

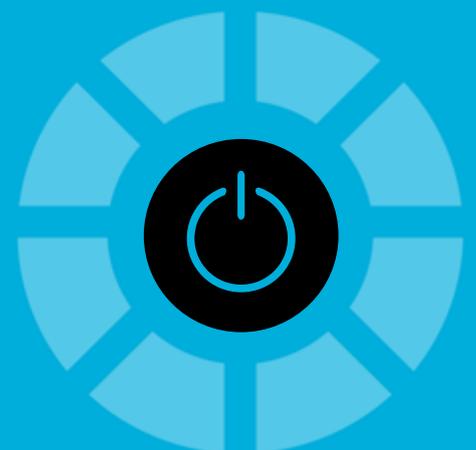
Q1 2016

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IRAN

CONSUMER ELECTRONICS REPORT

INCLUDES 5-YEAR FORECASTS TO 2019



Iran Consumer Electronics Report Q1 2016

INCLUDES 5-YEAR FORECASTS TO 2019

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BMI Industry View

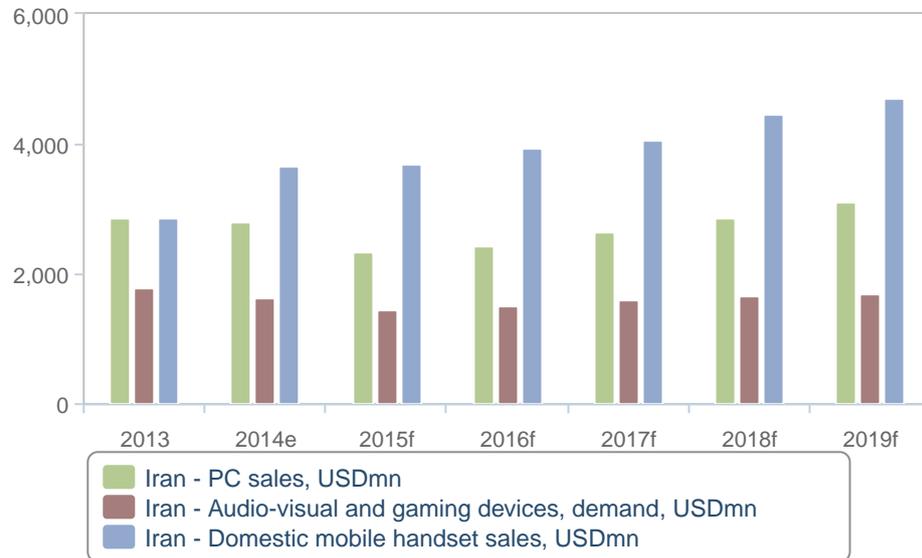
***BMI View:** We made revisions for the Iran consumer electronics market in our Q415 report to better reflect the growth potential and historical data in the market. Following the nuclear deal in July 2015, we have also revised the potential for future prospects. Under our revised outlook we expect consumer electronics spending growth to accelerate from 2016 as the easing of sanctions makes a positive contribution through increased supply of devices and formalisation of retail, which will drive down prices and catalyse volume growth, enabling vendors to tap into positive fundamentals including population and income growth. We do, however, continue to stress downside risk and uncertainty surrounding the outlook for Iran, including political and operational risk and the challenging economic environment.*

Headline Expenditure Projections

- **Computer sales:** USD2.8bn in 2014 to USD3.1bn by 2019; Even after easing of sanctions relatively high cost of devices will continue to be a drag on growth, but economic recovery and more competition should see the market move to a higher growth trajectory.
- **AV and gaming device sales:** USD1.6bn in 2014 to USD1.7bn in 2019; Demand is likely to be weakest in this segment as TV market saturation and price erosion and cannibalisation of digital camera volumes, will offset the growth dividend from sanctions being rescinded.
- **Handset sales:** USD3.7bn in 2014 to USD4.7bn in 2019; the handset market is forecast to outperform as an easing of sanctions and formalisation of retail will accelerate growth, particularly in the handset market where under sanctions the premium segment was primarily served by black market goods acquired overseas.

Sanctions Easing Growth Dividend Delayed Until 2016

Iran Consumer Electronics Spending By Segment (USDmn)



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

SWOT

Consumer Electronics Market

Iran Consumer Electronics SWOT

Strengths

- Iran had a population of 78.5mn at the end of 2014 and the country has the potential to be the leading consumer electronics market in the Middle East.
- Iran's youthful and tech-literate population is increasingly well informed about the latest technology trends and brands.
- Over two-thirds of Iranians live in urban areas, which bodes well for strong retail growth and broadband access.
- The expansion of 3G and 4G services, launched by multiple operators.

Weaknesses

- High tariffs on some imported electronics products (eg 60% for mobile handsets).
- Local electronics distribution sector is small-scale and fragmented, making it hard for regional vendors and distributors to build channels to market.
- Large grey market of pirated goods entering the country through Pakistan, Afghanistan and Iraq.
- Political environment creates risk for vendors.

Opportunities

- Lifting of US handset sanctions will boost competition and should accelerate smartphone adoption.
- Increased competition and coverage in the mobile data market should drive smartphone sales. Individual retailers of international consumer electronics brands, particularly Apple, are increasingly well-organised, offering their own warranties and services tailored to Iranian consumers.
- Government drive to encourage local production, particularly of handsets, could help vendors willing to form partnerships.

Iran Consumer Electronics SWOT - Continued

Threats

- Failure to control parallel imports and inflow of inferior computer components and accessories.

 - Political tensions between Iran and the West could limit opportunities for multinational corporations and create an element of unpredictability.
-

Industry Forecast

Latest Updates

- We have revised our core scenario for the Iranian consumer electronics segment to better reflect the historical data and to give a more accurate forecast for the future.
- The recent Iranian nuclear deal will lead to a lifting of sanctions against Iran and will allow the economy to grow at a better pace.
- The household income breakdown of Iran points towards a positive picture in the future and we hold the opinion that as household incomes rise, discretionary spending powers will follow.

***BMI View:** We made revisions to our consumer electronics forecast in the Q415 report to better reflect historical data and medium-term growth prospects to 2019. The previous market size estimates were revised downwards to more accurately reflect the scale of local demand for devices, but following the easing of sanctions our core scenario has become more positive for 2016. It is however important to stress the high level of uncertainty regarding the outlook for Iran due to a paucity of locally produced data, the high levels of political risk and the extent of the black market under the sanctions regime. Our new outlook estimates a market size of USD8.06bn in 2014 and we forecast a CAGR of 3.3% 2015-2019.*

Structural Trends

The nuclear agreement and the potential for an easing of sanctions is attracting significant vendor interest, for instance it was reported in July 2015 that **Apple** was in talks with Iranian distributors regarding the creation of a network of premium resellers in Iran. **BMI** has adopted a more bullish core growth scenario to reflect the potential for increased supply of devices and formal competition, helping to drive down prices and unlock demand. We stress however that the prospects for a short term boom are weak due to the challenging economic environment in 2015 and our Country Risk team's assessment is that practically all economic sanctions on Iran will be lifted by the beginning of 2016, if Iran complies with the IAEA's requirements.

2016 Outlook

Sanctions have restricted the development of the Iranian consumer electronics market. Exporting to Iran remains a huge logistical challenge while key trade routes are closed and restrictions still apply to the financial sector. Many vendors have been unwilling to invest without the greater certainty provided by a wider sanctions relief agreement. US vendors are not the only ones waiting for greater stability; even

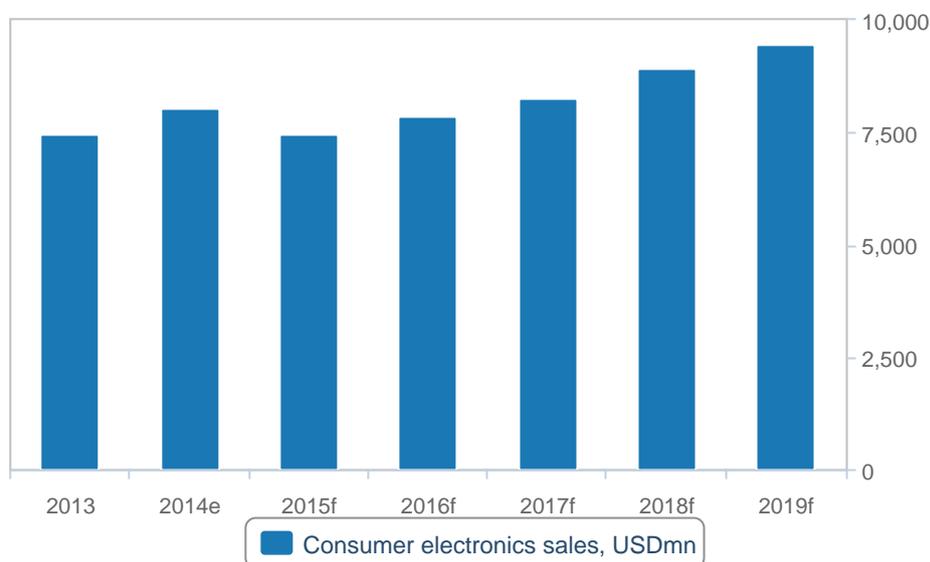
leading Chinese PC vendor Lenovo stated in early 2014 that it would wait for an agreement between Western nations and Iran before formally expanding into the country. In this context the nuclear deal and prospects for removal of all consumer electronics sanctions by 2016 has raised confidence levels.

