers/100 Inhabitants	130.9	146.4	163.1	172.0	176.9	180.3	182.1	182.2
3G & 4G phone subscribers, '000	1,600.0	9,920.0	23,212.8	33,658.6	41,736.6	47,997.1	53,036.8	57,916.2
3G & 4G market, % of mobile market	1.6	8.7	18.0	24.4	29.1	32.5	35.3	38.1
Monthly Blended ARPU, IRR	100,381.0	110,005.8	100,448.5	96,965.3	96,032.9	96,032.9	96,974.4	98,894.7
Broadband internet subscribers, '000	3,694.5	4,531.3	5,417.2	6,403.1	7,482.1	8,641.8	9,864.6	11,127.3

Telecoms Sector - Historical Data & Forecasts (Iran 2013-2020) - Continued								
	2013	2014	2015	2016f	2017f	2018f	2019f	2020f
Broadband internet subscribers/100 Inhabitants	4.8	5.8	6.8	8.0	9.2	10.6	11.9	13.3

e/f = BMI estimate/forecast. Source: BMI, TCI, MCI

Industry Risk Reward Index

BMI View: *The overall Telecoms Industry Risk/Reward score for the Middle East and North Africa region has declined in the Q2 2016 update, as GCC markets approach saturation and the entire region continues to grapple with the impacts of high security risks and low oil prices.*

Industry Risks Weigh MENA Down

The Middle East and North Africa (MENA) is the worst scoring region globally in the Industry Risks category, which is a subjective score reflecting the level of independence of telecoms regulatory bodies, and the level of interference of the government in the telecoms sector, most obviously through high ownership stakes in telecoms operators. The latter is the main reason for MENA's low Industry Risks score, as GCC governments continue to retain high stakes in their incumbent operators **- STC** (Saudi Arabia), **Etisalat** (UAE), **Ooredoo** (Qatar), **Zain** (Kuwait) and **Omantel** (Oman). The situation is similar, to a lesser or greater degree, across most of the rest of the region, with the least open being Lebanon and Libya, where all telecoms operators are state-owned, and Egypt among the most competitive, as the government does not compete in the mobile market, but retains dominance over the wireline sector. In Morocco, the regulator's very slow progress in forcing **Maroc Télécom** to offer reasonable wholesale broadband rates to alternative players pushed **BMI** to downgrade the country's Industry Risks score by 5 points for the Q2 2016 update.

Table: Regional RRI Comparison, Q216

	Industry Rewards	Country Rewards	Industry Risks	Country Risks	Telecoms Score
Western Europe	39.7	69.6	83.8	66.4	57.6
Asia Pacific	41.9	50.7	64.5	59.1	50.2
Latin America	36.2	60.4	64.2	51.3	48.6
Middle East	**37.4**	**61.5**	**43.3**	**54.7**	**46.8**
Central & Emerging Europe	30.4	42.3	68.3	49.8	41.9
Sub-Saharan Africa	29.1	44.6	48.6	44.1	38.1
Average	**35.8**	**54.8**	**62.1**	**54.2**	**47.2**

Source: BMI

The exception to this rule is Israel, where the government retains a limited stake in the telecoms sector. However Israel suffers from the opposite problem. After allocating new mobile licences to several now low-

cost players in the mobile market in 2012, which drove down the cost of mobile services, the regulator (supported by the government) has been unwilling to allow consolidation. As a result, mobile operators lack the scale to cope with the combination of low prices and consumer demand for higher quality data networks. In order to reflect the regulator's unhelpful approach to the development of Israel's mature mobile market, we downgraded its Industry Risks score by 10 points in this quarter's update.

While we expect the MENA region to remain an underperformer in the Industry Risks category, given that there is little sign of further privatisation of the telecoms sector in the near future, the picture is brightening among some of the lowest ranked markets. Kuwait's government has passed legislation for the establishment of an independent telecoms regulator, which we expect to be created during H116. Meanwhile, as Iran prepares to rejoin the global economy during 2016, the government has announced plans to allocate new telecoms licences which will open investment opportunities in the telecoms sector, and have a positive impact on its Industry Risks score.

Industry Rewards

The worst performer this quarter in the Industry Rewards category was Iraq. This score is based on data points measuring the size of the addressable market, the forecast subscriptions growth rate across the telecoms sector, as well as average spending per user, a key metric for measuring the returns for telecoms operators in a given market. In the Q216 update, Iraq's score dropped by 10 points as **BMI** estimates the mobile market contracted by 7.5% in 2015. 3G only arrived in Iraq at the beginning of 2015, offering massive growth potential for the three mobile operators, and increasing ARPU in 2015 suggesting take-up of the new data services. However, the positive impact of 3G could not offset the huge challenges presented by the ongoing war with Islamic State in Iraq.

Most countries' scores declined in the Q216 update, as the extension of our forecast to 2020 resulted in slower growth in many highly penetrated telecoms markets in the GCC, and as the region continues to battle with high security risks and oil exporters face another year of very low oil prices, which will force some cutbacks to government spending and subsidy programmes in 2016. This risks having a negative impact on the telecoms sector in GCC countries, where cuts to government spending could result in slower demand for advanced services from the enterprise sector, where, as with telecoms, the government remains an important investor.

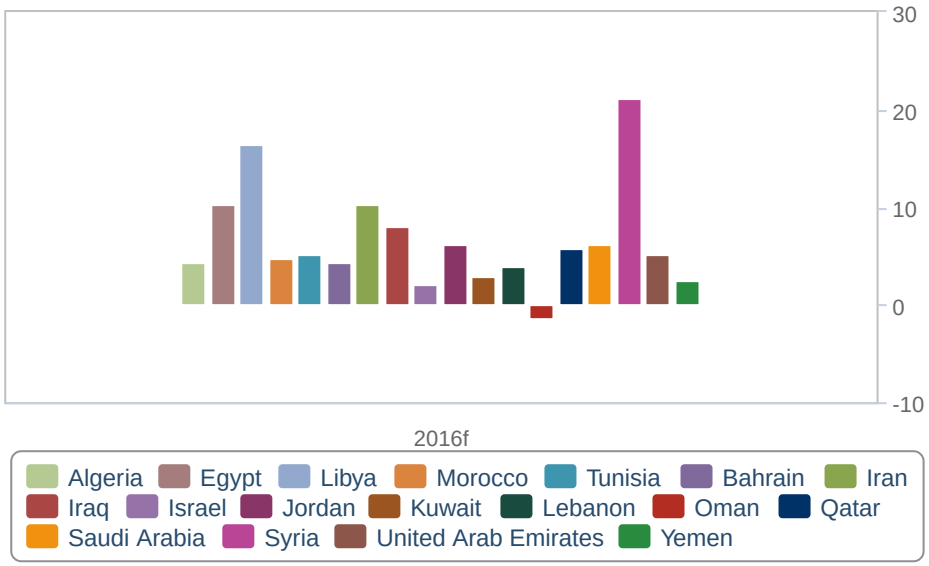
Despite the challenging macroeconomic environment for governments, **BMI** nevertheless expects modest growth in GDP per capita in across the region, reversing the downward trend in 2015. Therefore, while security and industry risks will continue to weigh on growth opportunities for telecoms operators, growing

in GDP per capita suggests that consumer demand for telecoms services will remain intact. This will help support operators' continued efforts to drive increased take-up and usage of mobile and wireline data services, which now offer the greatest opportunity for revenue growth.

In the GCC, where data usage is already very high and competition is rapidly pushing down data tariffs for end-users, **BMI** believes telecoms operators must continue to diversify their revenue streams towards content and enterprise solutions. With a growing number of users relying on their smartphones for shopping, to planning transportation and entertainment, **BMI** has a positive outlook for telecoms operators that have a stake in content services, either through partnership with over-the-top (OTT) players or investment in the vibrant scene of local content and service start-ups.

Improving Spending Power In 2016

GDP Per Capita, % Change Y-o-Y (Local Currency)



f = BMI forecast. Source: National Sources, BMI

Table: MENA Telecoms Risk/Reward Index, Q216

	Industry Rewards	Country Rewards	Industry Risks	Country Risks	Telecoms Score	Rank	Previous Rank
Israel	40.0	90.0	70.0	69.7	61.2	1	1
Qatar	52.3	75.0	50.0	76.3	61.1	2	3
UAE	55.0	69.0	50.0	63.6	59.0	3	2
Saudi Arabia	49.5	66.0	60.0	67.7	57.8	4	4
Oman	36.3	60.0	60.0	59.0	49.0	5	8
Bahrain	33.0	69.0	50.0	60.3	48.5	6	7
Kuwait	33.0	78.0	30.0	64.2	48.3	7	5
Morocco	32.5	56.7	65.0	57.7	47.1	8	9
Jordan	35.0	60.0	50.0	54.9	46.4	9	10
Iraq	40.0	60.0	40.0	49.1	46.3	10	6
Egypt	35.0	47.0	55.0	55.6	44.0	11	14
Tunisia	31.3	53.3	60.0	49.4	43.7	12	12
Algeria	35.0	49.7	40.0	58.3	42.8	13	11
Iran	42.5	46.3	20.0	59.5	42.6	14	13
Libya	40.0	63.3	10.0	36.8	40.7	15	15
Lebanon	23.8	66.7	30.0	44.0	38.2	16	16
Syria	25.0	51.0	20.0	34.6	32.1	17	18
Yemen	31.6	45.3	20.0	23.6	32.0	18	17
Average	***37.3***	***61.5***	***43.3***	***54.7***	***46.7***	**-**	**-**

