3. The Mobile Market

3.1 Mobile Market Definition

For the end of this ECMR, the mobile market encompasses traffic for which at least a part of the call leg uses the mobile network infrastructure as the carrier. The latter would typically include radio base stations (though with the advent of picocells and femtocells[8] these need not necessarily be the big antennae that many would imagine), the mobile switching centre and one or more location and identity registers.

[8] These have not been introduced in Malta or, on a large scale, anywhere else in the world so far.

3.2 Mobile Telephony Subscribers

As at the end of March 2007, the number of registered Active-3[9] mobile subscribers in Malta stood at 344,390. This represents a decrease of 1,096 (or 0.3%) Active-3 subscriptions compared to the last ECMR's end of period and an increase of 18,776 Active-3 subscribers (tantamount to 6.4%) over March 2006.

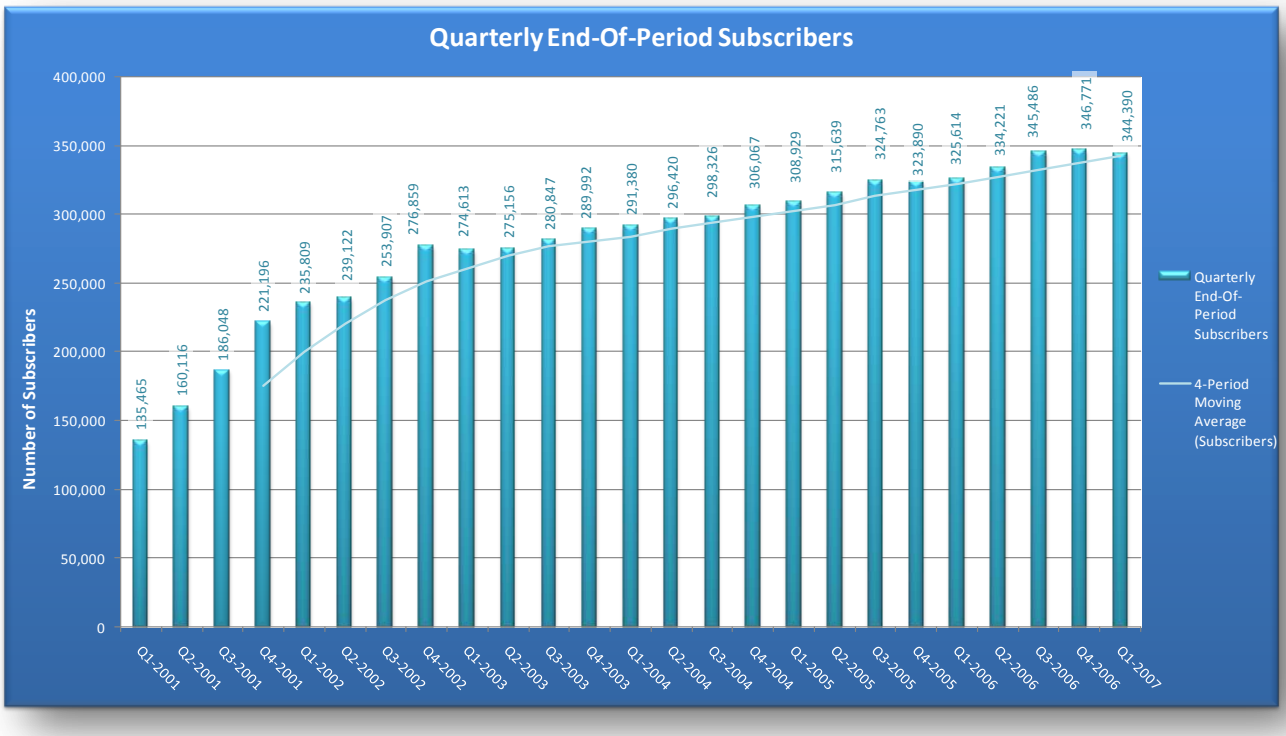

Chart 9. Quarterly End-Of-Period Subscribers With Its 4-Quarter Moving Average Superimposed.

The 4-quarter moving average superimposed on chart 9 (above) shows that although subscriber base has been increasing at a decreasing rate for seven consecutive quarters since the second quarter of 2002, the rate of growth has thereafter exhibited a sustained cyclical pattern with average run durations approximating two quarters.

The quarterly changes (first differences) in the 4-Quarter-Moving-Average are charted on chart 10 on the next page, whereas its differences (i.e. the second differences in the 4-Quarter-Moving-Average) are charted on chart 11, also on the next page.

The former, which is intended to show the deseasonalised rate of change, reveals that notwithstanding cyclical and seasonal fluctuations, the mobile subscriber base has been increasing since 2002. As chart 10 clearly illustrates, the pace of growth was higher in 2002 and 2003 than in subsequent years, this being indicative of the maturing market. The latter, on the other hand, gives an inkling of the rate at which the increase has been occurring (i.e. whether the increase occurred at an increasing or a decreasing rate). Chart 11 exposes a combined cyclical-seasonal component

[9] The "Active-3" definition only counts in subscribers that have been active during the preceding 90-day period.

that is very evident from quarter 1 of 2004 onwards. This chart also serves to expose some very interesting features of the mobile services life cycle and the dynamics of the evolution of the market.

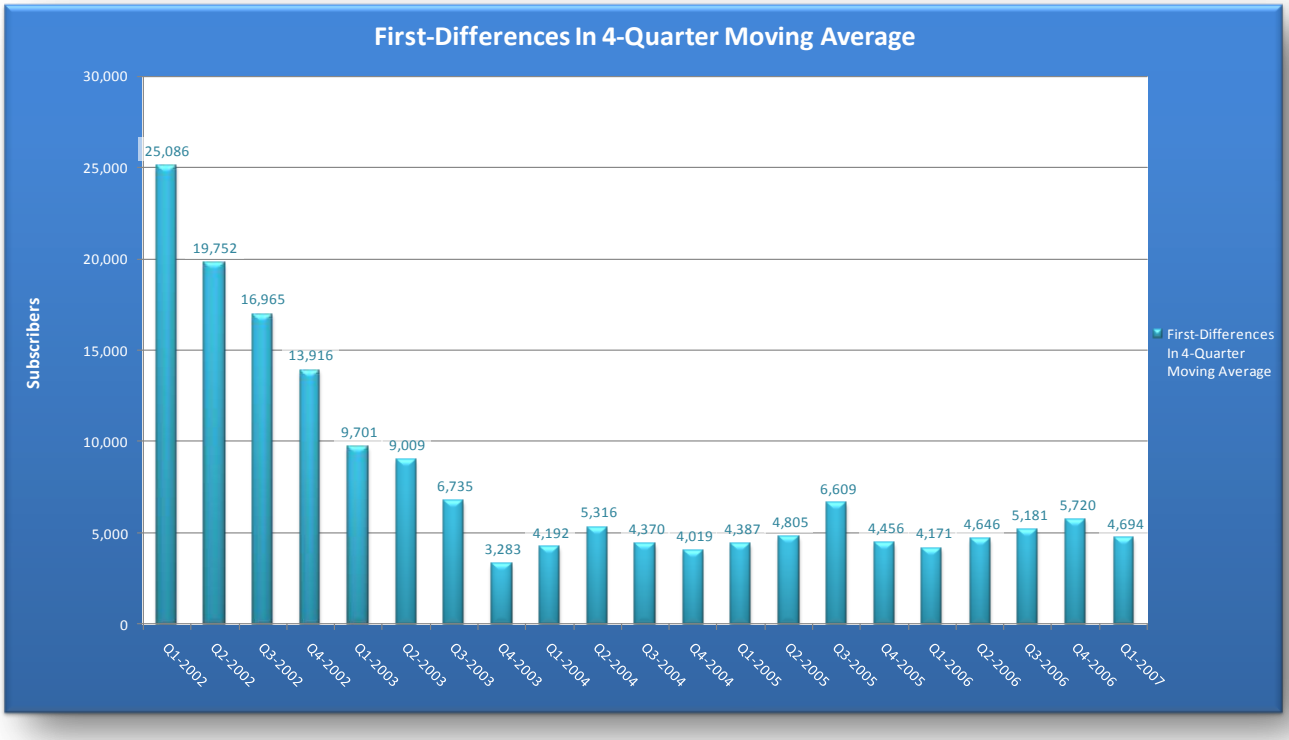

Chart 10. The First Differences In the 4-Quarter Moving Average.