A reason for caution is the informal nature of a large part of the consumer electronics market under the sanctions regime. Restrictions have resulted in a large black market for devices acquired overseas, primarily in Dubai and other GCC markets. There will be a delay before new distribution channels are developed, particularly outside the main urban areas. It is additionally worth noting that **BMI** estimates it is the most affluent segments of the Iranian consumer base that have most fully utilised informal import channels, or acquired devices directly overseas, part of the explanation for relatively low levels of device spending per capita in Iran.

The easing of sanctions and the black market are only one part of Iran's consumer electronics market and there exists a large market in volume and value terms right across the device spectrum in our estimate for formal market size. As a result it will be economic trends that to a greater extent determine the spending growth trajectory in 2016 and as such we forecast 5.4% growth to a value of USD7.85bn.

Consumer Electronics Demand

(2013-2019)



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

Market Trends

Under our core scenario for implementation of the nuclear deal and a full lifting of sanctions we expect the Iranian consumer electronics market to exhibit to move to a higher growth trajectory over the medium term. Once the implementation of the deal is confirmed, Iran will gain immediate access to approximately USD100bn in frozen assets; regain access to SWIFT and the international banking system; and see sanctions pulled back on all key sectors such as energy, transport, insurance and mining.

BMI expects this to have a direct impact on the consumer electronics market. While many Iranians have been able to find iPhones and other popular products through specific retailers, abroad or on the black market, the establishment of formal distribution networks should help bring down the cost of these devices, in turn supporting greater demand. This should result in a considerably larger share of the population's consumer electronics spending taking place through formal retail channels in Iran, raising per capita spending levels much closer to the level we would anticipate given household PC and smartphone penetration rates we estimate approached 50% by the end of 2014.

Downside risk is however significant and multifaceted. The successful implementation of the deal is uncertain, though our core scenario. Meanwhile, the operational and regulatory environment will continue to present major challenges to vendors. For instance, the mobile handset import tariff of 60% is among the highest globally and a major squeeze on affordability, while there have also been suggestions that breaking up the black market could prove challenging when corruption, bureaucracy, nepotism and domestic resistance to opening the economy are rife. At the same time, low oil prices will ensure weak government spending and private consumption growth.

Vendors are however unlikely to be deterred by the challenges in Iran and vendors have operated in the market despite US led sanctions. The contribution of sanctions easing on the wider economic and consumer spending growth trend will further heighten vendor interest in formalising local presence and investing in distribution and retail operations. After average real GDP contraction of 2.1% 2012-2015, during which time GDP per capita in US dollars declined 27.8% to USD5,248 in 2015, **BMI** forecasts average annual real GDP growth of 4.3% 2016-2019. Further rial depreciation will squeeze US dollar income growth, but despite this we still forecast a 31% increase to USD6,870 in 2019.

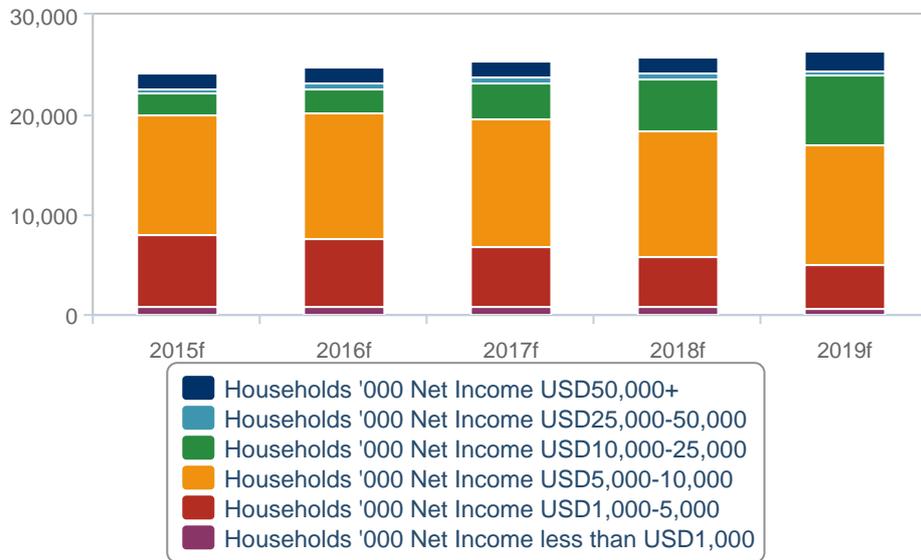
The introduction of our household income distribution and forecast in Q42015 adds further detail to the consumer spending trend. In 2016 the household income profile of Iran is of a middle income market with a relatively high participation rate, based on our in-house Country Risk team's forecast for a third of

households in Iran to have incomes of less than USD5,000 in 2015 (the level we consider the threshold for sufficient purchasing power to participate in the device market). The predominant household consumption characteristic is instead one of price sensitivity in 2015 and 2016, while the premium segment is estimated to be more likely to acquire desirable devices informally.

BMI's medium term household income forecast illustrates the robust consumption growth story in Iran 2015-2019. We forecast large scale migration of households up the income scale, a trend that will be most evident in the easing of price sensitivity constraints in the mass market, with around 4.2mn households expected to be added to the USD10-25k income band by 2019 (*see chart below*).

Rising Incomes, Rising Spending Power

Household Income Breakdown (USD) (2015-2019)



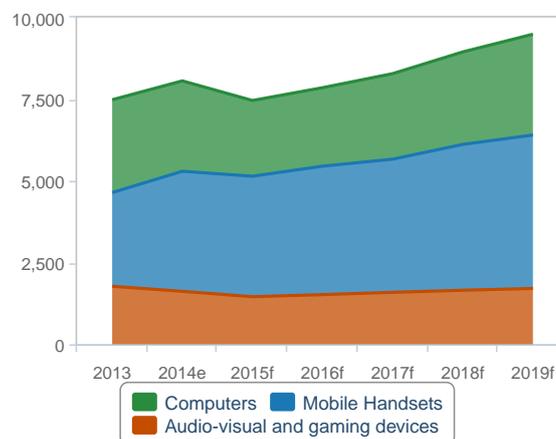
Source; BMI Calculation/Statistical Centre of Iran

Segments

BMI estimates mobile handsets was the largest segment of the consumer electronics market in 2014 at USD3.7bn, accounting for about 45% of total spending. Handset spending is potentially the most dynamic segment of the market, particularly after the removal of sanctions, with additional upside if the government adjusts the tariff regime. There will likely be a short-term boost to sales once Apple devices become available through official channels in 2016, but the market will continue to be dominated by Samsung and the competitive dynamics with Chinese vendors, such as **Huawei** and **Lenovo**. We expect the market to grow strongly during the forecast period, with handset sales growing by a CAGR of 5% 2015-2019, increasing the share of handset sales to almost 50% by the latter years of our forecast.

Consumer Electronics Demand

(2013-2019)



e/f = BM estimate/forecast. Source: BMI

Computer hardware is estimated to have been the second largest consumer electronics market category in 2014 and is expected to continue to account for about a third of total device spending for the duration of our five-year forecast period. Government spending will help drive the market, while demand will also be strong in the SME and consumer segments. Spending will rise at a CAGR of 2.2% 2015-2019, with an emphasis on notebooks and tablets.

AV devices are estimated to have been the smallest consumer electronics market segment in 2014, at 20% of the total and we expect this share to decline to 18% by 2019. The AV segment growth potential is limited by technology trends including the cannibalisation of digital camera demand by the proliferation of multifunctional smartphone ownership. Meanwhile, saturation of the TV set market and intense price competition between vendors at the global and regional level will diminish returns to vendors over the medium term and see AV spending growth underperform both the handset and PC markets.

Table: Consumer Electronics Overview (Iran 2013-2019)

	2013	2014e	2015f	2016f	2017f	2018f	2019f
Consumer electronics sales, exports and domestic sales, USDmn	7,481.46	8,058.80	7,459.23	7,850.44	8,280.79	8,945.70	9,486.64
Consumer electronics sales, computers, exports and domestic sales, USDmn	2,840.22	2,765.77	2,317.02	2,401.21	2,616.75	2,830.01	3,084.22
Consumer electronics sales, consumer electronics, exports and domestic sales, USDmn	1,775.11	1,620.06	1,455.69	1,519.05	1,589.71	1,653.70	1,707.41
Consumer electronics sales, communications, exports and domestic sales, USDmn	2,866.13	3,672.98	3,686.52	3,930.18	4,074.33	4,462.00	4,695.00

Source: BMI research

Industry Risk Reward Ratings

Industry Risk Reward Index

BMI View: *In Q116 there were several positional changes in the Consumer Electronics Risk Reward Index (RRI) for the Middle East and Africa (MEA), although there were only minor changes to the scores of individual markets. The average regional score was down 0.8 points q-o-q, but more significantly down 2.2 points y-o-y to 50.4. The decline is largely the result of the impact of the lower oil price and dollar appreciation, which have squeezed consumer electronics device demand in markets across the region.*

The MEA RRI ranks the 10 countries in our coverage based on an aggregate score of risks and rewards divided into four categories: Industry Rewards, Country Rewards, Industry Risks and Country Risks. It is characterised by a wide spread of markets in the region - from the high income but small population markets of the Gulf Cooperation Council to the high potential but less developed and higher risk markets such as Iran and Egypt at the bottom of the ratings.