Scores out of 100, with 100 highest. The Telecoms Risk/Reward Index comprises two sub-indices, 'Rewards' and 'Risks'. Scores are weighted as follows: 'Rewards': 70%, of which Industry Rewards 65% and Country Rewards 35%; 'Risks': 30%, of which Industry Risks 40% and Country Risks 60%. The 'Rewards' Index evaluates the size and growth potential of a telecoms market in any given state, and country's broader economic/socio-demographic characteristics that impact the industry's development; the 'Risks' Index evaluates industry specific dangers and those emanating from the state's political/economic profile, based on BMI's proprietary Country Risk Index that could affect the realisation of anticipated returns. Source: BMI

Iran Industry Risk/Reward Index

Rewards

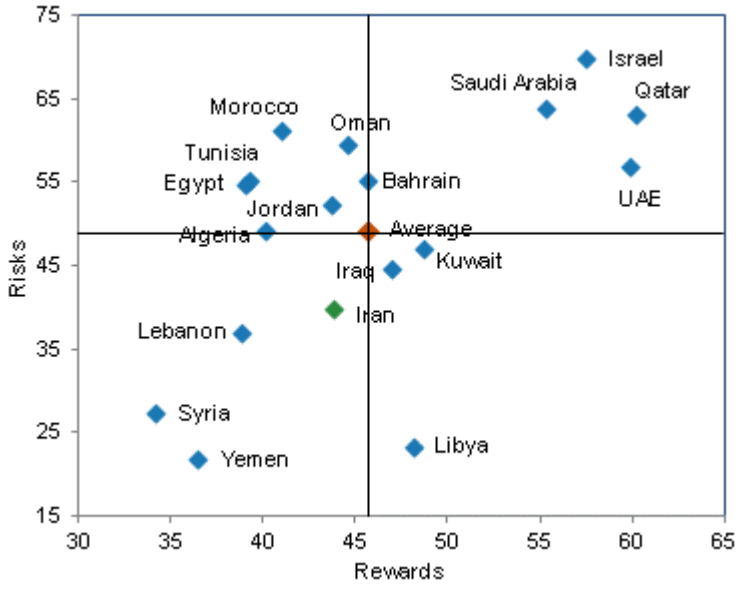
- Iran's middling Industry Rewards score reflects the lasting impact of sanctions on the country. However, the lifting of these sanctions in January 2016 will prove beneficial to the mobile segment as Iranian consumers will gain access to a wider range of products and data usage will increase. **BMI**'s Country Risk team forecasts GDP to rise from 0.6% in 2015 to 4.8% in 2020.
- However, Iran may impose higher import taxes on consumer goods following the removal of sanctions. Also, the increase in 3G/4G subscriptions will prove detrimental to the fixed-line sector, despite continued investment into the segment by **Telecommunications Company of Iran**.

Risks

- Iran places at the bottom end of the Industry Risks ranking due to ongoing political and economic issues, with the country's telecoms market long being overlooked by international investors due to limited opportunity for investment.
- However, the government's plan to issue mobile virtual network operator licences and the announcement of an upcoming tender for broadband spectrum suggest that the government is aiming to promote a competitive environment within the telecoms sector.

Iran Versus Middle East And North Africa Region Risk/Reward Profile

Q2 2016



Source: BMI

Market Overview

Market Drivers & Trends

Recent Developments

- The lifting of sanctions in 2016 offers telecoms operators opportunities to foreign investors.
- **MTN Irancell** and **Mobile Telecommunication Company of Iran** (Hamrahe Aval)'s launch of 3G/4G services has led to the acceleration of mobile subscriptions growth. The government will auction new wholesale wireless broadband licences and spectrum, which will further underpin 3G/4G subscriptions growth.

Iran's telecoms market has long been overlooked by international investors due to the limited opportunity for investment while international sanctions were in place and while many political leaders remained hostile to technologically advanced telecoms services. Despite limited opportunity and appetite for investment, Iran has a young, educated and tech-savvy population that is keen to access mobile and broadband services. In 2013, it overtook Egypt to become the largest mobile market in the Middle East and North Africa (MENA) region and is likely to experience further growth following the lifting of sanctions by the USA, UN and EU in January 2016.

There are six players in Iran's mobile market, but MTN Irancell and Hamrahe Aval have an effective duopoly, controlling more than 95% over the last five years. Their established brands and much wider network coverage make it difficult for smaller players to succeed, particularly given the rising cost of importing network equipment following two devaluations and gradual depreciation of the Iranian Rial since 2012. MTN Irancell and Hamrahe Aval both invested heavily in deploying 3G/4G networks prior to receiving licences in August 2014, and have since continued to rapidly expand their networks to cater to huge pent-up demand for more advanced mobile data services. This is further entrenching their dominance of the mobile market.

Nevertheless, the prospect of a deal between the US, Europe and Iran is creating opportunities for increased foreign investment in the sector, most notably through the planned allocation of mobile virtual network operator (MVNO) licences. We expect the arrival of MVNOs to broaden consumer choice and ensure growth in 3G/4G take-up remains strong after the initial boom.

In the wireline segment, competition is more evenly balanced between incumbent **Telecommunication Company of Iran** (TCI) and 10 other licensed wholesale broadband infrastructure players. While TCI remains the dominant operator, helped by its monopoly over fixed-line voice services, Iran has liberalised

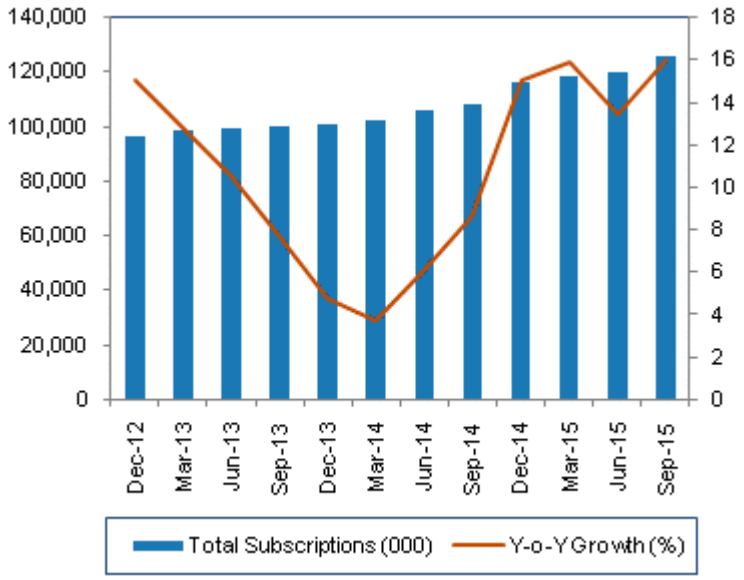
the voice-over-IP (VoIP) market, enabling other internet service providers (ISPs) to compete on a more level footing.

Mobile

Since August 2014, when Iran awarded 3G/4G licences to MTN Irancell and incumbent mobile operator Hamrahe Aval, the country has shown a growing interest in encouraging development of telecoms networks and services. This will help sustain strong growth in the mobile market, with take-up of advanced data services creating a wealth of opportunities for data-centric services such as e-commerce, e-government, educational content and entertainment.

Mobile Market Growth

2012-2015



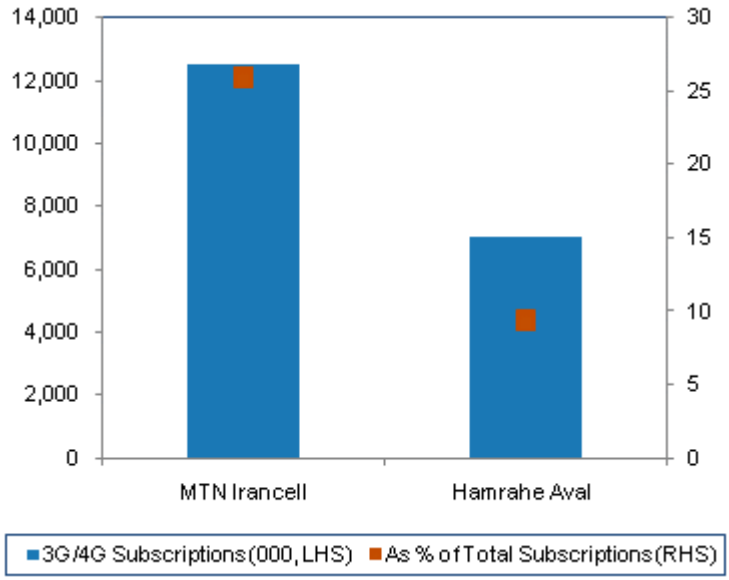
Source: BMI, operators

The increased growth since the second half of 2014 can be attributed to MTN Irancell's launch of 3G services from September 2014, followed by 4G in November. The explosion of 3G/4G subscriptions in Iran from late 2014 is due to the high smartphone ownership across both major operators' networks, and therefore large latent demand for more advanced data services. In September 2015 MTN Irancell reported having 23mn smartphones on its network, suggesting there is still significant untapped demand for 3G

services. Although newest entrant **RighTel** has operated a 3G network since 2011, **BMI** believes it failed to gain traction due to inability to quickly expand a high quality network, without a major local or regional backer.