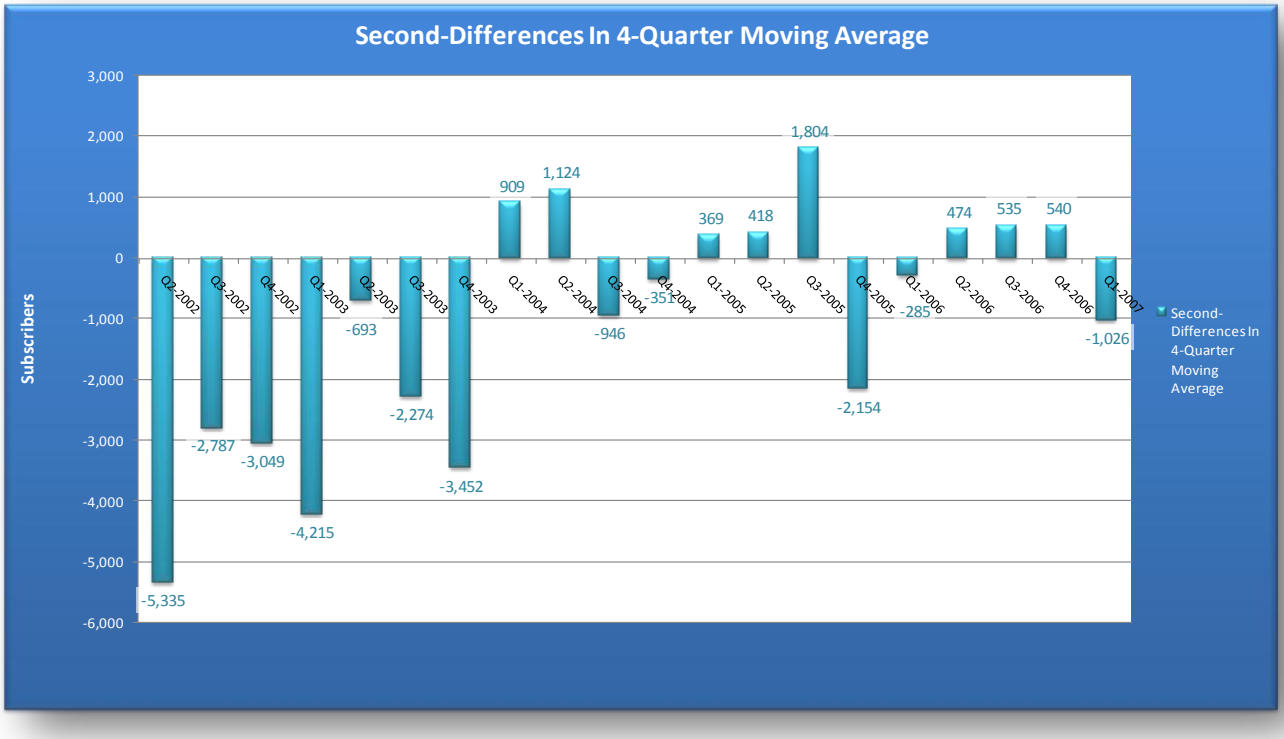

Chart 11. The First Differences In the Differences Of The 4-Quarter Moving Average. This, Therefore, Represents The Second Differences In The 4-Quarter Moving Averages.

The marginal drop in subscribers over the previous ECMR period, in this milieu, may be attributed to cyclical-seasonal influences and does not seem to represent a change in the underlying upward trend.

By the *end of* the *period under review*, the mobile penetration rate for the Maltese Islands stood at 85%[10]. The average mobile penetration rate for a cohort of selected European Union (EU) countries featuring in chart 12, below, as at the *end of 2006*, stood at 104%, whereas Malta's, at that juncture, stood at 86%. Chart 12 also presents the penetration rate per country compared to the EU average (shown as a superimposed line).

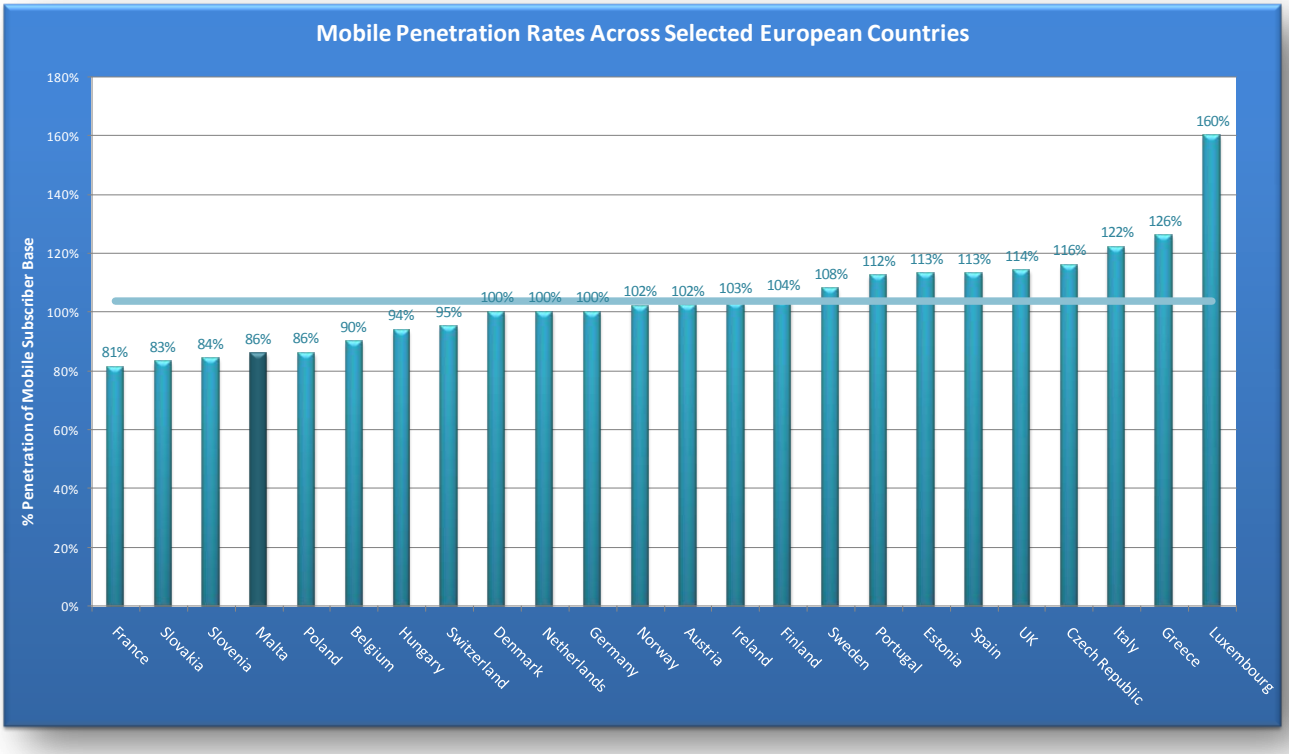

Chart 12. Mobile Telephony Percentage Penetration Throughout Selected EU Countries With The Average Penetration Rate Superimposed *As At The End Of 2006*.
Source: Tarifica Statistics and the MCA database.

[10] Caution is advisable in interpreting this statistic. This does not mean that 85% of the Maltese population has access to a mobile phone and is actively using it, but rather that the proportion of active lines in relation to the Maltese population is 85%. More explicitly, by way of illustration, this means that if all those who have a mobile phone own 2 mobile SIM cards, only 42.5% of the Maltese population would have access to mobile telephony but the proportion of mobile lines to the Maltese population would still be 85%. The population statistic used in the computation of this indicator has been obtained from the "Census of Population and Housing – Preliminary Report", NSO (2006) p. 3.

The structural prepaid-postpaid dichotomisation between mobile subscribers in the Maltese market as at the end of December 2006 is illustrated in chart 13, hereunder. 91% of the Maltese mobile subscriber base makes use of pay as you go (prepaid) arrangements, whereas the remaining 9% is composed of postpaid subscribers. This makes the structure of the Maltese mobile market markedly different from that of the average European Union (EU) country, at least insofar as the prepaid-postpaid dichotomy is concerned. In fact, as chart 14 shows, 58% of mobile telephony subscribers in the EU are on prepaid plans and 42% are on postpaid plans.