Qatar moved up to first position in the Q1 MEA RRI with a 0.8 point increase in its overall score, overtaking Israel in the process. We made a minor revision to historical data for Qatar this quarter which boosted its industry rewards score despite the limitations of a population of just 2.17mn. The upgrade built upon our bullish outlook for Qatar's consumer electronics devices market that is underpinned by high per capita incomes, the strong consumption culture, steady population growth from the influx of migrant workers and the government's continued commitment to invest in the ICT sector.

The UAE also moved up one position in Q1 to second in the RRI, but its score is unchanged this quarter. The UAE has many shared characteristics with Qatar, as a small population but high income per capita GCC market without a consumer electronics manufacture or innovation ecosystem. The UAE does not however have the same resilience to global economic headwinds, most notably in the Dubai emirate where real estate and finance are much more important economic sectors as compared to Qatar that has a higher concentration of oil and gas. The greater diversity of the UAE does however mean that it also operates as a regional distribution hub and traditionally welcomes large numbers of shoppers from Iran and South Asian markets hunting for deals.

Israel was the big loser in the Q1 consumer electronics MEA RRI, dropping two positions to third after we downgraded the devices spending forecast. A downward revision to historical data, most notably for the computer hardware market, as well a more bearish growth outlook, in combination resulted in the lower score this quarter. *The forecast revision does not however impact our assessment of Israel as one of the*

most sophisticated device markets in the Middle East and Africa, supported by its vibrant high-tech start-up community, its position as an R&D hub for global devices and IT vendors.

Saudi Arabia receives an unchanged score in fourth position in Q1, but even after the downgrade to Israel's score there is a sizeable gap of 4.7 points between the two. Saudi Arabia has the largest population in the GCC, but crucially for the RRI, incomes per capita are much lower than in Qatar or the UAE, which translates into a less lucrative market for consumer electronics devices. An additional drag on its RRI score is the threat to government finances posed by the fall in the oil price, as well as a squeeze at the *low end of the market due to the exit of a considerable number of migrant workers under the government's 'Saudisation' policy.*

Kuwait sits in fifth position in Q1 despite a weaker device spending forecast and downgrade to its RRI score. Our forecast for device spending in Kuwait has been downgraded *to reflect the drag on demand from the weakening Kuwaiti economic outlook due to the impact of the drop in oil prices, which will weigh on consumer confidence. That said, Kuwait retains many positive characteristics for vendors, including high incomes per capita and a favourable operating environment to vendors due to its small size and ease of logistics.* Additionally, we envisage a return to faster device spending growth in the latter years of the forecast period *when population growth and a stabilisation of the economy will unlock demand.*

South Africa's RRI score is unchanged q-o-q in Q1, but is down sharply y-o-y as the economic outlook deteriorated markedly in 2015. The extent of the challenges faced are evident in the fact South African business confidence hit a 16-year low in August 2015 and real GDP contracted by 1.3% in Q215. Meanwhile, in **South Africa**, which has a sizeable manufacturing base (around 17% of GDP), ongoing load-shedding is impacting exports and employment through hitting factories' ability to operate. This has filtered through to our device spending forecast, *including through rand depreciation against the US dollar that has eroded South African household purchasing power in global markets.*

The forecast for the Omani handset spending has been upgraded to reflect stronger than expected adoption of smartphones, which raised the device average selling price. As a result the industry rewards score has been upgraded, enabling it to move above Bahrain and Iran in the Q1 RRI. There is however limited upside after the revision, and we caution that our core scenario envisages *Omani consumer electronics being subdued in 2016 compared to previous years as a combination of market maturity and economic challenges from the low oil price will weigh on short-to-medium-term device spending growth.* At the bottom of the MEA RRI are two of the largest but least developed consumer electronics markets in Iran and Egypt. Both have large populations and low device penetration rates, which translate to market growth potential where

economic conditions are supportive, but both markets have been severely disrupted by economic and political risks in recent years.

There are however reasons for optimism, that could potentially see both markets move to a higher growth trajectory. For Iran, we revised up our outlook for 2016 as the easing of sanctions is expected to make a positive contribution to device spending through increased supply of devices and formalisation of retail, which will drive down prices and catalyse volume growth, enabling vendors to tap into positive fundamentals including population and income growth. Meanwhile, in the case of Egypt the multi-year growth outlook is strong and sustainable and political risks are subsiding. Although bureaucracy and corruption are pertinent concerns, we believe these drawbacks are outweighed by the opportunities in both Iran and Egypt.

Table: MEA Consumer Electronics Risk/Rewards Index, Q116

Country	Rewards		Risks		Consumer Electronics Index	Rank	Previous Rank
	Industry Rewards	Country Rewards	Industry Risks	Country Risks			
Qatar	50.0	82.5	70.0	68.6	63.7	1	2
UAE	53.3	80.0	65.0	54.1	61.4	2	3
Israel	48.3	62.5	65.0	80.3	59.5	3	1
Saudi Arabia	53.3	45.0	55.0	71.6	54.8	4	4
Kuwait	37.5	77.5	55.0	55.1	52.6	5	5
South Africa	35.0	50.0	57.5	67.5	47.2	6	6
Oman	34.2	45.0	57.5	50.8	42.6	7	9
Bahrain	30.8	52.5	50.0	53.3	42.5	8	7
Iran	41.7	47.5	30.0	33.4	40.2	9	8
Egypt	40.0	22.5	52.5	54.4	39.8	10	10
Average	42.4	56.5	55.8	58.9	50.4	-	-

Scores out of 100, with 100 the best. The Consumer Electronics (CE) Index is the principal rating. It comprises two sub-indices, Rewards and Risks, which have a 70% and 30% weighting respectively. In turn, the Rewards index comprises Industry Rewards and Country Rewards, which have a 65% and 35% weighting and are based on growth/size of the CE industry (Industry) and the broader economic/socio-demographic environment (Country). The Risks index comprises Industry Risks and Country Risks, which have a 40% and 60% weighting and are based on a subjective evaluation of barriers to entry and the regulatory environment (Industry) and the industry's broader country risk exposure (Country), which is based on BMI's Country Risk Index. The index structure is aligned across all industries for which BMI provides Risk/Reward Indices. Source: BMI

Market Overview

BMI View: We revised historical data for the Iranian consumer electronics market in the Q415 update, as well as raising the growth outlook from 2016, when the easing of sanctions is expected to make a contribution to spending growth. It is however important to note the outlook for Iran remains subject to considerable uncertainty, for instance in the implementation of the nuclear deal, but also with regards the challenging economic, political and operating environment for vendors. Nonetheless our core scenario is successful implementation of the nuclear deal and sanctions easing to be a fillip for spending growth through greater competition and a stronger economic growth story 2016-2019.

Recent Developments

- We are anticipating that the Iranian market will witness significant growth once the international sanctions are removed and international trade flows easier as a result of the Iran nuclear deal.
- The Iranian consumer electronics market is poised to grow at a rate of 5.2% in 2016 to reach an overall value of USD7.85bn
- Fastest growth will come from the booming mobile sales sector which is set to grow by an estimated 6.6% in 2016 to reach a total value of USD3.93bn

Computers

Table: PC Sales (Iran 2013-2019)

	2013	2014e	2015f	2016f	2017f	2018f	2019f
PC sales, USDmn	2,865.84	2,790.72	2,337.92	2,422.88	2,640.36	2,855.54	3,112.05
PC sales, '000	3,355.00	3,042.00	3,233.00	3,478.00	3,948.00	4,329.00	4,718.00
Desktop sales, '000	542.00	454.00	276.00	222.00	427.00	592.00	485.00
Notebook sales, '000	2,813.00	2,588.00	2,957.00	3,256.00	3,521.00	3,737.00	4,233.00

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

BMI revised its historical data for Iran's consumer electronics segment in the Q415 update to better reflect the growth in recent years under the sanctions regime. Nevertheless, we have made upward revisions to our forecast for 2016 and beyond.

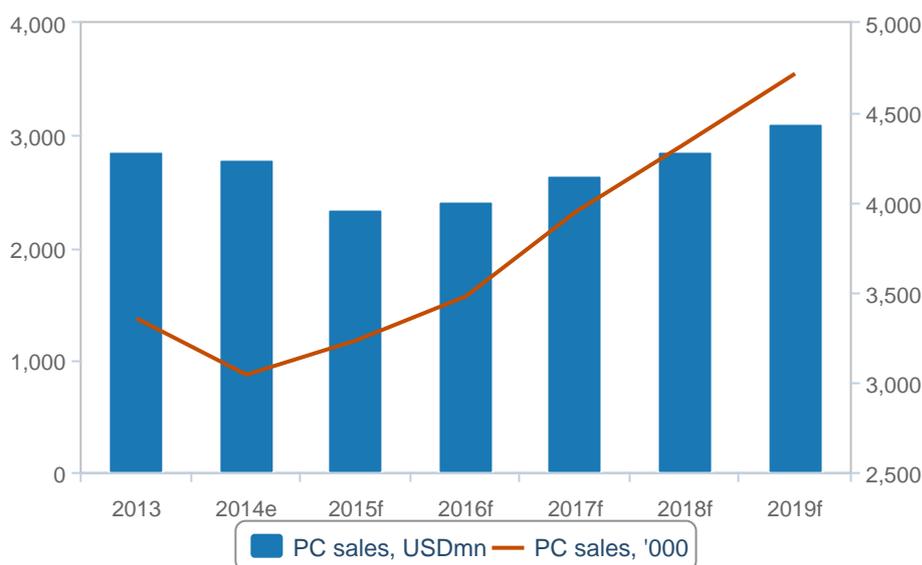
We are now estimating a significant growth in the Iranian consumer electronics segment in 2016 with the easing of sanctions from 2016 onwards. We forecast the consumer hardware market to grow by 3.6% in

2016 to reach a value of USD2.4bn. As imported hardware becomes more affordable, we are expecting an increased demand uptake.