Hamrahe Aval Catching Up Quickly

MTN Irancell & Hamrahe Aval 3G Subscriptions, September 2015

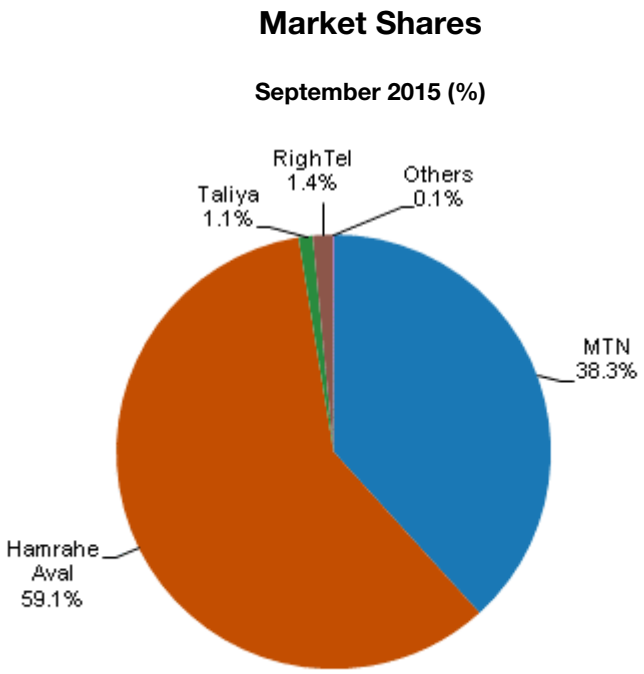


Source: BMI, operators

Despite its early mover advantage into the advanced mobile data market, Hamrahe Aval continues to dominate Iran's mobile market. **BMI** believes MTN Irancell's six-month early advantage was not long enough to tip the scales, while as the incumbent Hamrahe Aval likely still benefits from a larger network coverage, especially in rural areas.

BMI believes the biggest shake-up to the mobile market will come from the arrival of MVNOs in late 2015 or 2016. In September 2015, the Ministry of Communications reported that it received 51 MVNO applications, including one from large global player **Lycamobile**. It plans to award licences to all applicants that fulfil the minimum point requirement for the licence conditions *(see Regulatory Overview for more details)*, with each mobile network operator required to host at least two MVNOs. We forecast the market to expand by around 22mn subscriptions between 2015 and 2020, leaving lots of opportunity for new entrants

to target new subscribers rather than poaching them from Iran's six mobile network operators. That said, their expansion in more saturated urban areas will be facilitated by the Communications Regulatory Authority's plan to implement mobile number portability (MNP) by July 2016.



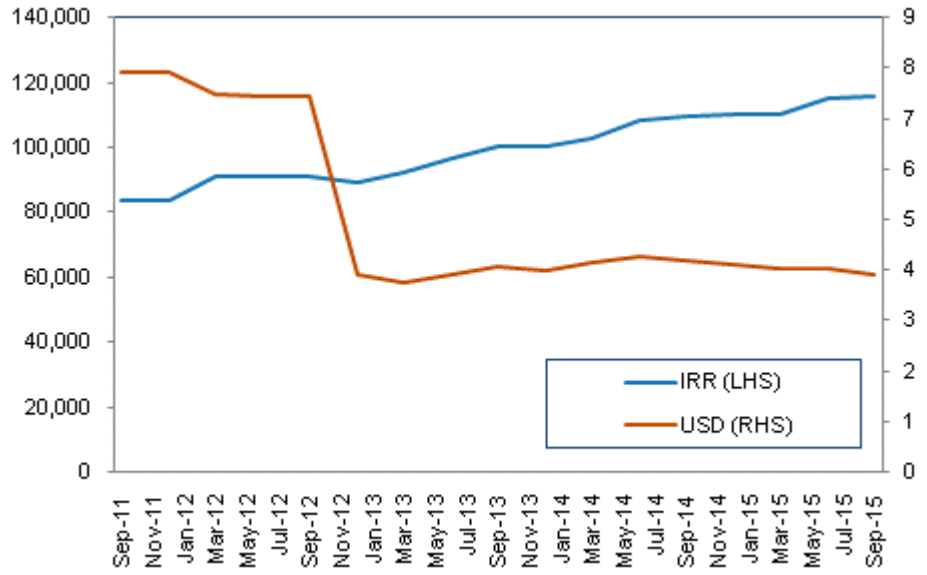
Source: BMI, operators

MTN Irancell is the only operator that publishes operational data on a regular basis. MTN's ARPU has remained fairly flat USD terms following a sudden drop in 2012 alongside the devaluation of the Iranian Rial. Yet local currency figures show that the operator's ARPU has risen by nearly a fifth since June 2013. This rise in ARPU was underpinned by the launch of 3G/4G, contributing to an 85% y-o-y rise in data revenues for MTN Irancell in H115.

While incumbent Hamrahe Aval's launch of 3G services during Q215 does not appear to have impacted MTN's rising ARPU, price competition will is likely to have a bigger effect on the market when MVNOs launch services, which we expect sometime in 2016.

MTN Irancell ARPU

Local currency (IRR) Vs USD, 2011-2015



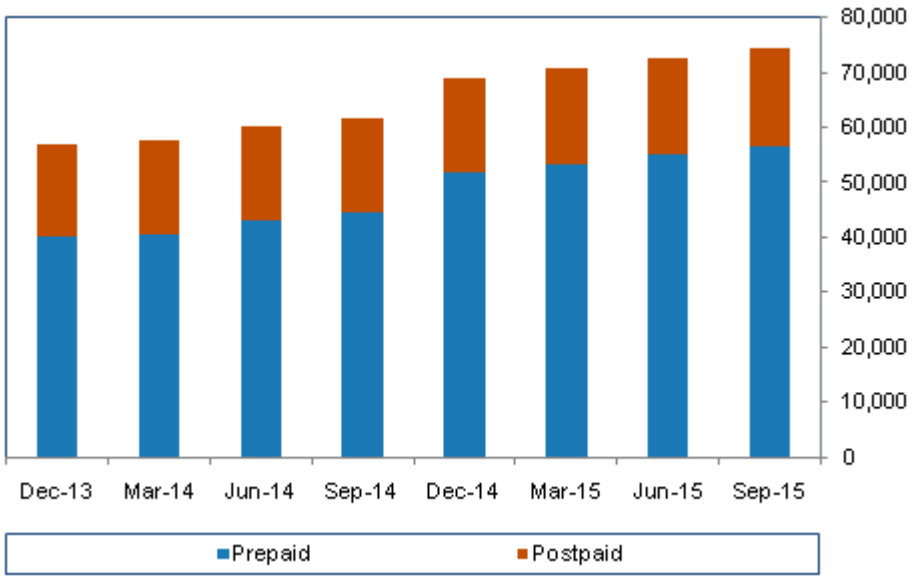
Source: MTN

As operators prepare for the additional competition from MVNOs, **BMI** expects them to also begin implementing other strategies to reduce churn and encourage greater spending on telecoms services. The most commonly used strategy to reduce churn is to encourage customers to move on to postpaid subscriptions.

Data from Hamrahe Aval show that over the last year, the prepaid segment has been the key drive of growth. **BMI** believes this is because most new subscribers coming from underserved and rural areas, and thus likely to be more interested in lower-cost prepaid services. Nevertheless, Hamrahe Aval's postpaid subscribers account for well over 20% of subscribers, much higher than across the rest of the Middle East, except for Israel. The launch of 3G and 4G services offers a good opportunity to migrate more customers on to postpaid packages, by offering shared data packages or bundling devices with mobile contracts.

Prepaid Subscriptions Driving Growth

Hamrahe Aval Subscriber Mix (000)



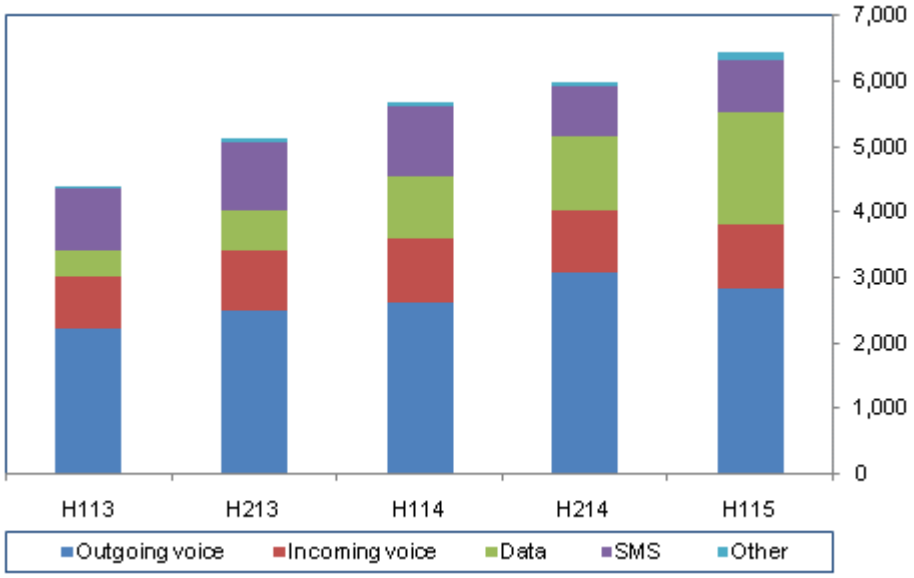
Source: MCI

As illustrated in MTN Irancell's H115 revenues (*see chart below*), impressive take-up of mobile data services has clearly translated into strong data revenue growth. Although this has come at the expense of outgoing voice, likely a result of many subscribers switch to cheaper IP-based alternatives such as **WhatsApp**, it is indicative of the pent-up demand for data services among users that have long owned smartphones. While the pace of growth may slow as the initial boom in users ends, introduction of data-centric value added services, such as MTN Irancell's Zoom (TV and videos), Rhythm (music), Gisheh (view and purchase travel and event tickets) and Ketabkhan (text and audio books), will help to sustain growth in usage and revenues over the longer term.

The lifting of sanctions in 2016 may offer telecoms operators another good opportunity to sustain revenues growth. A large number of global and regional players across multiple sectors, including financial services, infrastructure, autos and shipping to name a few, will flock to Iran in order to pursue growth opportunities in one of the world's largest remaining frontier markets. This will bring telecoms operators a host of potential new enterprise customers, or at the very least a boost from roaming revenues as companies come to test the waters.