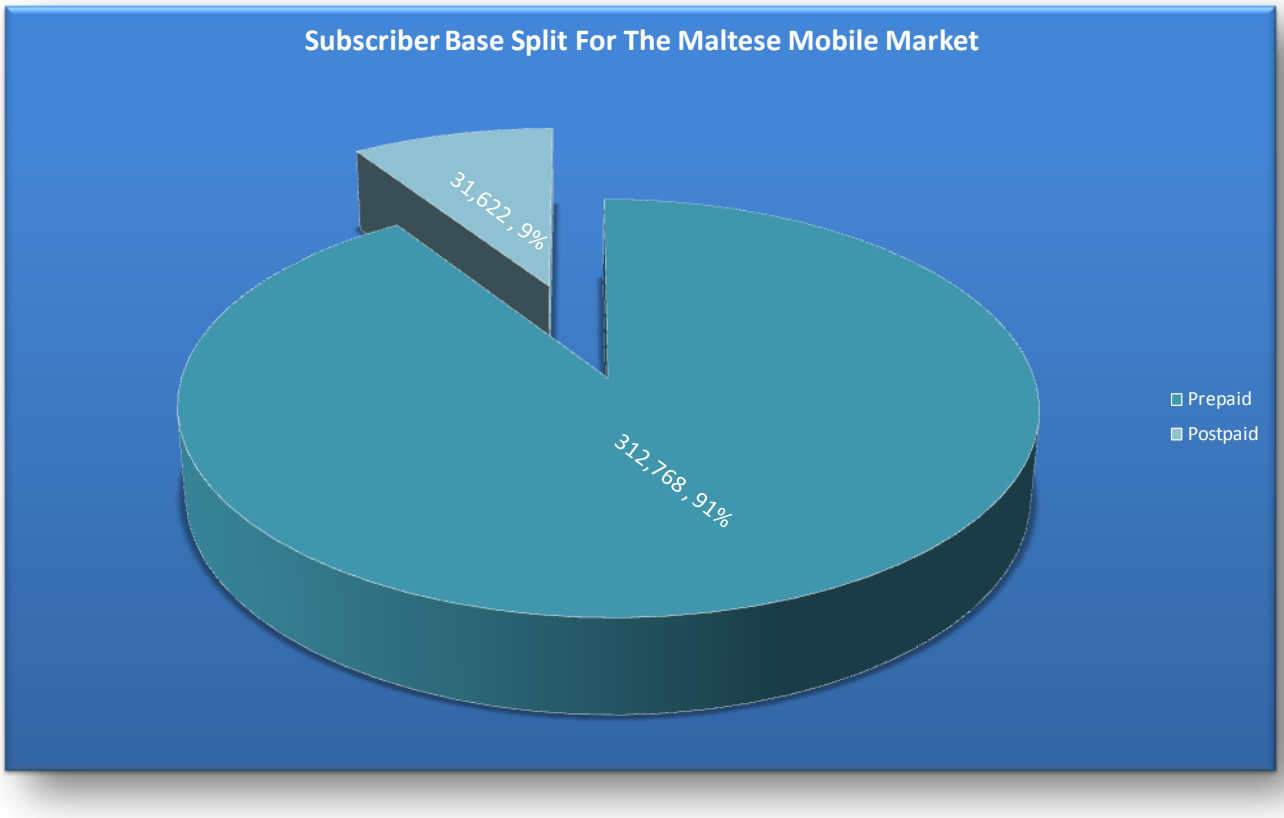

Chart 13. The Subscriber Base Prepaid-Postpaid Dichotomy For The Domestic Mobile Market.

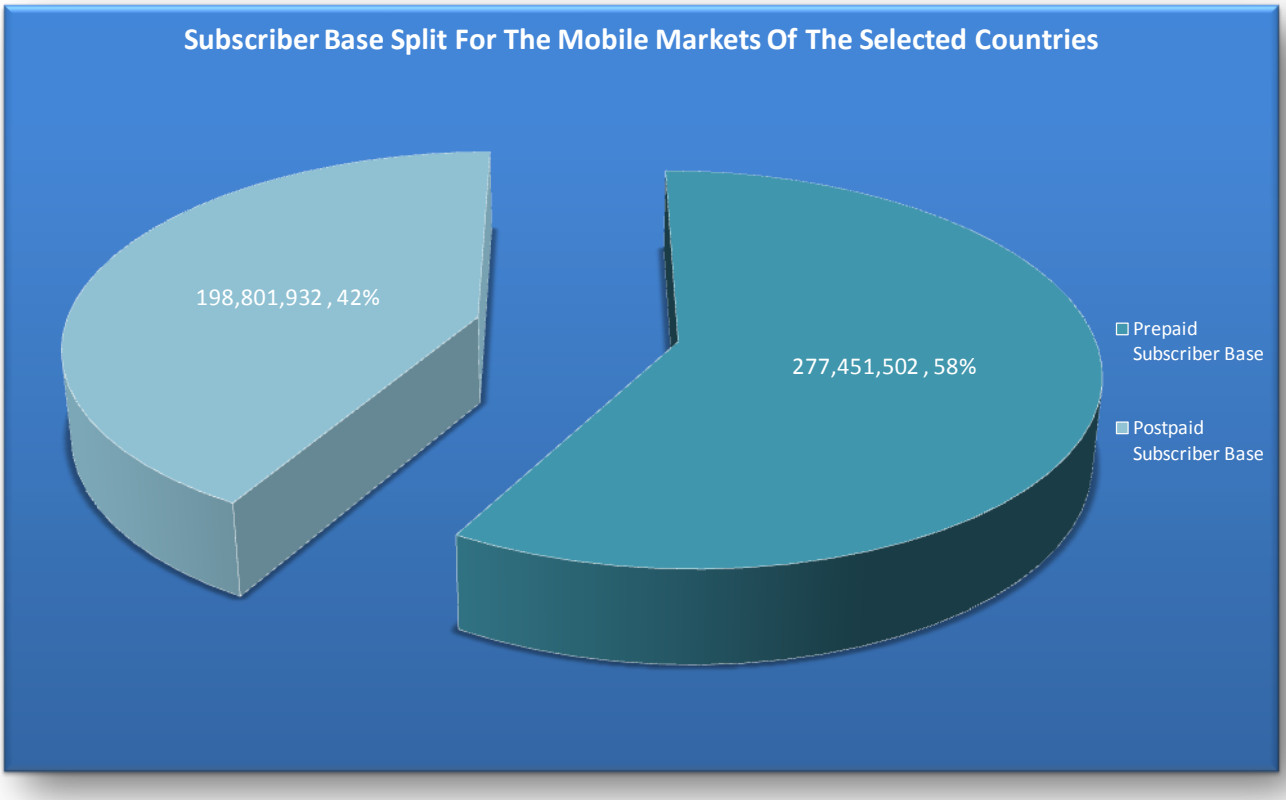

Chart 14. The Prepaid-Postpaid Subscriber Base Dichotomy For The Selected EU Countries[11].
Source: Tarifica Statistics and the MCA database.

Chart 15 on the next page charts the prepaid-postpaid customer base dichotomy in various EU countries. From all the selected EU countries alluded to in footnote 11, postpaid subscriber base was highest in Finland and France and lowest in Italy and Malta. Since by the very nature of the prepaid-postpaid dichotomy, a subscriber is either on a prepaid or a postpaid plan, the reverse is true of prepaid subscriber bases across the selected EU countries featuring in chart 15 on the next page. Indeed, this chart may be thought of as a continuum: the farther away one country is from another, the more dissimilar in terms of the prepaid-postpaid subscriber base dichotomy the particular country in question is.

[11] These being Austria, Belgium, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Malta, Norway, Poland, Portugal, Slovakia, Spain, Sweden Switzerland, the Netherlands and the UK.