A broad easing of sanctions from 2016 that is envisaged to accompany the nuclear deal under our core scenario will boost market growth by enabling vendors to target the enterprise and government sectors, which we expect will generate rising demand for hardware as the economy recovers. This will be driving the computer hardware market growth in Iran. We forecast the market will grow in US dollar terms from 2016 and record a CAGR of 2.2% for 2015-2019 as a whole, with significantly stronger growth expected in the latter years of our forecast.

Computers: Demand

(2013-2019)



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

Market Trends

Asian vendors have taken advantage of the gap left by US companies not allowed to sell directly to Iran. Compared with many markets there is a much stronger presence of companies such as **LG**, **Samsung**, **Acer**, **Sony** and **Toshiba**. However, there were changes to the market after an August 2013 decision to lift

restrictions on selling consumer electronics to Iran. For instance, **Apple** lifted restrictions on those consumers buying devices with the intention of taking them to Iran. Furthermore, despite the US trade embargo on Iran, printers from leading global vendor **HP** are readily available in Iran, as was revealed by the controversy surrounding HP's distributor **Redington**. Stung by the bad publicity, HP said that it would tighten sales restrictions on Redington to prevent it from selling printers to retailers in Iran. However, it is doubtful whether HP can do much to prevent its printers from selling there. Redington laid the foundation for the popularity of the HP printers brand a decade ago, famously decorating its offices in Tehran with giant colourful maps created by HP printers.

It is likely that there will be significant changes to the market with the easing of sanctions. Despite US consumer electronics companies' increased ability to compete with their dominant Asian counterparts since 2013, many are yet to expand operations into the country. Exporting to Iran remains a huge logistical challenge while key trade routes are closed and restrictions still apply to the financial sector and many vendors have been unwilling to invest without the greater certainty provided by a wider sanctions relief agreement. US vendors are not the only ones waiting for greater stability; even leading Chinese PC vendor **Lenovo** stated in early 2014 that it would wait for an agreement between Western nations and Iran before formally expanding into the country. Further to this, **Emex**, a Dubai consumer electronics retailer has told local media that it is interested in entering the Iranian market.

The nuclear deal in July 2015 does however appear a watershed for US vendor direct involvement in Iran. In July 2015 it was reported that Apple was already in talks with Iranian distributors regarding the creation of a network of premium resellers in Iran - in a similar structure to the one it operates in South Korea. However, with a degree of uncertainty remaining around sanctions easing and the complexity of compliance it has been suggested that a deal could take as long as until late 2016 to come to fruition.

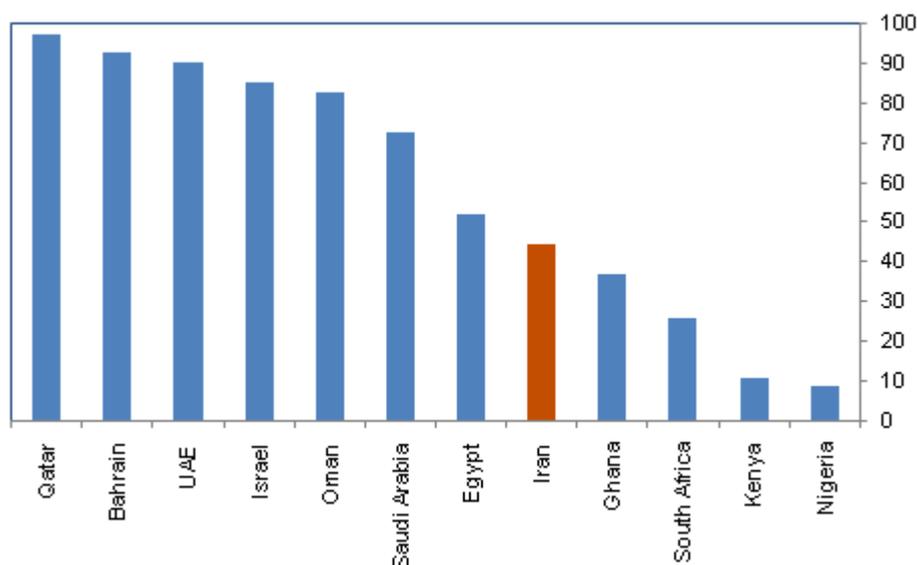
The rescinding of sanctions is not however a panacea for vendors hoping to tap the potential of Iran's PC market. **BMI** highlights several other important factors will have a bearing on whether the computer market achieves its potential. High tariffs and the government trade embargo have a significant impact on the market, which remains dominated, in the desktop segment, by local assembly, with monitors procured from warehouses and computer parts malls.

The removal of tariffs could accelerate computer hardware market development by driving down prices through increased competition, however, local assembly has a political voice that may be resistant to changes. Until now the lack of international production and imports has led to growth in the manufacture of locally made computers and any erosion of their advantages will be contested. Customers can purchase

computer parts from specialists markets or malls where customised computers are assembled. Assembly is a major feature of the market and a large portion of the computer hardware market is concerned with parts, particularly monitors and accessories such as printers.

MEA Household PC Penetration Rates (%)

2013



Source: National Sources, WEF, BMI

PC Market

Iran's PC market trails regional peers in terms of hardware adoption rates, a consequence of restricted supply from global markets and economic weakness resulting from the sanctions regime and more recently the sharp decline in the oil price.

The easing of sanctions could have a marked impact on the competitive landscape in Iran. In contrast to the more diverse landscape in most Middle Eastern markets, the direct sales market in Iran lacks full competition, with US vendors such as HP and Apple previously excluded from operations. Some East Asian vendors have operated locally through local partnerships and alliances. For instance, local electronics firm **Maadiran Group** began to manufacture LG monitors in Iran over a decade ago and LG has a premium

position in the market, while Samsung has a smaller but significant market share. **BMI** believes easier access for US and other international brands such as global PC market leader Lenovo will erode the dominance of Samsung and LG in the consumer electronics market.

While shipments growth is underperforming compared to many other regional markets, Iran is seeing a number of trends in common with its regional peers. There is a shift to greater use of mobile computing devices including notebooks and netbooks and potentially of tablets in future. As a result, desktops now account for only around one-third of sales and this share is expected to fall further over the forecast period, while PC unit sales will grow in absolute terms to 4.7mn units by 2019. We expect PC units will outperform PC market value growth as competition drives down average selling prices, thereby deepening the market.

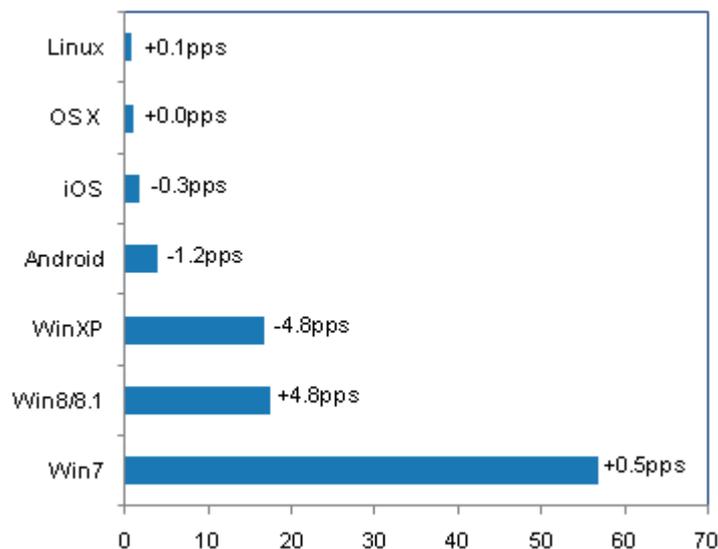
BMI expects notebook shipments (including tablets) to increase to 4.2mn units in 2019, from 2.6mn in 2014, with a CAGR of 10%. The popularity of netbooks echoed trends in other emerging markets, but more limited competition from tablet volumes has been sustained for longer. However, by 2014 with Android tablets available from East Asia for several years, netbooks diminished as a source of sales and now exist only in the installed base - and are expected to decline rapidly in this respect as the direct sales market broadens with the easing of sanctions.

Over the medium term we expect notebooks, tablets and hybrid notebooks will be the outperforming device categories. This trend should be considered in the context of local specifics. For instance, with imported products more expensive and remaining difficult to obtain (at least until 2016), the extent to which Iranian consumers can shift to tablets and hybrids is subject to uncertainty. However, **BMI** believes there is likely to be pent up demand for mobile form factors given the dominance of local assembly under the sanctions regime, meaning we expect the decline in desktop sales to be more pronounced than in other regional markets from 2016, after they held up better than most during the global shift to mobile form factors 2009-2013.