3G/4G Has Clear Positive Impact On Revenue

MTN Irancell Revenue By Segment (ZARmn)



Note: Represents only MTN's 49% share of the joint venture. Source: MTN

Wireline Voice & Broadband

Broadband

Iran has three tiers of fixed broadband licences. The first is private access providers (PAPs), of which there are 11, including wireline incumbent Telecommunication Company of Iran (TCI), that can deploy national fixed and wireless broadband infrastructure to provide capacity on a wholesale basis. The second is internet service distribution providers (ISDP), which operate at the provincial level and transmit data between PAPs and retail ISPs, the third tier. Most PAPs and ISDPs also hold ISP licences. This has given rise to a highly competitive retail market, where 100 ISDPs deliver capacity to more than 1,200 retail ISPs. Although **BMI** believes not all licensed players are currently operational, there are dozens of sizable operators providing services to end users.

In October 2015, the Communications Regulatory Authority of Iran (CRA) announced an upcoming tender for broadband spectrum in the 2.3GHz, 2.6GHz and 3.5GHz frequency bands. All frequencies can be used to deploy 4G/LTE technology, with the first two open to existing wireline operators and the 3.5GHz band

open to all applicants. **BMI** believes the most likely bidders include leading wholesale infrastructure players such as **Afranet**, **Asiatech** and **Pars Online**, which have established wholesale, retail and enterprise solutions businesses.

Given this competitive environment and the changing macroeconomic landscape in Iran, **BMI** highlights several key factors that will ensure the spectrum sale will have a significant positive impact on the broadband market:

- The presence of healthy competition and many well established players in the Iranian broadband market means there will be strong demand for the spectrum, and that successful bidders are likely to have enough experience to manage spectrum efficiently and roll out high quality networks.
- The requirement that successful bidders must open their new networks to competitors on a wholesale basis will ensure strong competition in the wireless broadband market, too, resulting in affordable tariffs for end users.
- Lifting of sanctions from 2016 will enable operators to access additional finance more easily and will also reduce the challenges and costs associated with importing network equipment.
- The wireless spectrum will enable operators to roll out last mile connectivity more quickly to underserved areas. **BMI** believes many areas outside key urban centres have suffered from underinvestment as the difficult economic environment weighed on operators' ability to invest in next generation networks.

Although, as the owner of Hamrahe Aval, there is scope for TCI to expand its converged services offering, the trend has not yet arrived in Iran. But **BMI** believes the additional competition from MVNOs and newly licensed wireless broadband players will drive service innovation and encourage the incumbent to explore new strategies to minimise churn and deepen customer relationships.

National Fibre Networks And FTTx

TIC is one of the major investors in the Europe-Persia Express Gateway (EPEG) fibre optic cable system together with Russian operator **Rostelcom**, **Omantel** and UK-based **Cable and Wireless Company** (CWC). At launch in September 2013, the 10,000km cable running from Frankfurt, Germany, through eastern Europe, Russia, Azerbaijan, Iran, the Persian Gulf and finishing in Oman reportedly brought Iran's international bandwidth capacity up from 72Gbps to 82Gbps. Iran's Communications Minister planned to increase capacity to 100Gbps by 2014.

In June 2013, **ISP Iranian Net Communication and Electronic Services** (Iranian Net) announced plans to begin deploying a fibre-to-the-x (FTTx) network, according to Iran's telecoms watchdog, the Communications Regulatory Authority. Iranian Net has been granted a licence to deploy the FTTx network in Mashhad, Tehran, Shiraz, Karaj, Qom, Isfahan and Tabriz. The company intended to provide services to

400,000 subscribers by the end of August 2013 and gradually increase its subscriber base to a total of 1mn over the next two years. However, the government has only lifted 128kbps-speed restrictions on home internet services in September 2014, causing a delay in the deployment of FTTx insfrastructure. **Iranian Net** announced in June 2015 it aimed to develop services in Tehran, Isfahan, Karaj, Shiraz, Tabriz, Mashhad and Qom, with 500,000 access ports over the next two years.

TCI has not provided any more detailed information regarding the development of its national fibre-optic network, which we believe the operator continues to steadily expand. This was supported by the operator's announcement in May 2013 of plans to invest IRR25trn (USD20.34mn) in its network before the end of the Iranian year, ending March 2014.

Fixed-Line Voice

The main drag on the development of Iran's fixed-line market is the comparatively high price of products offered by monopoly provider TCI. There were 27.478mn lines in service at the end of 2012, a figure **BMI** believes grew by 3.6% to reach 28.462mn at the end of 2013. We believe growth will slow as mobile voice continues to become more attractively priced, which will result in fixed-to-mobile substitution as witnessed in other regional markets and indeed globally.

Wireline services in Iran are limited to major cities with rural networks undeveloped. Incumbent TCI remains in state hands. The complete lack of competition limits incentives for investment and service development

Pay-TV

Iran's ministry of ICT announced in December 2013 that it had launched the first phase of its IPTV project. Six provinces are to be reached, covering 140,000 households. The ministry expects 7mn subscribers to the service over the long-term, but details on the project remain scarce. **BMI** believes the main risk to the pay-TV market, as well as the wider broadband market, is the potential for considerable restrictions on content. This may dampen demand for the service in the long term and the government's involvement with the network may also alienate some potential subscribers.

BMI believes the larger growth opportunity in the pay-TV market will arrive with the easing of sanctions, which will likely see many regional video-on-demand players begin to target the massive Iranian market. The booming growth in the 3G/4G market is indicative of demand for advanced services which local players such as **Icflix** and **OSN** will be keen to tap into.

Risks From Government Internet Content Policies

Highlighting the risk government policy poses to development of the wireline sector, in January 2014 it was reported Iran was seeking help from China to build its National Information Network (NIN) intended as censored bypass to the world wide web. In December 2014, the government also offered details on plans to develop 'smart Internet', which instead of entirely blocking access to site deemed unethical, would only filter specific content that disagrees with Islamic values.

While **BMI** believes this is a risk that should not be ignored, leading mobile operators MTN Irancell and Hamrahe Aval have faced very little criticism of their mobile data offerings, compared to sharp criticisms handed down to small entrant RighTel for its mobile video calling service. Meanwhile, Iran's dedication to blocking content can be put into question by the fact that virtual private networks (VPNs), which enable users to bypass censors by obtaining a foreign IP address, are easily accessible, and often owned by state-backed companies. Indirectly, the state is thus profiting from censorship of Internet content.

Regulatory Development

Table: Iran's Regulatory Bodies And Their Responsibilities

Regulatory Body	Responsibilities
Ministry of ICT Dr Ali Shariati Avenue Tehran Iran 1631713461 Tel: 9821 811 3355 Fax: 9821 811 3926	▪ Overseeing the implementation of the information and communication technology (ICT) national development plan. ▪ Drafting national telecommunications policy. ▪ Drafting and implementing amendments to existing legislation or new laws, as necessary. ▪ Issuing licences, concessions and general authorisations. ▪ Mediating interconnection agreements between operators, where relevant. ▪ Regulating tariffs for dominant operators and establishment of calculations for setting prices for other operators. ▪ Monitoring of frequencies and interference with use of the frequency spectrum.

Source: BMI

Privatisation Of TCI

Repeated preparations to privatise Iran's fixed-line incumbent were characterised by a mixture of high expectations, disappointment and controversy. Despite early optimism surrounding the privatisation of **Telecommunication Company of Iran** (TCI), by end-2007, no visible progress had been made towards achieving this goal. As a forerunner to the sale of a controlling stake in TCI, a 5% stake in the operator was scheduled to be floated on the Tehran Stock Exchange before the end of December 200 . The flotation finally took place in August 2008.

In November 2009, it was announced by the Mehr News Agency that 50% plus one share of TCI had been offered over the stock market to **Tose'e Etemad Mobin** consortium for IRR78.0trn.

Competition

In contrast to the monopoly in the fixed-line sector, mobile phone services, based on GSM standard, are offered by TCI and by four private sector companies: **MTN Irancell**, **Taliya**, **MTCE** and **TKC**. A third national operator, **Tamin Telecom** (Rightel), was licensed in April 2010 but it was not until late November 2011 that the operator, reportedly owned by Iran's Social Security Organization, launched limited services. Mobile Telecommunication Company of Iran (MCI), which is the mobile unit of fixed-line incumbent TCI, and MTN Irancell - offer services using the GSM 900 and GSM 1800 spectrum bands. Three companies - Taliya, MTCE and **Kish Free Zone Organization** (KFZO) - offer services using GSM 900 spectrum only.

Iran has three tiers of fixed broadband licences. The first is private access providers (PAPs), of which there are 11, including wireline incumbent TCI, that can deploy national fixed and wireless broadband infrastructure to provide capacity on a wholesale basis. The second is internet service distribution providers (ISDP), which operate at the provincial level and transmit data between PAPs and retail internet service providers (ISPs), the third tier. Most PAPs and ISDPs also hold ISP licences. This has given rise to a highly competitive retail market, where 100 ISDPs deliver capacity to more than 1,200 retail ISPs. Although not all licensed players are currently operational, there are dozens of sizeable operators providing services to end users.

The lifting of sanctions by the US, EU and UN in January could lead to a rise in foreign direct investment into the ICT sector. The development may also lead the way for the entry of more foreign players into the market, increasing competition for domestic ICT companies.

3G/4G Licences

Tamin Telecom, which trades under the brand name Rightel, lost exclusive rights to 3G network services in August 2014, when MTN Irancell and incumbent MCI were granted the right to offer 3G and 4G services. MTN Irancell was the first major mobile operator to market with 3G in September 2014, followed by 4G/ LTE in November 2014. MCI launched 3G services during Q215.

In September 2015, MTN Irancell was further granted a TDD-LTE licence which will enable it to migrate its WiMAX broadband customers on to LTE-based fixed wireless broadband services.