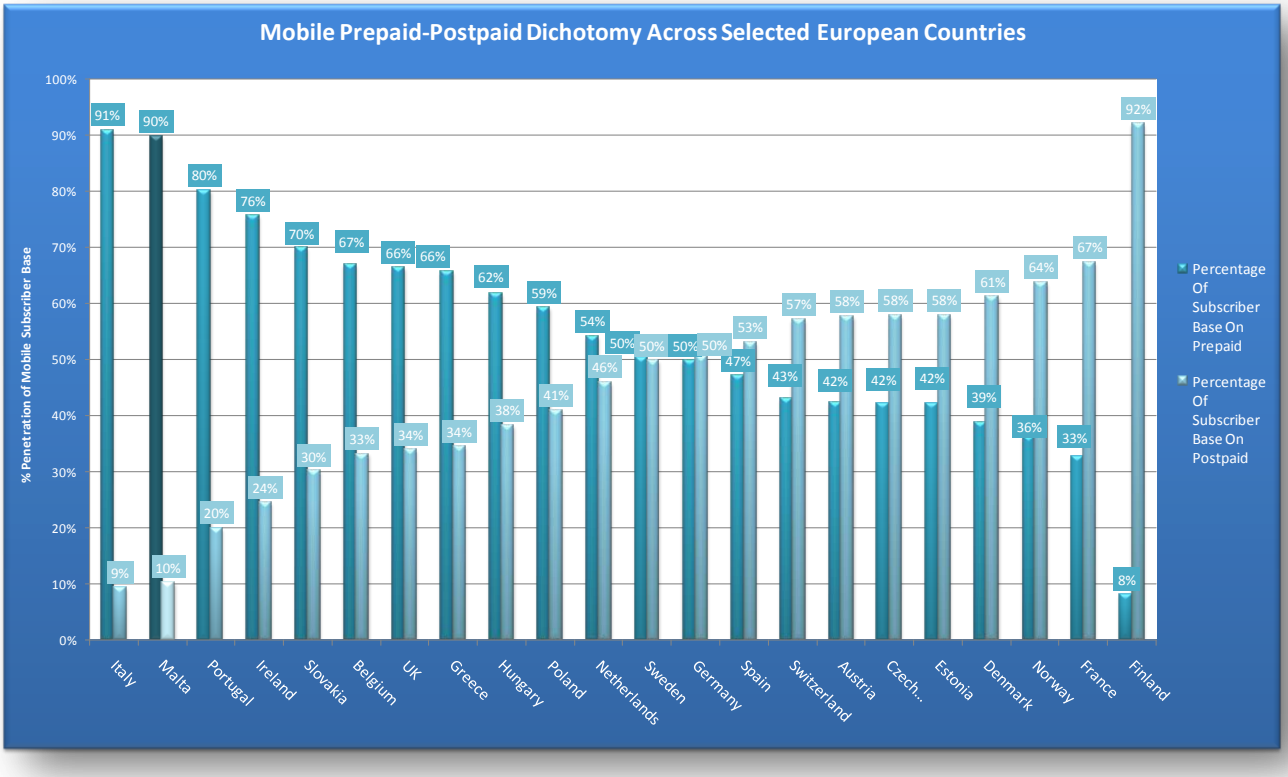

Chart 15. Prepaid-Postpaid Subscriber Base Dichotomy For Selected EU Countries.
Source: Tarifica Statistics and the MCA database.

3.3 Average Revenue Per User

Chart 16, on the next page, shows the quarterly ARPU for the local mobile market. This indicator represents the average amount of revenue generated by a local mobile subscriber *over a quarter* and may be thought of as the quarterly expenditure on mobile services of a representative mobile services subscriber. Chart 17, also on the next page, shows the average monthly revenue per user shown quarterly for the entire mobile market. This indicator represents the average amount of revenue generated by a local mobile subscriber *over a one-month period* and may be thought of as the monthly expenditure on mobile services of a representative mobile services subscriber.

ARPU statistics include revenues generated from outbound and inbound traffic of whatever nature and roaming revenues for local subscribers, and exclude the revenues generated by foreign networks' subscribers visiting Malta.

As charts 16 and 17 on the next page reveal, ARPU figures are fraught with seasonality which survive even the smoothing process inherent in quarterly aggregation. The summer period, in this respect, is always a good time for the local mobile network operators (MNOs), for revenues from services offered, aggregated over both the local MNOs, register an increase in this period.

As both charts 16 and 17 show, ARPU has declined during the last quarter of 2006 and the first quarter of 2007 relative to the previous ECMR period. This, as shown in charts 18 and 19, is the combined result of a decline in both prepaid and postpaid ARPU which are, in great part, both attributable to seasonal factors. Though ARPU is nowhere near its 2004 levels, it has registered an increase of LM 0.89 over the comparable period a year earlier. This is mostly a result of the technological market life cycle that sees enthusiasts and early adopters, who tend to make more use of a service (in this case mobile telephony), take up a service for first, only to be followed by the laggards and the traditionalists, who would have a propensity to make less use of a given service. To a lesser extent, this inevitably embodies 'noise' from the wider economy's business cycle and is therefore also reflecting that.

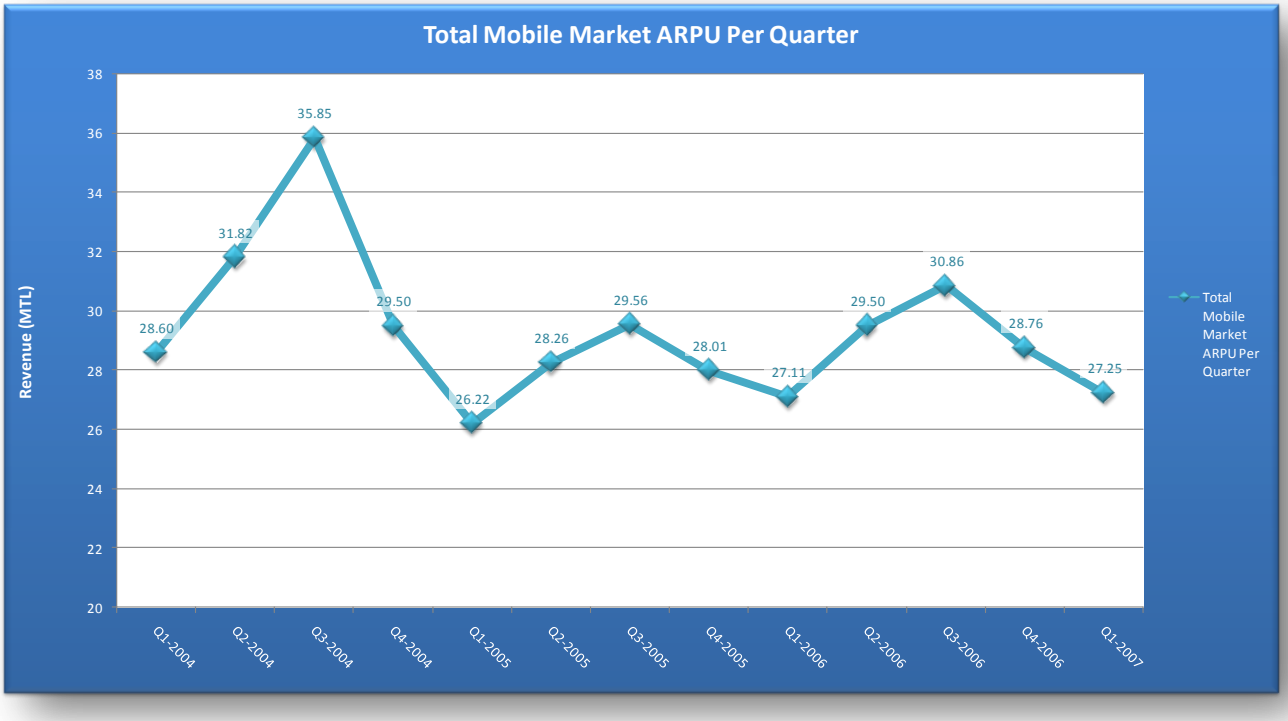

Chart 16. Average Revenue Per User Shown Quarterly For The Entire Mobile Market.

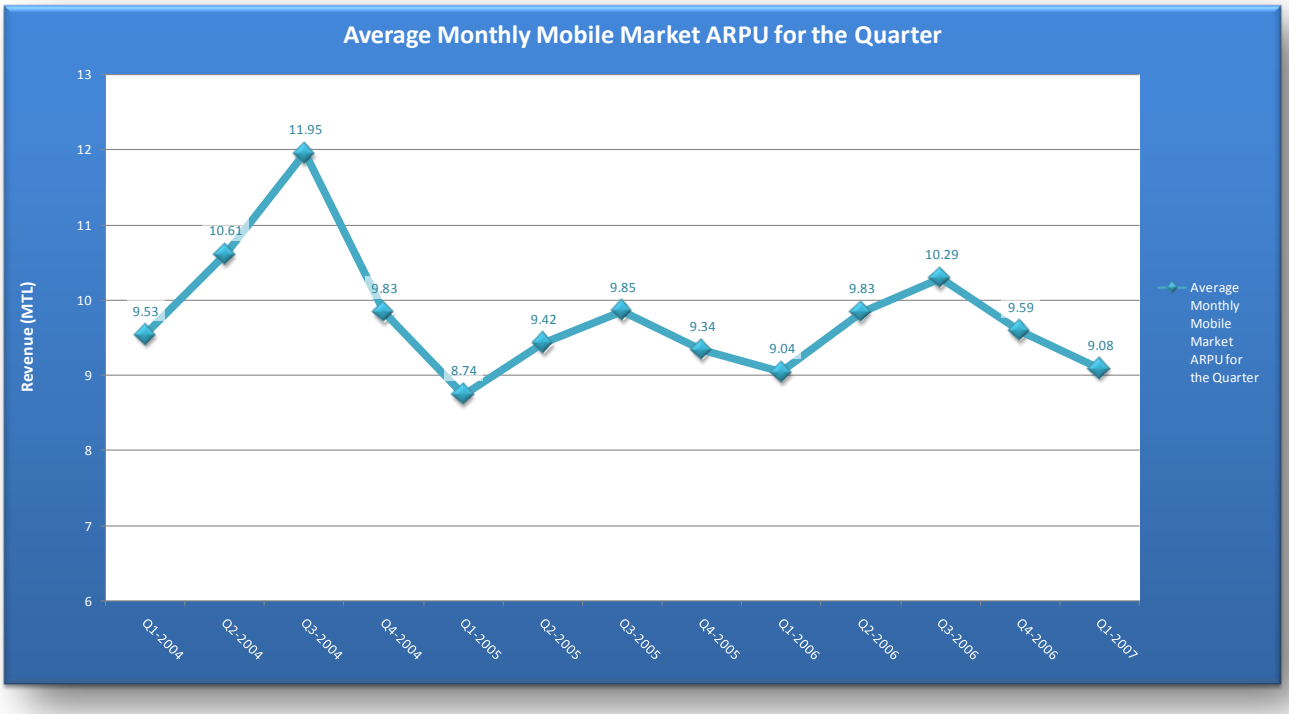

Chart 17. Average Monthly Revenue Per User Shown Quarterly For The Entire Mobile Market.