The government and commercial segment dominates computer purchases, with more than 50% of the total market. Over the next few years, computer sales should be boosted by government procurement for education projects and other uses, with e-government initiatives helping to fuel spending, along with privatisations. There should also be growing investment by private companies, particularly in modernising sectors such as telecoms and banking. Despite its huge potential, the small to medium-sized enterprise (SME) market will be relatively constrained by its lack of access to investment compared with other countries in the region.

Iran PC Browsing Traffic By OS (%) And Y-o-Y Change

July 2015



Source: Statcounter

AV Devices

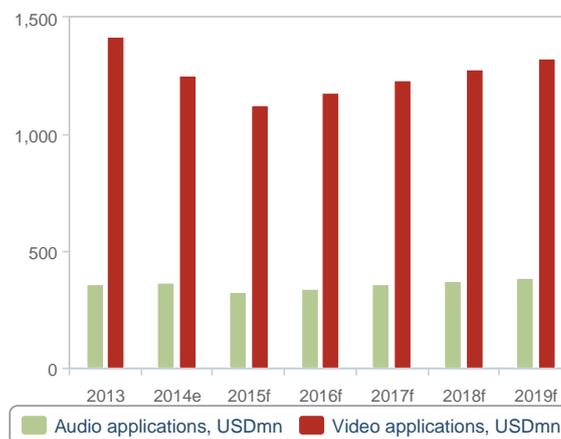
Table: AV Sales (Iran 2013-2019)

	2013	2014e	2015f	2016f	2017f	2018f	2019f
Audio-visual and gaming devices, demand, USDmn	1,775.11	1,620.06	1,455.69	1,519.05	1,589.71	1,653.70	1,707.41
Audio-visual and gaming devices, demand, audio applications, USDmn	358.00	364.31	327.35	341.59	357.48	371.87	383.95
Audio-visual and gaming devices, video applications, USDmn	1,417.11	1,255.75	1,128.34	1,177.46	1,232.22	1,281.82	1,323.46
Digital camera sales, '000	319.70	296.00	239.00	206.00	174.00	162.00	160.00

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

BMI expects the AV market will underperform over the medium term, but in this sector too overturning of the sanctions can have a positive effect as the market's size is sufficient to attract interest from regional and global vendors. Newer products such as LED/LCD TV sets continue to gain in popularity, but demand is limited by affordability, while supply chain hurdles remain an issue. Nevertheless, consumers are keen to get their hands on the latest products, with flat screen TVs bolstering demand. A more open market would see faster growth, particularly if accompanied by improved economic performance with an easing of sanctions. However, under our existing forecast the market is still expected to see a CAGR of 1.1%, reaching USD1.7bn by 2019, with strong growth from 2016 obscured by the expected contraction in 2015 before sanctions are lifted and in an environment of high inflation and rial depreciation.

AV: Demand (2013-2019)



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

Market Trends

In addition to boosting the economy, lifting of sanctions is likely to also have an impact on inflation. Inflation has a particularly important impact on consumer electronics, whose components are usually priced in US dollars and therefore become much more expensive in local currency terms for end buyers when inflation rides high. As the gradual lifting of sanctions curbs inflation, imported devices should become more affordable for Iranian consumers, giving a boost to all vendors.

The sector currently remains restricted by the small scale and fragmented nature of the retail channel, but there is progress. For instance, Maadiran Group has made significant investment in domestic production facilities and it claims to have the largest single consumer electronics manufacturing facility in the region.

Iran's AV devices market is dominated by multinational brands such as Sony, Samsung, **Sharp**, LG and **Toshiba**. Maadiran is becoming an important player via its expanded manufacturing facilities 80km outside Tehran. High tariffs on some products and the trade embargo have allowed local manufacturers to gain a foothold in the market. It is likely that this will change however, once the sanctions are lifted. The regional

competitive landscape has evolved over the last two years, with Samsung moving into a strong position across a range of product groups including plasma and LCD TV sets, LCD monitors, micro hi-fi and DVD recorders.

TV Sets

Another boost to growth could come from a decision by the government to launch a process of migration from analogue to digital broadcasting. This should stimulate a rise in TV set purchase rates as well as boost demand for set-top boxes. TV sets will be the main driver of AV category sales growth over the forecast period as consumers upgrade and trade their old models for digital. The potential TV set market was estimated at around 739,000 LCD TV set units in 2014 and we forecast a CAGR of 3% to 858,000 in 2019.

Sales of LCD and plasma sets have increased as prices have fallen substantially. The demand for higher quality TV viewing experiences has seen demand for 42-inch and 50-inch plasma TV sets increase substantially. There is reportedly particularly strong demand in Iran for screens of 46-inches or more, rather than the 32-inch set which dominates elsewhere, which only accounts for around one-third of demand. At the same time, vendors are aware that TV sets are no longer purchased simply for watching broadcasts and newer models from Samsung and other vendors include 'smart' capability allowing people to enjoy downloaded content.

In January 2012, Iran opened 'N (Display)' which was claimed to be the first digital TV-channel in the country. The broadcasting is in Farsi and the channel broadcasts local and foreign movies and TV series.

To try and maintain sales volumes, TV set vendors will also focus on product innovation, with drivers including improved display quality and wider screens, as well as design and features such as wireless technology. Regional vendors placed a lot of expectation on LED TVs to drive revenue, as LCD TV prices declined, although demand for LED sets has thus far been limited to high-end consumers.

The leading local TV set manufacturer is Maadiran Group, which in 2006 launched its X-Vision brand. The company claims it is now the third-largest LCD TV brand in Iran. Samsung was understood to have claimed top spot in the LCD TV set market ahead of main multinational rivals Sony, LG, **Philips** and Sharp. In Iran, Samsung has built success on localisation of production, marketing and sales activities, as well as brand building, such as its 'silk carpet' campaign, which emphasises the slim size of its LED TV set.

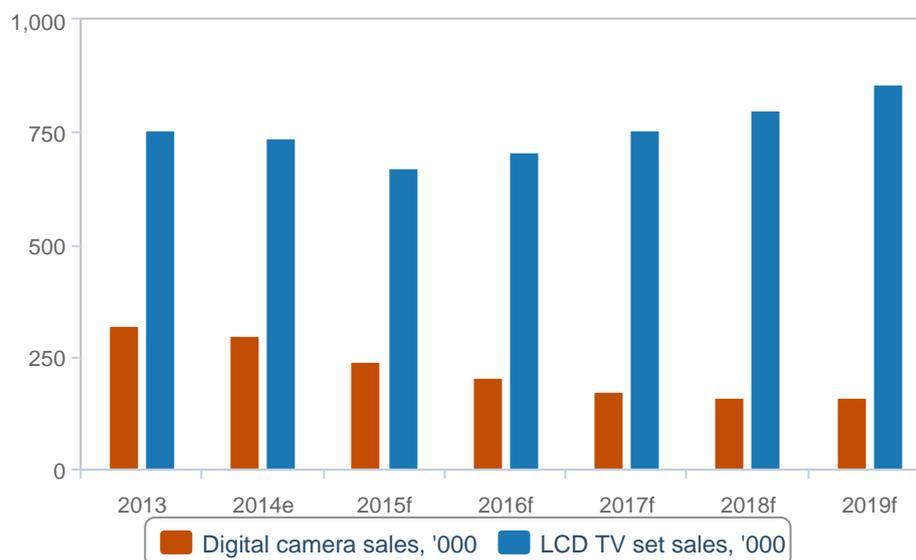
In the Middle East Sony is estimated to have a 15-20% share, while LG and Sharp have around 10%. Samsung and LG placed a lot of expectation on LED TVs, although demand was limited to high-end consumers initially. The launch of local digital TV should benefit sales.

The emergence of the LCD TV market opportunity has prompted a range of consumer electronics vendors, including Sony, Sharp, **BenQ**, **Nikai**, LG and **JVC**, to negotiate new, or strengthen existing distribution deals to expand their presence in Iran. In 2010 Sharp launched an LCD TV assembly plant in Iran, in partnership with Maadiran Group. The facility marked a new stage in cooperation between Sharp and Maadiran that dates back to 1964. The plant will make digital TV sets with sizes of between 32 and 55 inches. Sony was launching its Bravia range of LCD TV sets, after negotiating a distortion agreement with a new channel partner. Sony has already established a service centre in Iran. JVC established a liaison office in Tehran to provide marketing support to local partners and planned to further boost its presence through establishing its own network of retail outlets. According to the company, Iran was already its most significant single market in the Middle East.

Vendors and distributors were continuing to invest in retail expansion. **Panasonic** said that it would provide strong support for branding in the region despite the economic downturn. Panasonic was aiming for a 25% share in the 37-inch-plus flat panels television market, with its Viera LCD range with energy saving features leading the campaign. Among other challengers is Asian consumer electronics leader BenQ, which has said that Iran is its third largest market in the Middle East, generating 15-20% of annual revenue. The company manages the market from Dubai and has considered investing in assembly plants in Iran in the past, only to be deterred by the security risks.

AV: Demand Key Products

(2013-2019)



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

Digital Cameras

Elsewhere in the AV market, digital cameras are forecast to sell at around 28,260 units a month in 2015. Consumers are becoming more ready to upgrade their cameras to digital, or to buy a better digital camera when new features become available, especially as average selling prices decline. Seven- and eight-megapixel models remain the most popular in the compact segment regionally but demand for 12-megapixel models is growing. However, over the medium term sales of digital cameras face the downside risk of consumers choosing to settle for the camera on their smartphone. In the digital camera segment, Samsung has also made regional advances, due to the popularity of its multimedia compact cameras. New models such as the i8 support functions such as PMP, MP3 playback, travel information and text viewers.