MVNO Licences

By September 2015, Iran's ICT Ministry received a total of 51 mobile virtual network operator (MVNO) applications, including one from **Lycamobile**. It further noted that all applicants who fulfilled the minimum point requirement for the licence condition would be granted licences. The Ministry believed only a small number of the applicants would meet all requirements and successfully negotiate wholesale agreements with one of the country's mobile network operators. The licence conditions included:

- Must forecast net profit value of more than IRR100bn (USD3.34mn)
- Must forecast annual turnover of more than IRR300bn for Iranian shareholders (USD10mn)
- Must forecast achieving a subscriber base of more than 300,000
- Private investors must have at least a 20% stake in the MVNO
- A Fixed Communication Licensee must have at least a 20% stake in the MVNO

- Foreign shareholders must have at least three years' experience as a telecoms service provider, or two-and-a-half years as a mobile service provider
- Must be registered in Iran with at least 51% local shareholders

Iran's mobile network operators are required to sign wholesale licence agreements with at least two MVNOs, which should bring the total number to 12.

Iranian Leadership Divided Over Internet Controls

In January 2014, it was reported that Iran was seeking help from China to build its National Information Network (NIN). While cooperation would usually indicate the presence of Chinese equipment manufacturers to aid build-out, on this occasion the help on offer to Iran was to control content online and build a 'clean' internet. The policy of internet control is hardly surprising as the NIN was planned as a means of bypassing the World Wide Web. In September 2014, it was reported that Iran's Prosecutor General Gholam-Hossein Mohseni-Eje'i was looking to ban applications such as **WhatsApp**, **Tango** and **Viber** because of their 'criminal content', following criticism from a number of conservative leaders of the decision to expand the 3G market as the use of social media and other advanced platforms can be seen to promote political unrest and challenge Islamic beliefs. Iran's judiciary ordered the government to ban access to over-the-top IP voice and messaging applications in January 2015, but the following month President Hassan Rouhanis vetoed the plan to ban WhatsApp.

Competitive Landscape

Market Structure

Table: Key Players: Iranian Telecoms Market

Company Name	Ownership	Market
Telecommunications Company of Iran (TCI)	Etemad Mobin (50% plus one share), Equity Shares Brokerage Companies (20%), Government (19.9%), TCI staff (5.09%), other entities (5%)	Fixed-line (local, domestic long distance, international), mobile, data operations
Taliya	Rafsanjani Industrial Complex (RIC)	Mobile
MTN Irancell	MTN (49%), Iran Electronic Development Company (51%)	Mobile
Mobile Telecommunications Company of Esfahan (MTCE)	Telecommunication Company of Esfahan Province (100%)	Mobile
Telecommunication Kish Co. (TKC)	LibanCell (100%)	Mobile Internet (dial-up, WLAN)
Pars Online	Private (100%)	Internet (dial-up, ADSL, WiMAX)
Datak Telecom	Private (100%)	Internet (dial-up, ADSL, Wi-Fi, direct fibre), Residential VoIP

Source: BMI

Table: Key Operator Revenues (USDmn)

	2010	2011	2012	2013	2014	H115
TCI*	-	-	-	1,124	854	-
MCI*	-	-	-	-	2,763	-
MTN Irancell**	1,257	1,522	1,483	1,164	1,225	531

**= For FY ending in March; **= MTN's 49% share of revenue for MTN Irancell. Note: Values transferred into USD using BMI annual average IRR/USD and ZAR/USD exchange rates. Source: BMI, MTN, ACL Asset Management*

Table: Mobile Market Overview

	Dec-13	Mar-14	Jun-14	Sep-14	Dec-14	Mar-15	Jun-15	Sep-15
Total Mobile Subscriptions (000)	100,966	102,267	105,845	108,537	116,130	118,480	120,059	125,872
Q-o-Q Growth (%)	1.1	1.3	3.5	2.5	7.0	2.0	1.3	4.8
Y-o-Y Growth (%)	4.7	3.8	6.1	8.7	15.0	15.9	13.4	16.0
Net Additions (000)	1,081	1,301	3,578	2,692	7,593	2,350	1,579	5,813
Mobile Penetration (%)	130.9	130.9	135.4	138.9	148.6	149.8	151.8	159.1

Source: BMI, operators

Table: Hamrahe Aval (Mobile Telecommunications Company of Iran)

	Dec-13	Mar-14	Jun-14	Sep-14	Dec-14	Mar-15	Jun-15	Sep-15
Subscribers								
Total Mobile Subscriptions (000)	57,037	57,692	60,151	61,812	68,941	70,677	72,710	74,391
Prepaid (000)	40,090	40,623	42,978	44,523	51,652	53,212	55,111	56,629
Postpaid (000)	16,947	17,069	17,172	17,289	17,289	17,466	17,598	17,762
3G Subscriptions (000)	-	-	-	-	-	-	5,293	7,016
o/w Prepaid	-	-	-	-	-	-	2,723	3,779
o/w Postpaid	-	-	-	-	-	-	2,570	3,237
Net Additions (000)	820	655	2,459	1,661	7,129	1,736	2,033	1,681
Market Share (%)	56.5	56.4	56.8	57.0	59.4	59.7	60.6	59.1

Source: MCI, BMI

Table: MTN Irancell

-	Dec-13	Mar-14	Jun-14	Sep-14	Dec-14	Mar-15	Jun-15	Sep-15
Subscribers								
Total Subscriptions (000)	41374	41783	42697	43533	43940	44,421	44,146	48,181
Net Additions (000)	79	409	914	836	407	481	-275	4,035
Market Share (%)	41.0	40.9	40.3	40.1	37.8	37.5	36.8	38.3
Subscriber Usage								

MTN Irancell - Continued								
-	Dec-13	Mar-14	Jun-14	Sep-14	Dec-14	Mar-15	Jun-15	Sep-15
Monthly Minutes of Use/Subscriber	80	-	84	-	81	-	72	-
Monthly Blended ARPU (USD)	4	4.13	4.26	4.18	4.11	4.01	4.03	3.91
Monthly Blended ARPU (IRR)	100,381	102,835	108,479	109,684	110,006	110,352	114,959	116,025
Financial/Structure (ZARmn)								
Outgoing voice	2,501	-	2,625	-	3,072	-	2,824	-
Incoming voice	920	-	978	-	965	-	985	-
Data	591	-	930	-	1,116	-	1,719	-
SMS	1,057	-	1,078	-	764	-	795	-
Devices	0	-	0	-	0	-	0	-
Other	43	-	49	-	54	-	112	-
Total Revenue	5,112	-	5,660	-	5,971	-	6,435	-
Hyperinflation	1,714	-	215	-	1,440	-	271	-
Revenue including hyperinflation	6,826	-	5,875	-	7,411	-	6,706	-

Source: MTN

Table: Taliya (Rafsanjan Industrial Complex)								
	Dec-13	Mar-14	Jun-14	Sep-14	Dec-14	Mar-15	Jun-15	Sep-15
Subscribers								
Total Mobile Subscribers (000)	910	1050	1200	1400	1420	1500	1310	1335
Net Additions (000)	11	140	150	200	20	80	-190	25
Market Share (%)	0.9	1.0	1.1	1.3	1.2	1.3	1.1	1.1

Source: BMI

Company Profile

MTN Irancell

Strengths	▪ Iran's second largest mobile operator, with an estimated market share of around 37%.
	▪ Has a major strategic backer in the form of South Africa's MTN Group.
	▪ First to market with 3G and 4G services.
Weaknesses	▪ Subscriber base is understood to be highly dependent on prepaid customers.
	▪ Mobile data services face government censoring and filtering.
	▪ Lacks presence in the wireline sector for converged services.
	▪ US sanctions put limits on potential network equipment partners.
Opportunities	▪ Smartphone adoption is high and active 3G/4G users increased to 28% of total subscribers within a year of launching services.
	▪ Strong take-up of mobile data services opens opportunity to expand advanced data-centric VAS.
	▪ Continuing network roll-out programme will have a positive effect on future growth.
	▪ Lifting of sanctions from 2016 will improve economic outlook and ease imports of network equipment and services.
Threats	▪ The privatisation of TCI could raise the level of competition for MTN Irancell.
	▪ Underdeveloped legal and judicial environment could pose challenges.

Company Overview	In November 2003, the Ministry of Communications (now the MICT) issued a notice of its intention to issue a second GSM licence. In February 2004, Turkish operator Turkcell announced it won the tender, at a cost of USD385mn, over its closest rival South

Africa's MTN Group. The Turkcell network was expected to launch within a year of licence issue, but by September 2004 the licence had yet to be formally awarded. The ongoing licence issue culminated in Iranian authorities limiting foreign ownership in Irancell to 49%. Talks between Turkcell and the government eventually fell apart, leading the MICT to award the licence to MTN on November 21 2005. The remaining 51% stake is held by the Iran Electronic Development Company (IEDC). Irancell is currently managed through a shareholder agreement setting out operational management including key positions nominated by respective shareholders IEDC (chairman and managing director) and MTN (chief operating officer and chief financial officer).

Licence Conditions

Under MTN Group's licensing terms, the operator has a 15-year fixed term, followed by an option to renew its licence for an additional five years, which is allowed twice. Fees incurred by the operator, aside from the EUR300mn licence fee already paid to the Iranian authorities, include an annual fee set at 28.1% of the revenue share, based on gross revenue minus handset sales and net interconnection, with connection fees limited to USD150. Moreover, the operator must also pay a universal service fee of 3% of revenue. Other fees, such as numbering, frequency and regulation fees, are applicable, but altogether will not exceed 5% of revenue.

Strategy

MTN Irancell aims to drive mobile penetration and market share through the deployment of innovative products and services. It continues to emphasise the development of segmented prepaid and postpaid packages. The operator also aims to improve the level of customer service that is currently offered; the introduction of online registration and activation within 15 minutes was designed to further this goal. A central part of MTN Irancell's strategy is the rapid expansion of its 3G/4G network in order to take first mover advantage between the two dominant players. Over the next five years, the operator plans to deploy a network that covers more than 1,000 cities and comprises almost 6,000 BTSs, and to bring coverage to 85.0% of the population by October 2020.