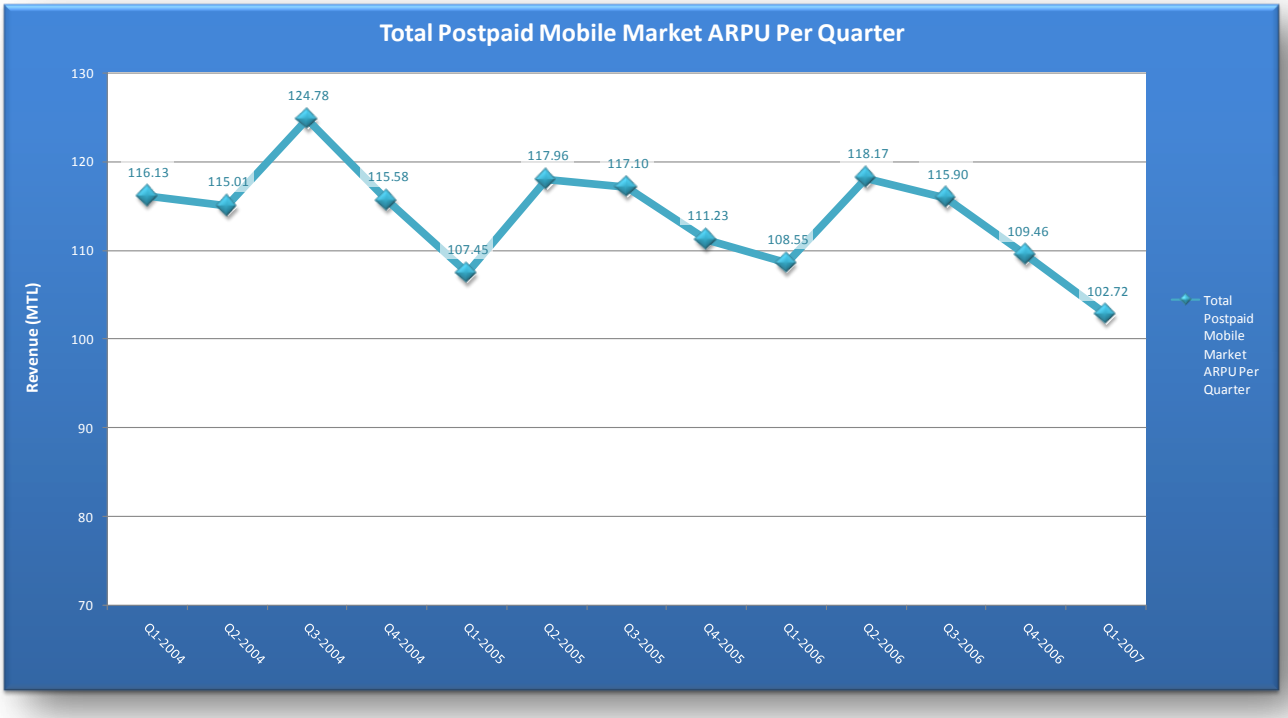

Chart 18. Average Monthly Revenue Per User Shown Quarterly For The Mobile Market's Postpaid Subscriber Base.

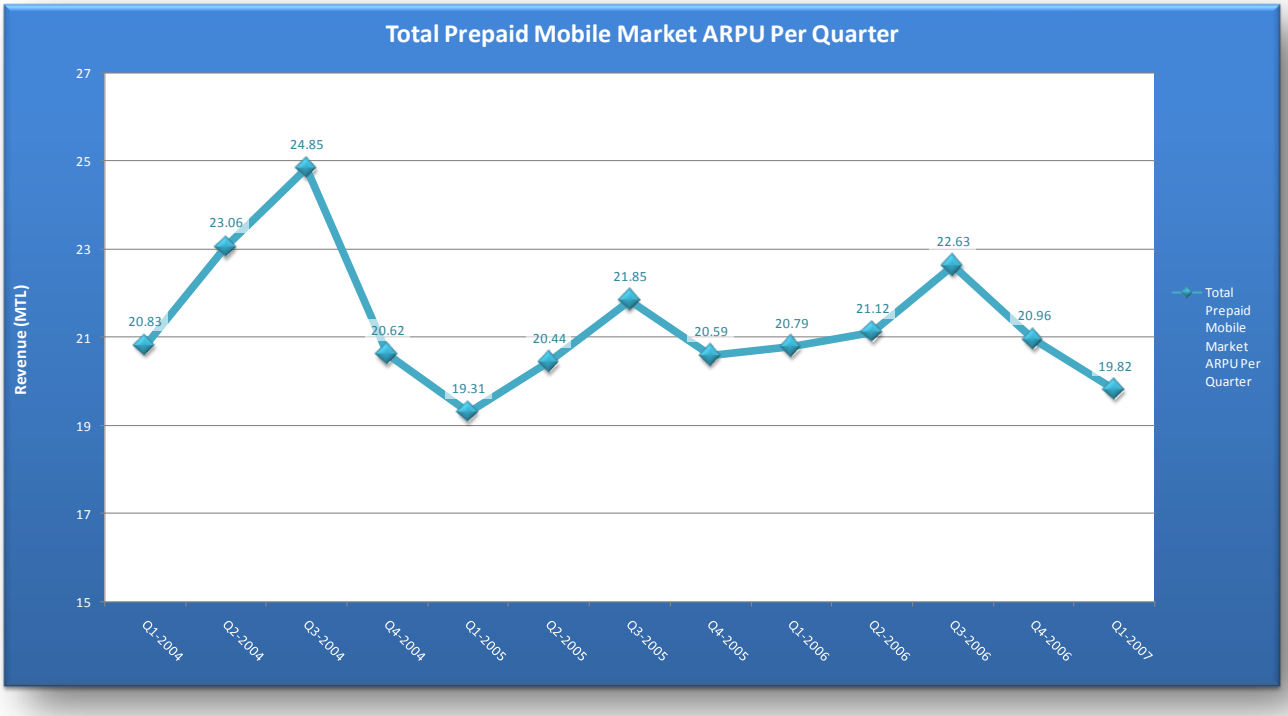

Chart 19. Average Monthly Revenue Per User Shown Quarterly For The Mobile Market's Prepaid Subscriber Base.

3.4 Outgoing Mobile Traffic

Chart 20 on the next page depicts the total number of mobile minutes terminating on the fixed, mobile and foreign networks. The existence of seasonal fluctuations, as shown in chart 22 (see page 21), which shows the growth rates for mobile-originating voice traffic by termination category, is unmistakable. The sustained upward trend in mobile-originating-and-terminating minutes has halted in the two quarters being reviewed. This is probably the combined effect of both the business cycle[12] and structural factors such as the advent of increased competition from lower-priced and zero-marginal-price solutions. In fact during quarter 4 of 2006 and quarter 1 of 2007, mobile-to-mobile traffic decreased by 1% (491,331 minutes) and 2.1% (1,079,201 minutes) respectively when compared to the two preceding quarters but increased by 22.1% (9,121,082 minutes) and 13.3% (5,809,589 minutes) over quarter 4 of 2005 and quarter 1 of 2006 respectively.

Apropos of the seasonal element in mobile-originating minutes terminating on PSTN, quarter 1 has shown a tendency for being the lowest since the starting point of the time series at the MCA's disposal. This is undoubtedly affected by the number of days in this quarter, which includes February with 28 (or, in a leap year, 29) days, but is not totally ascribable to it. As a matter of fact, when weighting the data by the number of days in a particular quarter, the exhibited trends change to those shown in chart 21, which shows the volume of voice traffic on a daily basis. Even after having detrended the whole data set, Quarter 1 still comes out as the worst quarter for the year.

Growth rates for mobile-originating voice traffic by termination category are illustrated in chart 22.