Revenue from audio devices was estimated at around USD564mn in 2014 and is expected to rise to USD762mn within the forecast period, with home theatre systems accounting for the largest share of revenue.

We expect the Sony PlayStation3 to be the number one gaming console in the region, with **Nintendo Wii** and **Microsoft Xbox** the other major players. The release of next generation games consoles from Sony and Microsoft in late 2013 could have been expected to boost the market; however the availability in Iran is uncertain and, as such, the release is not a factor we are including in our forecast for the time being.

Mobile Handsets

Table: Mobile Communications (Iran 2013-2019)

	2013	2014e	2015f	2016f	2017f	2018f	2019f
Cellular Mobile Phone Subscribers, '000	100,965.7	114,410.0	122,418.7	128,539.6	133,681.2	137,691.7	140,445.5
Mobile Phone Subscribers/100 Inhabitants	130.9	146.4	154.7	160.6	165.1	168.3	170.0
3G & 4G phone subscribers, '000	1,600.0	9,920.0	23,212.8	33,658.6	41,736.6	47,997.1	50,876.9
Domestic mobile handset sales, USDmn	2,866.13	3,672.98	3,686.52	3,930.18	4,074.33	4,462.00	4,695.00
Smartphone sales, USDmn	823.00	1,421.00	1,667.00	2,350.00	2,628.00	3,153.00	3,328.00
Domestic mobile handset sales, '000	28,801.00	31,681.10	29,910.68	30,987.47	31,791.47	32,296.65	32,485.04
Domestic smartphone sales, '000	2,077.14	4,644.30	5,991.76	9,230.57	12,059.33	14,983.04	16,695.77

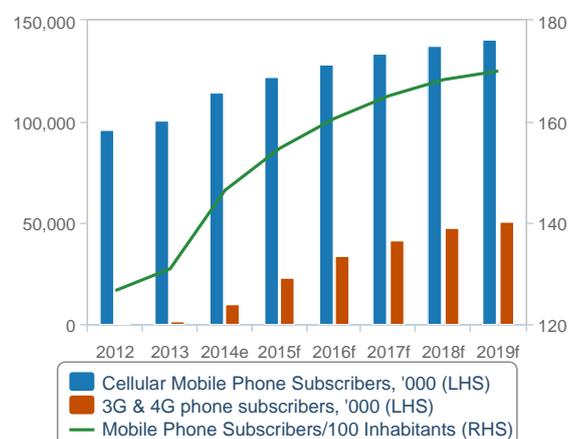
e/f = BMI estimate/forecast. Source: BMI, Operators, National Sources

Summary

The handset segment has great potential in Iran, but there remains significant uncertainty regarding the current market and the potential for accelerated growth from 2016 under an easing of the sanctions regime. Under our core scenario we expect sanctions easing to result in a stronger economic environment, enabling greater handset spending, as well as a formalisation of retail that will boost domestic handset spending as a declining number of Iranians acquire handsets from overseas. There does however remain a major impediment to faster development of the handset market in the 60% import tariff, significantly reducing the affordability of handsets and suppressing volume growth.

Industry Trends - Mobile

(2012-2019)



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

BMI forecasts the handset segment will outperform over the medium term with a CAGR of 5% forecast for 2015-2019 to total value of almost USD4.7bn in 2019. It is however important to stress the fact that Iranians have by no means been excluded from the global smartphone boom under sanctions, with mobile operator **MTN Irancell** reporting smartphone penetration had already reached 39% by YE14. Therefore, it is not simply a case of a delayed boom once market access is granted, but rather a shifting sales dynamic as an increasing number of smartphone replacement/upgrade sales take place domestically.

Mobile Subscription Trends

Our outlook still sees growth slowing over the forecast period, through a rationalisation of multi-SIM ownership and we expect the market to comprise 136.3mn subscribers by the end of 2019, for a penetration rate of 163.7%. However, as the majority of these subscriptions are pre-paid, it is likely that there will be periods of inactive SIM discounting.

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's 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. This could

mean that Iran would have easier access to new mobile technology and cheaper handsets, which could add upside to the data usage.

The outlook for Iran's nascent 3G market still offers upside potential to growth and MTN's 3G launch in August 2014, coupled with its 4G launch in December, will help the operator take a lead in the data market. The company announced that by April 2015 data subscribers on its network had increased to more than 21mn, including 7mn on its 3G and 4G networks.

We estimate there were around 9.9mn 3G subscriptions in Iran at the end of 2014, which will grow to over 27mn by the end of 2016, with the **MCI** launch of 3G services during 2015, while future launches of 4G services will also help the mobile broadband market. By the end of our forecast 3G/4G subscriptions will have risen to 41.53mn growing at the rate of 36.2% CAGR over 2015-2019. **BMI** believes that in 2019 3G/4G subscriptions will account for 30.5% of the whole market.

Overall Handset Market

We estimate total handset sales of almost USD3.7bn in Iran in 2014, but this figure remains subject to some uncertainty regarding the extent to which sales took place domestically rather than from overseas via informal channels. We base our estimate on browsing traffic data showing the prevalence of East Asian brands, which have remained available in Iran, but even here devices are also frequently acquired on the black market. However, Apple handsets, which had the fourth highest share of browsing traffic by brand in July 2015 according to Statcounter data, have been acquired through unofficial channels.

The easing of sanctions from 2016 is expected to catalyse a formalisation of retail channels, with the largest contribution to the expanding market expected to come from the premium segment where Iranians have been most likely to acquire devices internationally. **BMI** forecasts total handset spending will grow at a CAGR of 5% 2015-2019 and reach a total of almost USD4.7bn in 2019.

The short-term outlook is however much weaker, with value growth of just 0.4% forecast for 2015 as a challenging economic environment, including rial depreciation, will continue to limit demand under the regime of sanctions. Additionally, we forecast a contraction in total handset units in 2015 as consumers defer purchases due to erosion of purchasing power, weakening affordability and with expectations for a liberalisation of the market in 2016 bringing about a wider choice of devices.

The weighting of new users towards lower income rural areas will mean a continuation of the downward trend in handset prices. Mobile handsets are readily available from city kiosks at prices of USD20-50. Many

of these models come with an equivalent value of call credits, meaning they are in effect free to consumers. Moreover, in rural areas, around 10,000 rural communication centres have been set up, offering local people inexpensive or free access to communications.

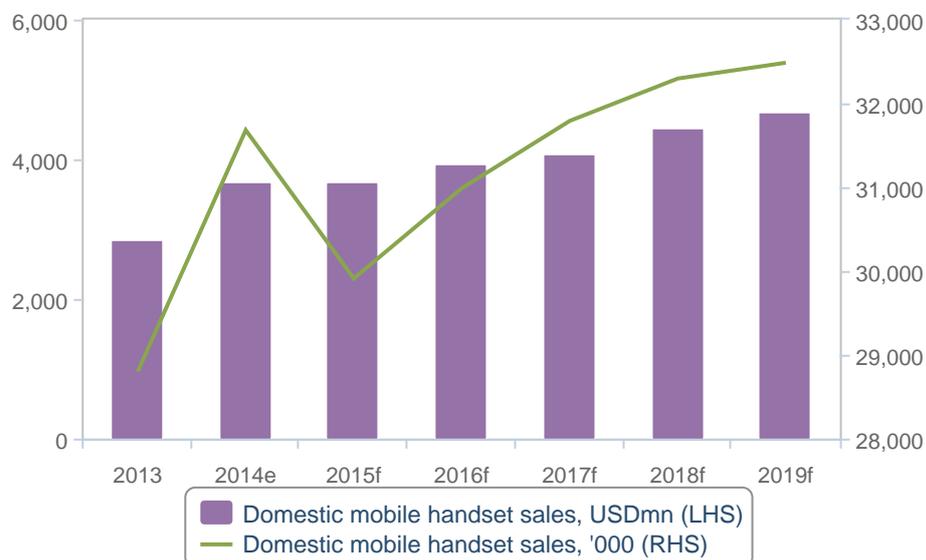
There does however remain a major impediment to market development in the 60% import tariff on handsets into Iran, which has the effect of reducing the affordability of handsets and pushing consumers towards the black market. The easing of sanctions will have an impact on the growth trajectory of the handset market, but **BMI** argues that optimism about the growth dividend must be tempered against the ongoing operational and political challenges.

In the face of sanctions on consumer electronics imports, Iran sought to make up the deficit by increasing local production and this could prove to be a constituency resistant to an easing of the tariff on handset imports. In the year to March 2012, Iran was expected to manufacture around 5mn handsets, according to local industry estimates, equivalent to around a quarter of the estimated local market. **Hamrah Gooya Aryand Communication Company**, which sells handsets under the GLX brand, has reported an annual production capability of 1.8m units. Contrasting this data were reports in January 2015 from Ministry of Industries and Mines official Abbas Hashemi, that Iran was producing only around 1.5mn mobile handsets a year.