Financial Results

MTN Irancell reported a 14.3% rise in total revenue in 2014, driven by improved distribution in Tehran and four other major cities, increased use of bolt-on packages and the expansion of its 3G network and value-added services. Data revenue, which now contributes 17.6% of the total revenue, grew 96.3% in the year and its subscriber base stood at 43.9mn, up 6.2% compared to a year ago. Smartphone penetration increased by about 15pps to 39.4% in 2014. MTN Irancell reported capital expenditure spending of ZAR6.35bn (USD538.17mn) in 2014, with the operator rolling out 621 LTE sites and 2,151 3G sites.

Operational Developments

2015

MTN Irancell reported that the number of data subscribers on its network has increased to more than 23mn, with the number of 3G/4G subscribers reaching 13.5mn by September 2015. The rise was supported by the expansion of its 3G and 4G networks, providing speeds of up to 150Mbps. The operator offers 3G services in more than 200 cities and has introduced its 4G network in more than 50 cities throughout the country.

In August, MTN Irancell also obtained a TDD-LTE licence which will enable it to offer LTE-based fixed wireless broadband services in the country. As of September 2015, MTN Irancell reported having around 500,000 WiMAX subscribers that it will switch over to LTE services.

In April 2015, MTN Irancell launched a Wi-Fi service in Tochal. Irancell subscribers can receive 500MB of free high-speed internet for 60 hours by connecting to the operator's Wi-Fi network, called irancellWiFi and sending a blank SMS to 4031 to receive a username and password. Subscribers will be able to receive a username and password only once every 24 hours.

2014

During the second half of 2014, MTN Irancell began the roll-out of a 3G network with LTE-capable frequency, following approval by the Communications Regulatory Authority. During the period it invested ZAR1.818bn, representing 100 percent of the operation, and deployed 274 new 2G sites. In August 2014 the operator was granted a 3G/4G licence, and with a ready network it launched 3G services in the following month. The operator also launched 4G networks in nine cities in November 2014, whereas its 3G network covered 75 cities in all 31 provinces.

Financial Data

- Annual revenue (2011): IRR33.352trn
- Annual revenue (2012): IRR41.980trn
- Annual revenue (2013): ZAR9.514trn
- Annual revenue (2014): ZAR11.631trn
- Capital expenditure (2011): ZAR1.168bn
- Capital expenditure (2012): ZAR1.122mn
- Capital expenditure (2013): ZAR1.758mn
- Capital expenditure (2014): ZAR6.350mn

All financial data reflect MTN's 49% stake in MTN

Operational Data

- Mobile subscribers (2011): 34.681mn
- Mobile subscribers (2012): 40.502mn
- Mobile subscribers (2013): 41.4mn
- Mobile subscribers (2014): 43.94mn

Company Details

- MTN Irancell
- 12 Anahita Alley
  Africa St

  Tehran

  Iran
- www.irancell.ir

Telecommunications Company Of Iran (TCI)

Strengths	▪ Remains the only fixed-line operator in Iran.
	▪ Investing in wireline operations to the country's rural areas.
	▪ Continuing to record steady growth and maintaining leadership of mobile market.
Weaknesses	▪ Growing number of internet service providers competing for market share in internet sector.
	▪ Privatisation failed to bring an international strategic partner with telecoms experience and financial backing.
Opportunities	▪ High import tax could provide fledgling domestic handset manufacturers with opportunity to grow.
	▪ Looking to converge its fixed and mobile assets into a compelling offer.
	▪ Mobile arm MCI launched 3G/4G services in Q215 and had 7mn 3G/4G subscribers by September 2015.
	▪ TCI building international IP traffic services, which could open more wholesale/carrier opportunity as the US and Europe lift sanctions in 2016.
Threats	▪ MTN Irancell's earlier launch of 3G/4G coupled with arrival of mobile number portability in 2016 could dent mobile market share.
	▪ Increasing competition from 10 other wholesale broadband providers likely curbing wireline market share.

Company Overview	The Telecommunications Company of Iran (TCI) was formed in 1972 out of its predecessor, the Telephone Company of Iran. After restructuring during July 2005, TCI announced it had reformed into a parent company overseeing 33 subsidiaries including data communications, mobile communications and backbone communications.

In early 2007, the Iranian Privatization Organization announced that a majority (51%) stake in TCI was due to be sold by the end of September 2007. However, it was not until September 2009 that privatisation finally took place. It was reported that local consortium Etemad Mobin paid more than USD7.8bn to secure a 50% plus one share stake in TCI. Etemad-e-Mobin comprises three companies, two of which are reportedly controlled by the Iranian Revolutionary Guard. Shares were exchanged through the Tehran Stock Exchange in November 2009.

A few weeks after the announcement, it was reported that Iran's General Inspections Organisation (GIO) had launched a probe into the connections between Etemad-e-Mobin and the Iranian Revolutionary Guard (*see Regulatory Developments*).

On August 20 2013, the mobile arm of TCI, the Mobile Company of Iran (MCI), listed on the Tehran Stock Exchange's Second Market. MCI had previously offered 5.5% of its shares on the Iranian over-the-counter (OTC) market for a combined value of USD396mn.

Strategy

As a state-owned operator, TCI's strategy is strongly influenced by the priorities of Iran's governing authorities. Central to the government's telecommunications strategy has been the expansion of the country's national communications infrastructure. Priority areas include the development of the national fibre-optic network and the development of rural communications infrastructures. Within the field of mobile communications, TCI has pursued the deployment of new technologies, such as 3G/4G, as well as a range of new data-based value-added services.

In March 2014, TCI reviewed its strategic objective of achieving full convergence of fixed and mobile services. Jurki Markku Runola, TCI transformation plan advisor, said that 2013 saw TCI focus on the basics and 2014 saw TCI produce practical outcomes, before growth in 2015 and full convergence of fixed and mobile services in 2016.

Financial Results

At the end of 2013, TCI reported total revenue for the year of IRR115,666bn (USD4.2bn) net profit of IRR23,094bn (USD838mn) operating profit of IRR20,480bn (USD743mn) and total investments of IRR39,827bn (USD1.45bn).

Operational Developments

2015

In the second quarter of 2015, TCI's mobile arm MCI (Hamrahe Aval) launched 3G data services. It reported very strong take-up of these services, reaching more than 7mn subscriptions by September 2015.

In December 2014, MCI began a SIM registration exercise, which resulted in the operator disconnecting 20,000 unidentified SIMs by the March 28 2015 deadline.

According to a report in the New York Times, the Revolutionary Guards-backed largest shareholder in TCI, Tose-e Etemad Mobin Co., put the telecoms operator up for sale in

July 2015, in order to take advantage of rising foreign investment when sanctions are lifted from 2016.

Financial Data

- Revenue (FY2013, ended in March): IRR20,204bn
- Revenue (FY2014): IRR22,053bn
- Net profit (FY2013): IRR20,360bn
- Net profit (FY2014): IRR21,816bn

Operational Data

Fixed lines

- 2011: 26.540mn
- 2012: 27,478mn
- 2013: 28.462mn

Mobile subscribers

- 2011: 48.233mn
- 2012: 53.897mn
- 2013: 57.037mn2014: 68.941mn

Company Details

- Telecommunications Company Of Iran (TCI)
- Shariati Avenue
  Tehran

  Iran
- www.tci.ir

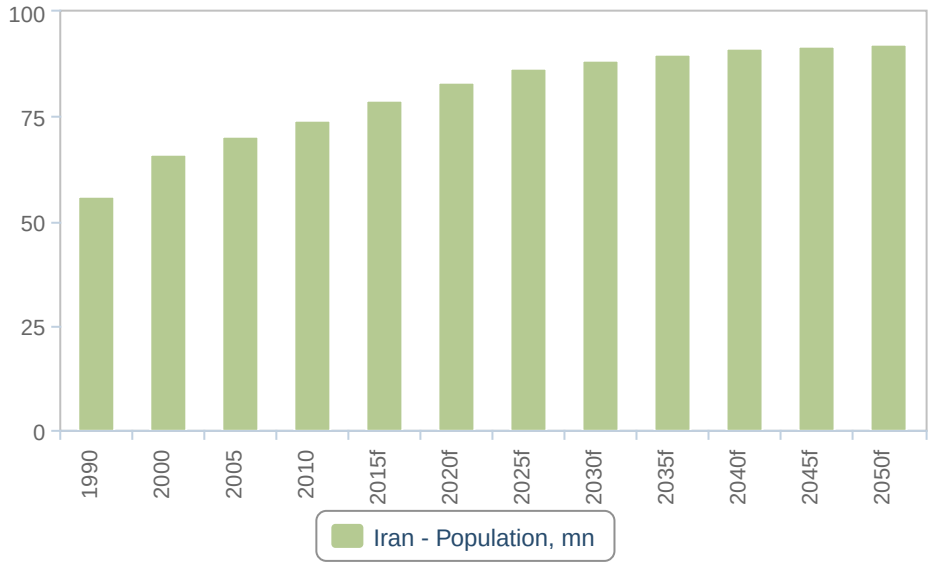
Demographic Forecast

Demographic analysis is a key pillar of **BMI**'s macroeconomic and industry forecasting model. Not only is the total population of a country a key variable in consumer demand, but an understanding of the demographic profile is essential to understanding issues ranging from future population trends to productivity growth and government spending requirements.

The accompanying charts detail the population pyramid for 2015, the change in the structure of the population between 2015 and 2050 and the total population between 1990 and 2050. The tables show indicators from all of these charts, in addition to key metrics such as population ratios, the urban/rural split and life expectancy.