Lastly, when it comes to international minutes, detrending the data shows that quarter 1 has invariably been the worst quarter when it comes to the volume of minutes registered, and quarter 3 invariably the best. Once again, the latter is partly, but not *in toto*, attributable to the number of days in February. Deseasonalised data confirms that mobile-originating traffic passing through the international gateways continued to exhibit the pronounced short-, medium- and long- term upward trends that they had been exhibiting hitherto, notwithstanding marginal decreases in the volume of SMS traffic in absolute terms over the two quarters being reviewed.

[12] In this regard, it is important to recall that October 2006 saw the raising of the intervention rate by the Central Bank of Malta, which increased again in January 2007. This might have had an impact on the disposable income of indebted households, possibly making them more price-conscious, without there having been a compensating effect from net savers who, by virtue of their being savers, would be less sensitive to prices prior to the upward adjustments of the intervention rate.

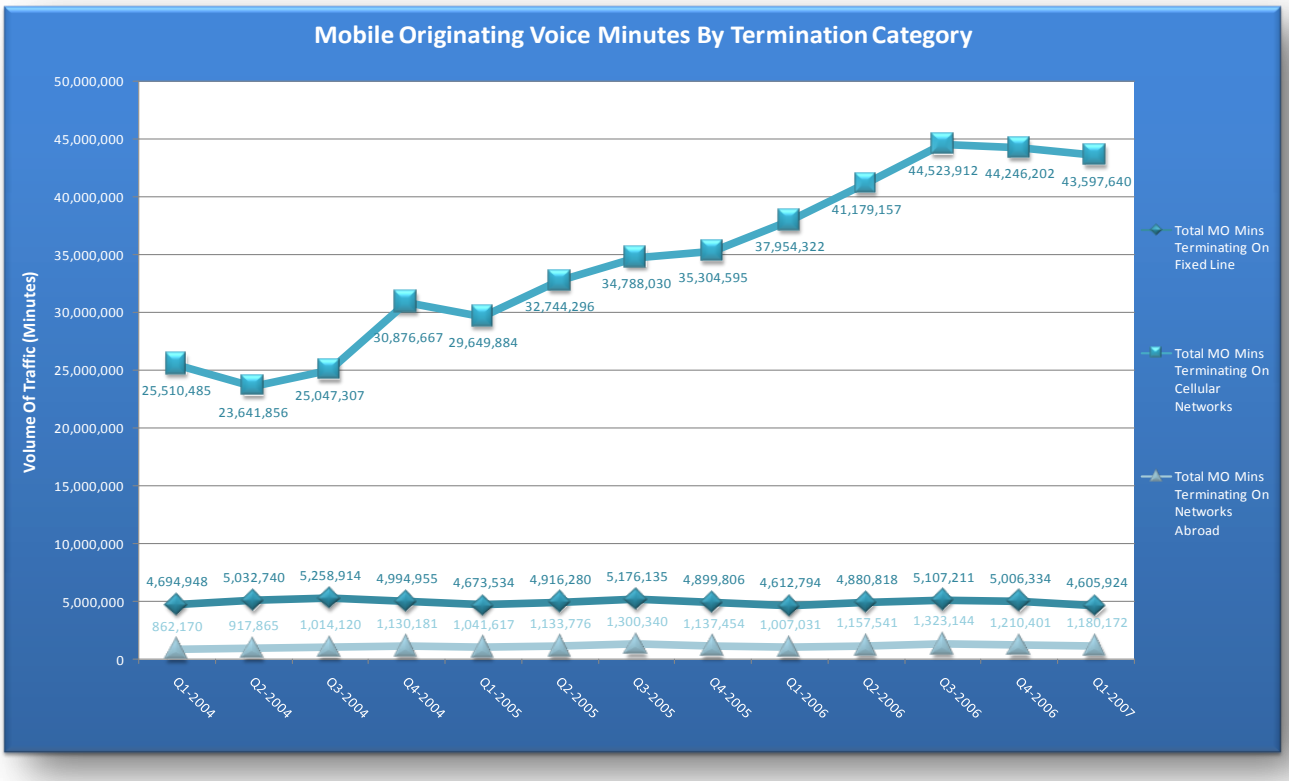

Chart 20. Mobile-Originating Voice Traffic By Termination Category.

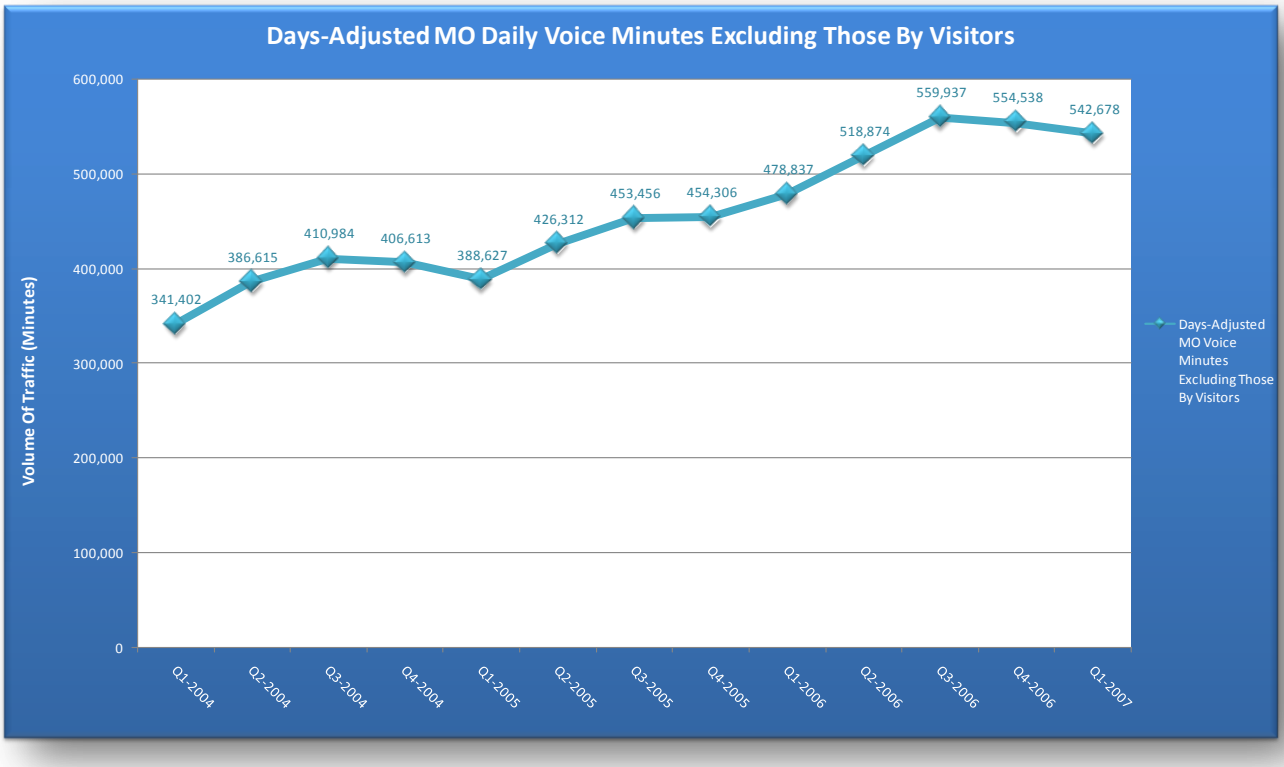

Chart 21. Mobile-Originating Voice Traffic By Termination Category Weighted By The Number Of Days.