In 2007, LG started producing handsets in Iran in partnership with the Maadiran Group. The agreement was shrouded in secrecy, but Maadiran said it had begun producing five models of handsets under licence from LG. Maadiran had been a long-term distributor for LG. LG's motives for entering the market likely included avoiding the steep tax on imported handsets and the opportunity presented by the Iranian market as relatively un-penetrated by the major rival brands. LG said that it planned to produce 2mn handsets a year, with some exported to other markets in the Middle East.

Mobile Handsets: Demand

(2013-2019)



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

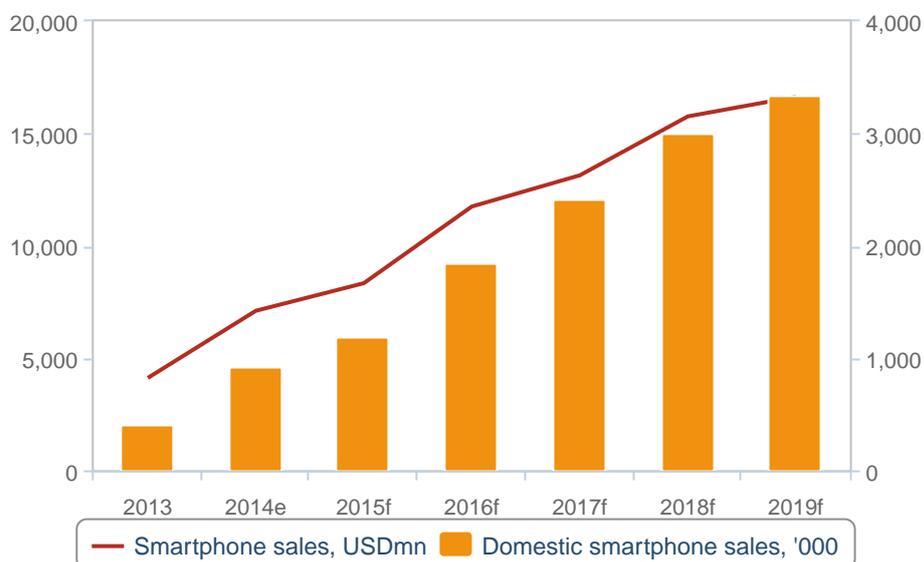
Smartphones

BMI expects smartphone volume growth to remain strong over the duration of our forecast period, reaching almost 17mn devices sold in 2019 - increasing at a CAGR of almost 30% 2015-2019. Growth will be underpinned by both growing sales associated with a deepening of the market and the formalisation of replacement/upgrade sales that were previously acquired from overseas. In addition to increasing volumes, wireless data services will increasingly be used as mobile infrastructure is put in place, encouraging demand for smartphones in the mass market.

While many Iranians have been able to find iPhones and other popular products through specific retailers, abroad or on the black market, the establishment of formal distribution networks should help bring down the cost of these devices, in turn supporting greater demand. The launch of 3G and 4G networks in the market is likely to drive further growth in the segment, as operators look to increase data usage amongst their customers. Smartphone revenue is expected to grow at a CAGR of 18.6% to USD3.3bn in 2019, driven by the replacement market and the shift to higher value featurephones and smartphones.

Mobile Handsets: Demand - 3G

(2013-2019)



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

Nokia has traditionally been the top selling brand in Iran, with a share estimated as high as 60%. However, accurate estimates are all but impossible to obtain, not least because of the large grey market but we infer from neighbouring markets that Nokia's position has weakened markedly since 2010 and the shift in spending towards smartphones. Nokia primarily lost out to Samsung, but also emerging leaders of the smartphone market such as LG, **HTC** and most recently **Huawei**, as well as local producers. Statcounter illustrates the fall of Nokia, which has seen its share of browsing traffic decrease to just 3.6% in July 2015, down 4.0pps y-o-y and the sixth highest in the market.

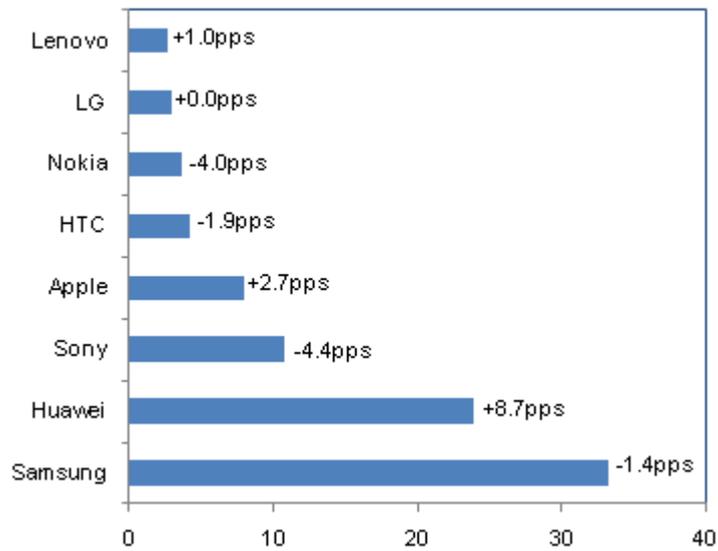
Meanwhile Samsung has established itself as the market leader, although browsing traffic data does not reveal the extent to which devices have been acquired officially or from overseas. Samsung Electronics had a share of 33.2% in July 2015, reflecting its strong performance through the first wave of smartphone market growth, but it has been outperformed in the 12 months to July 2015 by Chinese vendor Huawei, which grew by 8.7pp in the period to reach 23.9%.

The rise of Chinese vendors is also illustrated by **Lenovo**, which has the third strongest growth in the period but still remains a small player with an overall share of 2.7%. Chinese manufacturers can take a lead in the

Iranian smartphone market because they provide affordable devices to consumers and have the experience of their domestic market, which has followed similar trends in terms of smartphone adoption through low-cost handsets.

Iran Mobile Browsing Traffic By Vendor (%) And Y-o-Y Change

July 2015



Source: Statcounter

Competitive Landscape

Due to sanctions imposed by the US and its allies in Iran, the country's consumer electronics market is very different from most in that it includes a large grey market. Aside from the three major supermarket chains, **Carrefour** spin-off **Hyperstar** and local **Refah** and **Shahrvand**, **BMI** understands that the large majority of electronic devices in Iran are sold in small shops owned by individual traders. In Tehran most of these shops are concentrated in the Capital Computer Complex, where more than 350 traders sell devices to an increasingly tech-savvy population. According to the CEO of **RadanMac**, despite US sanctions, by 2013 there were around 100 unofficial **Apple** retailers operating in Tehran. These individual merchants source their products through underground trade routes, either directly from Hong Kong, Singapore and Malaysia, or via Dubai or Turkey.

International

Table: Hyperstar

Address	Shahid Sttari Boulevard, Tehran; and Sepidan Street, Shiraz
Company history	Hyperstar launched in Iran in 2009. It is a hypermart based on Carrefour's model, though has no association with the French company. The Hyperstar chain was established by Dubai-based Majid al-Futtaim (MAF) which is Carrefour's franchisee in the Middle East. Hyperstar was the first large supermarket chain to open in Iran. When the first location opened in Tehran, MAF reported that the store had an average of 10,000 visitors a day. In 2013 MAF stated on its website that there were three Hyperstar superstores in Iran, of which one was in Tehran and another in Shiraz. The company currently has 59 retail outlets.
Products and services	Based on the Carrefour model, Hyperstar sells everything from food, to home decoration, clothing and electronics. In the electronics section, Hyperstar sells large and small home appliances, audiovisual equipment, PCs (including tablets) cameras and mobile handsets. Hyperstar sells both local and international consumer electronics brands, such as Dell, LG, Sony, Samsung and Iranian brand Pars.
Company developments	In 2012 MAF Hyperstar LLC sold its operations in Iran and Syria to its parent company, MAF Capital LLC. This followed net losses of AED143.5mn for its Iranian operations during the year ended December 2012, down from net profits of AED49.9mn the previous year. The sharp decline in profit was likely due to inflation of the Iranian rial and foreign exchange losses. In May 2013 MAF Holdings bought out Carrefour Group's 25% share of MAF Hypermarkets LCC for EUR530mn (USD716mn) and extended its exclusive franchise partnership with the French company until 2025.

Source: Hyperstar, BMI

Local

Table: Refah Chain Stores Co

Address	RCS Head Office, 19 Shahid Sarparast St, West Taleghani Ave, Felestine Square, Tehran
Company history	Refah is a supermarket chain established in 1995 with some 160 branches throughout the country. Though smaller than hypermarkets such as Hyperstar, Refah is based on a similar model and sells everything from food to cosmetics, clothing, textiles, household appliances and consumer electronics. Refah also has an online store.
Products and services	In the consumer electronics section Refah sells televisions, computers, notebooks, cameras, printers, fixed-line telephones and other audiovisual equipment. Refah sells local brands and international electronics brands, such as Sony, Panasonic, Sharp, Samsung and LG. Refah does not advertise the sale of mobile phones on its website, but these may be available in store.
Company developments	Not available.

Source: Refah Chain Stores Co, BMI

Regulatory Development

BMI View: The transition from analogue to digital broadcasting has been chosen as the major reform to be carried out in the media sector.

Digital Broadcasting Migration Under Way

Iran launched its digital migration in 2010 and in 2011 state broadcaster Voice and Vision announced that three new channels would be launched by the end of the year using digital systems. The capital cities of all provinces were to be equipped with digital transmitters. At the time of writing, digital antennas have so far been installed in Ardabil, Namin and some parts of Raza'I, Nir and Meshkinshahr.