Population

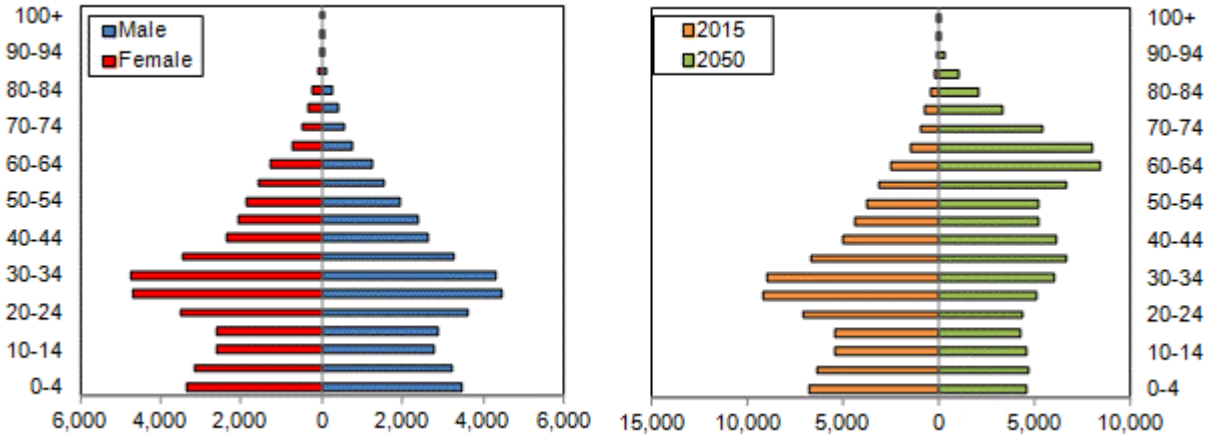
(1990-2050)



f = BMI forecast. Source: World Bank, UN, BMI

Iran Population Pyramid

2015 (LHS) & 2015 Versus 2050 (RHS)



Source: World Bank, UN, BMI

Table: Population Headline Indicators (Iran 1990-2025)

	1990	2000	2005	2010	2015f	2020f	2025f
Population, total, '000	56,169	65,850	70,122	74,253	79,109	83,403	86,496
Population, % y-o-y	na	1.7	1.2	1.2	1.2	0.9	0.6
Population, total, male, '000	28,617	33,372	35,796	37,542	39,835	41,940	43,439
Population, total, female, '000	27,551	32,477	34,325	36,710	39,274	41,463	43,057
Population ratio, male/female	1.04	1.03	1.04	1.02	1.01	1.01	1.01

na = not available; f = BMI forecast. Source: World Bank, UN, BMI

Table: Key Population Ratios (Iran 1990-2025)

	1990	2000	2005	2010	2015f	2020f	2025f
Active population, total, '000	28,800	40,064	48,413	53,171	56,428	58,737	61,495
Active population, % of total population	51.3	60.8	69.0	71.6	71.3	70.4	71.1
Dependent population, total, '000	27,368	25,785	21,709	21,081	22,681	24,665	25,000
Dependent ratio, % of total working age	95.0	64.4	44.8	39.6	40.2	42.0	40.7

Key Population Ratios (Iran 1990-2025) - Continued

	1990	2000	2005	2010	2015f	2020f	2025f
Youth population, total, '000	25,492	23,011	18,251	17,418	18,677	19,449	18,237
Youth population, % of total working age	88.5	57.4	37.7	32.8	33.1	33.1	29.7
Pensionable population, '000	1,876	2,773	3,457	3,662	4,003	5,216	6,763
Pensionable population, % of total working age	6.5	6.9	7.1	6.9	7.1	8.9	11.0

f = BMI forecast. Source: World Bank, UN, BMI

Table: Urban/Rural Population & Life Expectancy (Iran 1990-2025)

	1990	2000	2005	2010	2015f	2020f	2025f
Urban population, '000	31,640.1	42,171.7	47,373.1	52,442.2	58,046.4	63,173.8	67,253.7
Urban population, % of total	56.3	64.0	67.6	70.6	73.4	75.7	77.8
Rural population, '000	24,529.1	23,678.4	22,749.0	21,811.2	21,062.8	20,229.5	19,242.9
Rural population, % of total	43.7	36.0	32.4	29.4	26.6	24.3	22.2
Life expectancy at birth, male, years	61.6	69.2	70.4	72.5	74.5	75.1	75.8
Life expectancy at birth, female, years	66.3	71.1	73.5	75.5	76.7	77.4	78.1
Life expectancy at birth, average, years	63.8	70.1	71.9	74.0	75.6	76.2	76.9

f = BMI forecast. Source: World Bank, UN, BMI

Table: Population By Age Group (Iran 1990-2025)

	1990	2000	2005	2010	2015f	2020f	2025f
Population, 0-4 yrs, total, '000	9,346	6,379	5,494	6,402	6,855	6,228	5,197
Population, 5-9 yrs, total, '000	8,885	7,598	5,556	5,472	6,395	6,836	6,213
Population, 10-14 yrs, total, '000	7,260	9,034	7,200	5,543	5,426	6,384	6,826
Population, 15-19 yrs, total, '000	5,775	8,781	9,299	7,136	5,478	5,407	6,365
Population, 20-24 yrs, total, '000	4,674	6,868	9,123	9,148	7,086	5,434	5,369
Population, 25-29 yrs, total, '000	4,031	5,269	6,796	8,996	9,158	7,026	5,388
Population, 30-34 yrs, total, '000	3,506	4,419	5,156	6,759	9,045	9,096	6,979
Population, 35-39 yrs, total, '000	3,005	3,864	4,670	5,140	6,738	8,988	9,044
Population, 40-44 yrs, total, '000	2,123	3,344	4,091	4,580	5,029	6,688	8,931
Population, 45-49 yrs, total, '000	1,621	2,832	3,393	3,920	4,454	4,979	6,629

Population By Age Group (Iran 1990-2025) - Continued							
	1990	2000	2005	2010	2015f	2020f	2025f
Population, 50-54 yrs, total, '000	1,527	1,930	2,776	3,227	3,813	4,384	4,906
Population, 55-59 yrs, total, '000	1,393	1,431	1,767	2,631	3,124	3,723	4,286
Population, 60-64 yrs, total, '000	1,140	1,322	1,336	1,629	2,497	3,009	3,594
Population, 65-69 yrs, total, '000	899	1,145	1,258	1,193	1,475	2,338	2,828
Population, 70-74 yrs, total, '000	508	826	1,055	1,054	1,009	1,299	2,075
Population, 75-79 yrs, total, '000	269	509	654	780	785	776	1,015
Population, 80-84 yrs, total, '000	136	203	347	413	477	494	502
Population, 85-89 yrs, total, '000	49	67	113	174	194	232	249
Population, 90-94 yrs, total, '000	11	18	22	40	54	63	79
Population, 95-99 yrs, total, '000	1	2	3	5	7	10	12
Population, 100+ yrs, total, '000	0	0	0	0	0	0	1

f = BMI forecast. Source: World Bank, UN, BMI

Table: Population By Age Group % (Iran 1990-2025)							
	1990	2000	2005	2010	2015f	2020f	2025f
Population, 0-4 yrs, % total	16.64	9.69	7.84	8.62	8.67	7.47	6.01
Population, 5-9 yrs, % total	15.82	11.54	7.92	7.37	8.08	8.20	7.18
Population, 10-14 yrs, % total	12.93	13.72	10.27	7.47	6.86	7.66	7.89
Population, 15-19 yrs, % total	10.28	13.34	13.26	9.61	6.93	6.48	7.36
Population, 20-24 yrs, % total	8.32	10.43	13.01	12.32	8.96	6.52	6.21
Population, 25-29 yrs, % total	7.18	8.00	9.69	12.12	11.58	8.42	6.23
Population, 30-34 yrs, % total	6.24	6.71	7.35	9.10	11.43	10.91	8.07
Population, 35-39 yrs, % total	5.35	5.87	6.66	6.92	8.52	10.78	10.46
Population, 40-44 yrs, % total	3.78	5.08	5.84	6.17	6.36	8.02	10.33
Population, 45-49 yrs, % total	2.89	4.30	4.84	5.28	5.63	5.97	7.66
Population, 50-54 yrs, % total	2.72	2.93	3.96	4.35	4.82	5.26	5.67
Population, 55-59 yrs, % total	2.48	2.17	2.52	3.54	3.95	4.46	4.96
Population, 60-64 yrs, % total	2.03	2.01	1.91	2.19	3.16	3.61	4.16
Population, 65-69 yrs, % total	1.60	1.74	1.79	1.61	1.87	2.80	3.27
Population, 70-74 yrs, % total	0.90	1.25	1.51	1.42	1.28	1.56	2.40
Population, 75-79 yrs, % total	0.48	0.77	0.93	1.05	0.99	0.93	1.17
Population, 80-84 yrs, % total	0.24	0.31	0.50	0.56	0.60	0.59	0.58