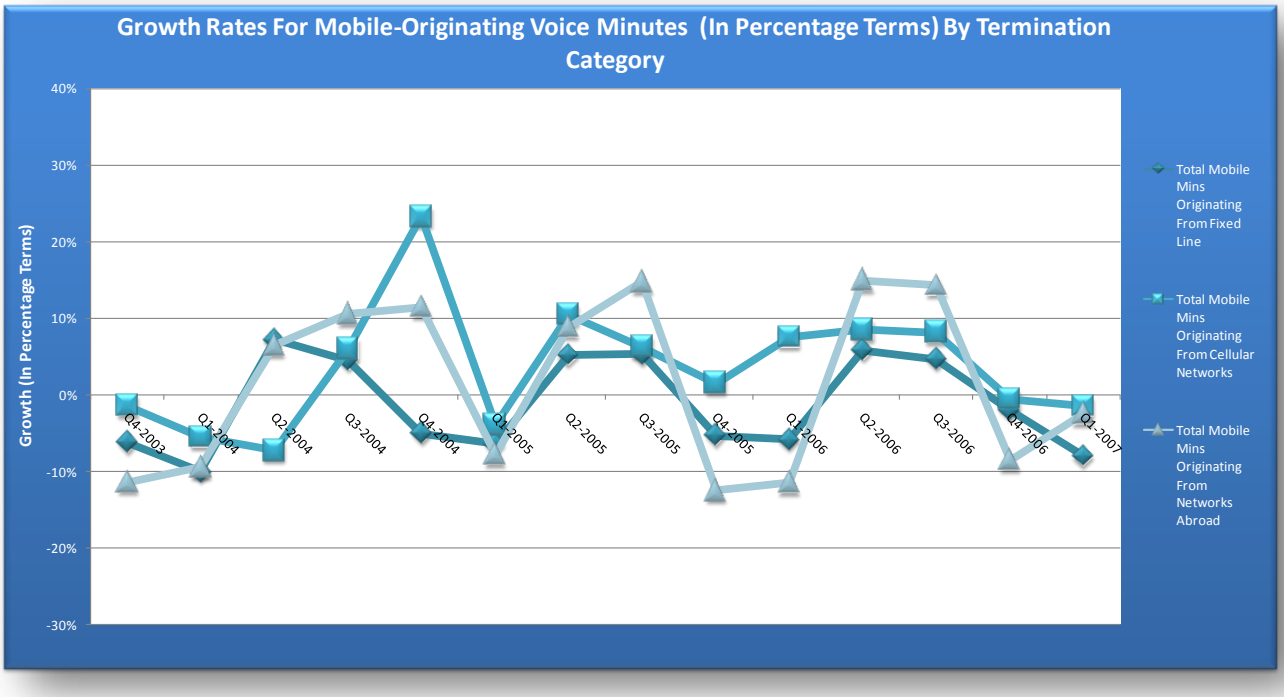

Chart 22. Mobile-Originating Voice Traffic Growth (In Percentage Terms) By Termination Category (Values Have Been Removed To Make The Chart More Readable).

3.5 SMS Traffic

Short Message Service (SMS) refers to the transmission of messages containing text. SMS traffic volumes have continued on their upward trajectory, albeit the rate of the increase is not as pronounced as it was previously, in the second and third quarters of 2006, and seems to be stabilising. As chart 23, below, illustrates visually, SMS usage grew by 12,221,739 messages, or 5.6%, over the year between this ECMR period and the one for quarters 2 and 3 of 2005.

The all-time high SMS usage is ascribable to a host of factors including – but not limited to – the high price differential between SMS and voice tariffs, the myriad promotional offers featuring texts in bulk, growth in the use of web portal SMS services and also the upward trend in subscriptions to mobile telephony services conducive to the amplification of so-called 'network economies'.

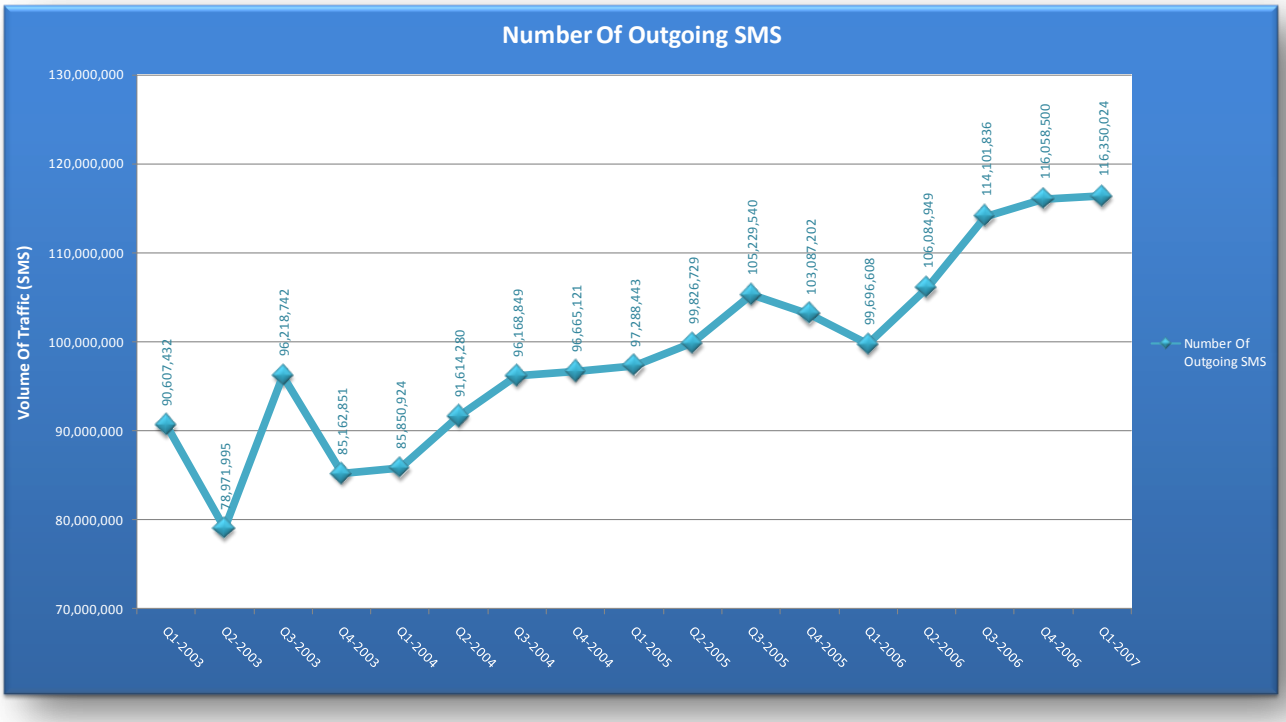

Chart 23. Total Volume Of Outgoing SMS.

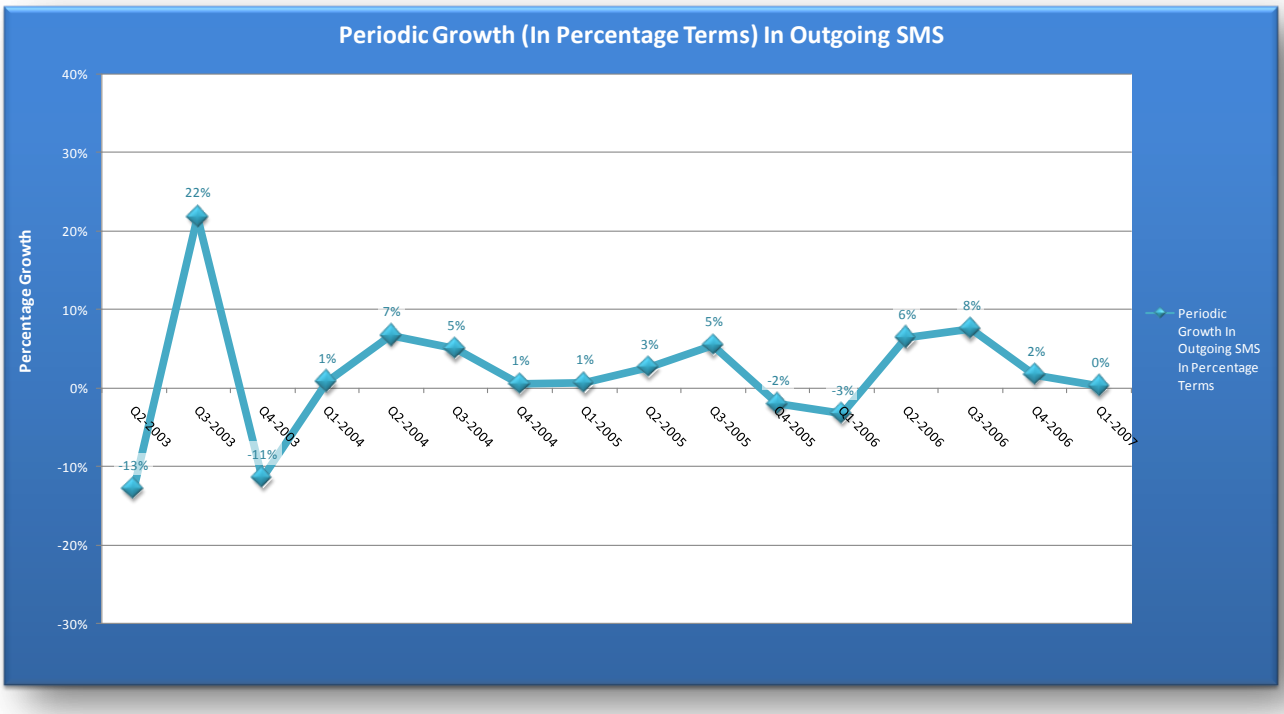

Chart 24. Percentage Growth Rate In The Volume Of Outgoing SMS.

The slow-down in the rate of increase in SMS traffic may be attributed to seasonal factors. This seasonal element is clearly illustrated in chart 24 which shows significant slow-downs in SMS activity in quarters 1 and 4 of each year and subsequent pick-up in activity in quarters 2 and 3.