The reform also continued to be implemented at a local level. Officials in West Azarbaijan Province launched several projects that provided residents of Orumieyh Township with 15 digital TV and 10 digital radio channels. A total of 750,000 residents of the province were reportedly able to watch a wide selection of digital channels. Another project was aimed at making 180 transmitters operational to provide 348,985 residents of 12 townships of the province with access to more digital channels. As of August 2011, it was reported that 17 provinces of Iran had been provided with the services.

In October 2013 the Deputy Head of the Islamic Republic of Iran Broadcasting (IRIB) announced the Iranian state broadcaster planned to launch eight new satellite TV channels by early 2014.

Iranian Internet Controls Grow

Iran would serve as an internet service provider to other countries by March 2013, according to Infrastructure Communications company deputy head Mehdi Karimi Neyestani. This development was to take place after the first phase of the Europe-Persia Express Gateway (EPEG) a communications highway connecting Europe with Eastern Asia, which started operating in March 20 2013. Iran was to be upgraded from the current Tier3 level (internet service consumer) to Tier2-level (internet service provider) after the official inauguration of this project, Neyestani said.

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 is 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.

The NIN was first mooted in 2005, creating a network separate from the global internet containing content that is 'compatible with religious and revolutionary values'. It is feared that Iran will have the power to cut off all access to the global internet, with many reports of slowing or declined access to international social media sites and a long history of blocking sites as the government sees fit.

In September 2014, it was reported that Iran's Prosecutor General was looking to ban applications such as **WhatsApp**, **Tango** and **Viber** because of its 'criminal content' and this followed 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 began piloting a new Internet censorship programme in late 2014, where instead of fully blocking access to sites such as **Facebook** and **Twitter**, 'smart filtering' allows access to the sites but blocks any content deemed unethical or politically sensitive. Iran's Communications Minister stated that the system would be fully operational by June 2015.

Local Production Of Mobile Handsets

The government has renewed calls to strengthen local production of mobile phones to ensure that the domestic market is not dominated by foreign vendors. A Ministry of Industries and Mines official said that the market should not be 'conveniently accessible' to products of other countries. However, the major challenge for the local mobile phone industry is understood to be smuggling, with estimates that as many as 80mn smuggled mobile phones exist in the domestic market.

In January 2015, it was reported that Iranian firms produced 1.5mn mobile phones a year, through the governmental awards of licences to 11 firms, of which only two were active in Q115. The local mobile handset production is expected to cover 10-15% of the demand in the country.

New Mobile Operator

In November 2011 the third Iranian mobile phone operator, **RIGHTEL**, was officially launched in Tehran. In April 2010 **Tamin Telecom** had been formally awarded a licence to provide 2G and 3G mobile telecoms services in Iran after securing a joint concession in December 2008 at a cost of USD399mn. Tamin was offered an exclusivity period of three years to provide its 3G services, according to the Communication

Regulation Agency (CRA). In February 2013 the operator's 3G exclusivity period was extended by a year, to September 2014. **BMI** believes the operator's subscriber base gives it third place in the market, behind **MCI** and **MTN Irancell**.

RIGHTTEL lost in exclusivity in August 2014, When MTN Irancell launched its 3G service. The operator followed suit by being the first to roll out a commercial LTE network, available from December 2014, as it looks to take advantage of increased demand for internet services. MTN launched 3G and 4G services with refarmed spectrum in the 1.8GHz band and the regulator is reported to be auctioning LTE frequencies in the first half of 2015.

Five-Year Plan

Information and communication technology (ICT) had a central role in Iran's national development plan. The plan has a number of ICT-related targets for increasing internet users, telephone subscribers and mobile subscribers and these have the potential to drive the market for electronics devices. The government wants to encourage the development of electronic services such as e-government, e-health, e-commerce and e-learning. Various cooperation projects have been launched between the Ministry of ICT and other relevant departments. A related goal is the development of a national electronics and IT production base, through the encouragement of foreign investment. A particular priority of the last two years has been to encourage domestic mobile handset production, through attracting multinationals such as **LG** to invest.

Government Willing To Negotiate With Internet Firms

The Iranian government is willing to negotiate with internet firms such as Facebook, Twitter and **Google** and allow them to operate in the country if they respect its cultural rules and policies, according to Deputy Telecommunications and Information Technology Minister Nasrollah Jahangard speaking in March 2015. 'We are not opposed to any of the entities operating in global markets who want to offer services in Iran,' said Jahangard, as quoted by the Fars News Agency. The minister further stated that the government was also ready to provide facilities to the companies in order to enable them to provide their services in the region.

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

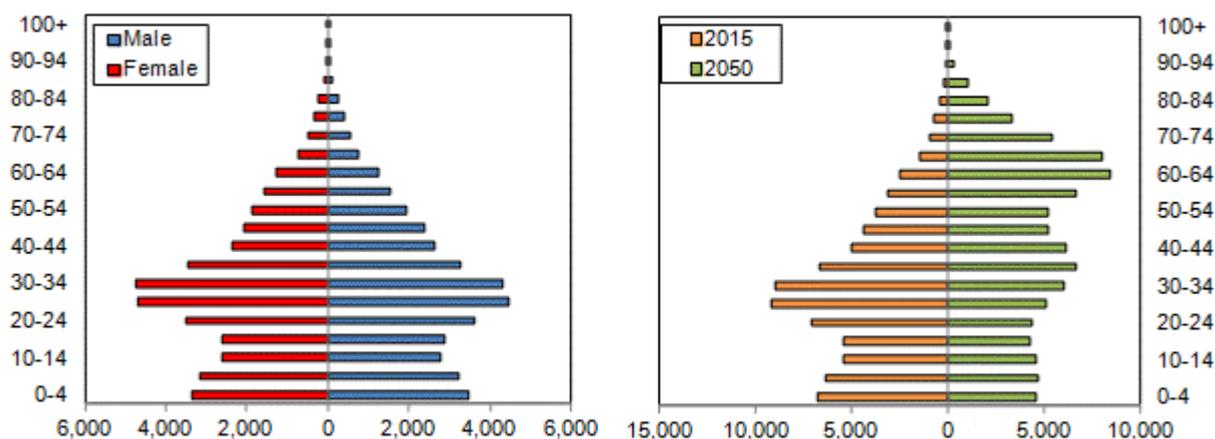
(1990-2050)



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

Methodology

Industry Forecast Methodology

BMI's industry forecasts are generated using the best practice techniques of time-series 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, which 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.

We mainly use 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. **BMI** mainly uses 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 multi-collinearity.

BMI uses the selected best model to perform forecasting.

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

Consumer Electronics forecasting is complicated due to the fragmented nature of the market, with little transparency of vendor data and low apparent agreement between many sets of figures in terms of market definition, base and methodology. Individual variables taken into account in creating each forecast include:

- Economic context, and GDP and demographic trends;
- Technological developments, and diffusion rates;
- Underlying demand trends;
- Telecommunications market developments
- Projected GDP share of industry;
- Maturity of market structure;
- Regulatory developments and government policies;
- Exogenous events.

Estimates for each industry segment are calculated using government statistics, where available, and our own macroeconomic and demographic forecasts.

Sources

Sources used in electronics reports include national ministries, statistics agencies, ICT regulatory bodies, national industry associations, officially released company results and figures and international and national industry news.

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.

BMI's approach in assessing the risk/reward balance for infrastructure industry investors globally is fourfold:

- First, we identify factors (in terms of current industry/country trends and forecast industry/country growth) that represent opportunities to would-be investors;
- Second, we identify country and industry-specific traits that pose or could pose operational risks to would-be investors;
- Third, we attempt, where possible, to identify objective indicators that may serve as proxies for issues/trends to avoid subjectivity;

Finally, we use **BMI's** proprietary Country Risk Index (CRI) in a nuanced manner to ensure that only the aspects most relevant to the infrastructure industry are incorporated. Overall, the system offers an industry-leading, comparative insight into the opportunities/risks for companies across the globe.

Sector-Specific Methodology

In constructing these indices, the following indicators have been used. Almost all indicators are objectively based.

Table: Consumer Electronics Risk/Reward Index Indicators

Rewards

Industry Rewards

Consumer electronics sales, USDmn

Sales per capita, USD

ICT development

Growth, %

Country Rewards

Urban/rural split

Young population

Richest 10%, % of total

GDP per capita, USD

Risks

Industry Risks

Barriers to entry

Government consumer electronics policies

Country Risks

Consumer Electronics Risk/Reward Index Indicators - Continued

Short-term economic risk

Real PC growth, volatility

Short-term financial risk

Trade bureaucracy

Institutions

*Source: BMI***Weighting**

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

Table: Weighting Of Indicators

	Weighting (%)
Rewards	70, of which
Industry Rewards	65, of which
Consumer electronics sales, USDmn	50
Sales per capita, USD	16
ICT development	16
Growth, %	16
Country Rewards	35, of which
Urban/rural split	25
Young population	25
Richest 10%, % of total	25
GDP per capita, USD	25
Risks	30, of which
Industry Risks	40, of which
Barriers to entry	10
Government consumer electronics policies	10
Country Risks	60, of which
Short-term economic risk	10
Real PC growth, volatility	10
Short-term financial risk	10

Weighting Of Indicators - Continued

Weighting (%)

Trade bureaucracy	10
Institutions	10

Source: BMI

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