Population By Age Group % (Iran 1990-2025) - Continued							
	1990	2000	2005	2010	2015f	2020f	2025f
Population, 85-89 yrs, % total	0.09	0.10	0.16	0.23	0.25	0.28	0.29
Population, 90-94 yrs, % total	0.02	0.03	0.03	0.05	0.07	0.08	0.09
Population, 95-99 yrs, % total	0.00	0.00	0.01	0.01	0.01	0.01	0.01
Population, 100+ yrs, % total	0.00	0.00	0.00	0.00	0.00	0.00	0.00

f = BMI forecast. Source: World Bank, UN, BMI

Glossary

Table: Glossary Of Terms					
2G	second generation	GDP	gross domestic product	NGN	next generation network
3G	third generation	GPRS	global packet radio service	Mbps	megabits per second
ADSL	asymmetric digital subscriber line	GSM	global system for mobile communications	MHz	megahertz
ARPU	average revenue per user	HDSL	high-bit-rate digital subscriber line	MNP	mobile number portability
ASP	average selling price	HSDPA	high-speed downlink packet access	MoU	memorandum of understanding
BMI	Business Monitor International	HPSA	high-speed packet access	MOU	minutes of use
bn	billion	HSUPA	high-speed uplink packet access	MPLS	multiprotocol label switching
BTS	base transceiver stations	HTML	hypertext markup language	MSC	mobile switching centre
CDMA	code division multiple access	Hz	hertz	MVNO	mobile virtual network operator
CRM	customer relationship management	ICT	information and communication technology	-	not available
D-AMPS	digital-advanced mobile phone service	IDD	international direct dialling	OIBDA	operating income before depreciation and amortisation
DLD	domestic long-distance	ILD	international long-distance	POP	point of presence
DMB	digital multimedia broadcasting	IPO	initial public offering	R&D	research and development
DSL	digital subscriber line	IP	internet protocol	SaaS	software-as-a-service
DSLAM	digital subscriber line access multiplexer	IPTV	internet protocol TV	SDSL	symmetric digital subscriber line
DSU	digital subscriber unit	ISDN	integrated services digital networks	SIM	subscriber identity module
DTH	direct-to-home	ISP	internet service provider	SMS	short messaging service
DVB-H	digital video broadcasting-handheld	IT	information technology	TDMA	time division multiple access
DVB-SH	digital video broadcasting-satellite handheld	ITU	International Telecommunication Union	TD-SCDMA	time division-synchronous code division multiple access
e/f	estimate/forecast	JV	joint venture	trn	trillion
EBITDA	earnings before interest, taxes, depreciation and amortisation	Kbps	kilobits per second	UMTS	universal mobile telecommunications system
EC	European Commission	KHz	kilohertz	VOD	video on demand

Glossary Of Terms - Continued					
EMEA	Europe, Middle East and Africa	km	kilometres	VoIP	voice over internet protocol
EV-DO	evolution-data optimised	LANs	local area networks	VLAN	virtual local area network
FDI	foreign direct Investment	LEC	local exchange carrier	WAP	wireless application protocol
FTTB	fibre-to-the-building	LTE	long-term evolution	W-CDMA	wideband CDMA
FTTH	fibre-to-the-home	M2M	machine-to-machine	WiBro	wireless broadband
FTP	file transfer protocol	mn	million	WiMAX	worldwide interoperability for microwave access
Gbps	gigabits per second	MEA	Middle East and Africa	WLL	wireless local loop
GPON	gigabit passive optical network	MENA	Middle East and North Africa	WTO	World Trade Organization

Source: BMI

Methodology

Industry Forecast Methodology

BMI's industry forecasts are generated using the best practice techniques of time-series modelling and causal/econometric modelling. The precise form of model we use varies from industry to industry, in each case being determined, as per standard practice, by the prevailing features of the industry data being examined.

Common to our analysis of every industry is the use of vector autoregressions. Vector autoregressions allow us to forecast a variable using more than the variable's own history as explanatory information. For example, when forecasting oil prices, we can include information about oil consumption, supply and capacity.

When forecasting for some of our industry sub-component variables, however, using a variable's own history is often the most desirable method of analysis. Such single-variable analysis is called univariate modelling. We use the most common and versatile form of univariate models: the autoregressive moving average model (ARMA).

In some cases, ARMA techniques are inappropriate because there is insufficient historic data or data quality is poor. In such cases, we use either traditional decomposition methods or smoothing methods as a basis for analysis and forecasting.

BMI mainly uses OLS estimators and in order to avoid relying on subjective views and encourage the use of objective views, we use a 'general-to-specific' method. We mainly use a linear model, but simple non-linear models, such as the log-linear model, are used when necessary. During periods of 'industry shock', for example poor weather conditions impeding agricultural output, dummy variables are used to determine the level of impact.

Effective forecasting depends on appropriately selected regression models. **BMI** selects the best model according to various different criteria and tests, including but not exclusive to:

- R^2 tests explanatory power; adjusted R^2 takes degree of freedom into account;
- Testing the directional movement and magnitude of coefficients;
- Hypothesis testing to ensure coefficients are significant (normally t-test and/or P-value);
- All results are assessed to alleviate issues related to auto-correlation and multicollinearity.

We use the selected best model to perform forecasting.

It must be remembered that human intervention plays a necessary and desirable role in all our industry forecasting. Experience, expertise and knowledge of industry data and trends ensure that analysts spot structural breaks, anomalous data, turning points and seasonal features where a purely mechanical forecasting process would not.

Sector-Specific Methodology

Our Telecommunications industry forecasts are generated using a number of principal criteria, and differ from the regression and/or time-series modelling used in other industries.

- **Average Market Growth**

Indicator takes into consideration the historical growth patterns of the fixed-line, internet, broadband and mobile markets, providing a basis from which to forecast. Using historical data is often the most desirable method of analysis. In most cases, subscriber data are derived from individual operators and/or national regulators.

- **Subjective Indicators**

Indicators look at a number of factors, such as the following:

- Neighbouring/similar states. These types of markets often share similar telecoms markets. For example, Japan and South Korea are both highly developed technophile markets where growth prospects are high in 3G. Meanwhile, China and India both offer high growth in successfully emerging markets.
- Tracking growth. High growth may be more likely to be repeated in the near future, and is unlikely to turn into a significant decline in the short term, although there may be exceptions to this rule.
- Market maturity. Where markets have reached saturation, they are not likely to expand as fast as those that are less developed.
- Competition from alternative technologies, such as VoIP versus fixed-line, ADSL versus mobile broadband.
- Operator behaviour. Operators' corporate strategies and investment behaviour may dictate changes in the telecommunications market. This is similarly the case for regulatory developments, which have been accounted for in our integration of the Telecommunications Risk/Reward Index.

Sources

Sources used in telecoms reports include national ministries and media/telecoms regulatory bodies, officially released company results and figures, national and international industry organisations, such as the CTIA, the GSM Association and the International Telecommunication Union (ITU) and international and national news agencies.

Risk/Reward Index Methodology

BMI's Risk/Reward Index (RRI) provide a comparative regional ranking system evaluating the ease of doing business and the industry-specific opportunities and limitations for potential investors in a given market.

The RRI system divides into two distinct areas:

Rewards: Evaluation of sector's size and growth potential in each state, and also broader industry/state characteristics that may inhibit its development. This is further broken down into two sub categories:

- Industry Rewards. This is an industry specific category taking into account current industry size and growth forecasts, the openness of market to new entrants and foreign investors, to provide an overall score for potential returns for investors.
- Country Rewards. This is a country specific category, and the score factors in favourable political and economic conditions for the industry.

Risks: Evaluation of industry-specific dangers and those emanating from the state's political/economic profile that call into question the likelihood of anticipated returns being realised over the assessed time period. This is further broken down into two sub categories:

- Industry Risks. This is an industry specific category whose score covers potential operational risks to investors, regulatory issues inhibiting the industry, and the relative maturity of a market.
- Country Risks. This is a country specific category in which political and economic instability, unfavourable legislation and a poor overall business environment are evaluated to provide an overall score.

We take a weighted average, combining industry and country risks, or industry and country rewards. These two results in turn provide an overall Risk/Reward Index, which is used to create our regional ranking system for the risks and rewards of involvement in a specific industry in a particular country.

For each category and sub-category, each state is scored out of 100 (100 being the best), with the overall Risk/Reward Index a weighted average of the total score. Importantly, as most of the countries and

territories evaluated are considered by **BMI** to be 'emerging markets', our score is revised on a quarterly basis. This ensures that the score draws on the latest information and data across our broad range of sources, and the expertise of our analysts.

Indicators

The following indicators have been used. Overall, the index uses three subjectively measured indicators, and around 20 separate indicators/datasets.

Table: Risk/Reward Index Indicators

	Rationale
Rewards	
Industry Rewards	
- ARPU	Denotes depth of telecoms market. High-value markets score better than low-value ones.
- No. of subscribers	Denotes breadth of telecoms market. Large markets score higher than smaller ones.
- Subscriber growth, % y-o-y	Denotes sector dynamism. Scores based on annual average growth over our five-year forecast period and also take into account the penetration rate.
- No. of operators	Subjective evaluation against BMI-defined criteria. Evaluates market openness and competitiveness.
Country Rewards	
- Urban/rural split	A highly urbanised state facilitates network rollout and implies higher wealth. Predominantly rural states score lower, with overall score also affected by country size.
- Age range	Proportion of population under 24 years old. States with young populations tend to be more attractive markets.
- GDP per capita, USD	A proxy for wealth. High-income states receive better scores than low-income states.
Risks	
Industry Risks	
- Regulatory independence	Subjective evaluation against BMI-defined criteria. Evaluates predictability of operating environment.
Country Risks	
- Short-term external risk	Score from BMI's Country Risk Index(CRI). Denotes state's vulnerability to externally induced economic shock, which tend to be the principal triggers of economic crises.
- Policy continuity	From CRI. Evaluates the risk of a sharp change in the broad direction of government policy.
- Legal framework	From CRI. Denotes strength of legal institutions in each state - security of investment can be a key risk in some emerging markets.

Risk/Reward Index Indicators - Continued	
	Rationale
- Corruption	From CRI. Denotes risk of additional illegal costs/possibility of opacity in tendering/ business operations affecting companies' ability to compete.

Source: BMI

Weighting

Given the number of indicators/datasets used, it would be inappropriate to give all sub-components equal weight. Consequently, the following weighting has been adopted:

Table: Weighting Of Indicators	
Component	**Weighting, %**
Rewards	70, of which
- Industry Rewards	65
- Country Rewards	35
Risks	30, of which
- Industry Risks	40
- Country Risks	60

Source: BMI