3.6 Multi-Media Messaging

Multi-Media Messaging (MMS) refers to the transmission of messages containing text, graphics, photographic images, and audio and video clips between mobile devices.

MMS was introduced in Malta towards the end of 2002 and this service was free of charge until March of 2004 (the period for which does not feature in chart 25, hereunder), but there was no MMS interoperability between local MNOs. Despite the falling cost of MMS-enabled handsets and their uptake, MMS usage is still ebbing. In fact, over the two quarters being reviewed, MMS usage dropped marginally by a further 3,652 MMSs, tantamount to 1.1% of total MMS volumes registered in the previous ECMR period and by 56,958 units, translating into 14.8%, over the comparable period in 2005/2006.

Tariff complexities, cost considerations, and the perception of the need – or the lack thereof – to send an MMS could all contribute towards the construction of an explanation of why MMS has taken off only limitedly in Malta. Ignorance of mobile handset interfaces and the wider availability of substitutes (such as digital cameras, Bluetooth and email which are relatively disadvantageous in terms of ease, speed and outreach of transferability but more advantageous in terms of cost and quality) might also be hampering MMS traffic.

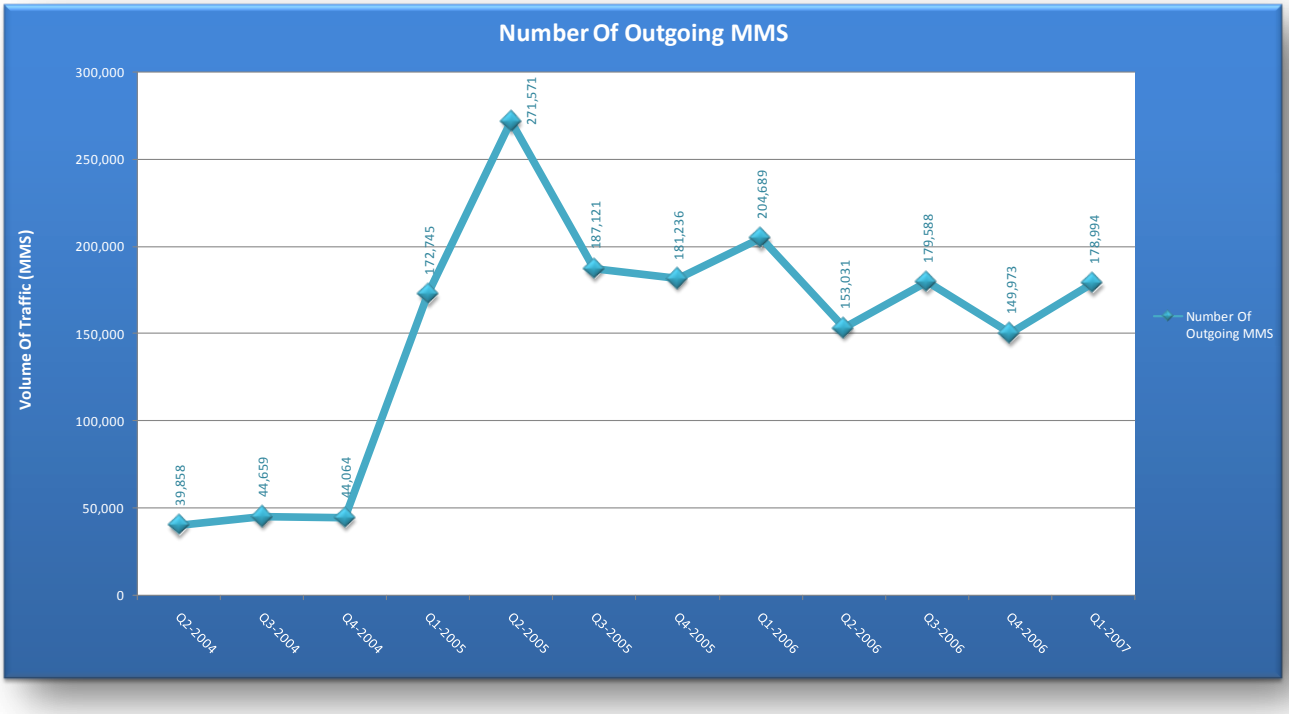

Chart 25. Quarterly MMS Origination Volumes.

3.7 Roaming

Roaming activity refers to activity by domestic subscribers generated on foreign networks.

Roaming voice traffic originating by Maltese roamers, shown in chart 26, hereunder, exhibits an unequivocal upward trend with significant seasonal spikes in quarter 3 of each year. Roaming voice origination increased by 153,045 minutes, or 10.9%, over the comparable period in 2005/2006.

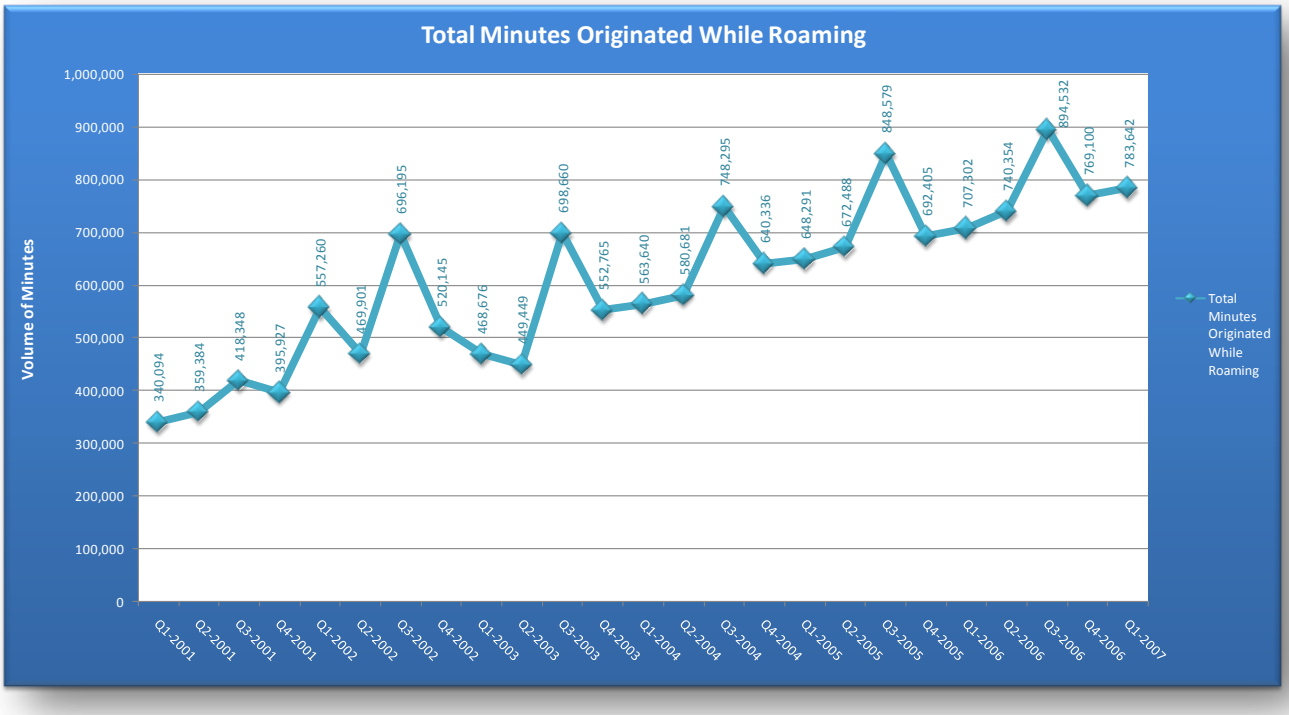

Chart 26. Total Voice Traffic Originated By Maltese-Registered Subscribers Roaming On Foreign Networks.

Chart 27, on the other hand, illustrates roaming traffic voice volumes terminating on roamers. Though the roamer-terminated voice volumes clearly follow an upward trajectory, the steepness of the trend is nowhere in the range of that of roaming traffic voice volumes originated by roamers. Over the comparable period in 2005/2006, roaming voice termination increased by 207,647 minutes, or 32.1%.

Chart 28 shows volumes of SMS originated by local subscribers when roaming. Deseasonalising the data shows a very clear upward trend that has been increasing in momentum since 2006. Roaming SMS increased by 728,475 SMS, or 30.7%, over the comparable period last year.

Lastly, during the review period, the European Commission was considering the introduction of roaming regulation with a view to bring roaming tariffs down across the whole of the EU. This has come into force on the 30th of June of 2007 and was expected to have an impact on roaming charges during the next ECMR period[13].

[13] More information is obtainable from the following url: http://ec.europa.eu/information_society/activities/roaming/index_en.htm <accessed 14 Jul 2007>.

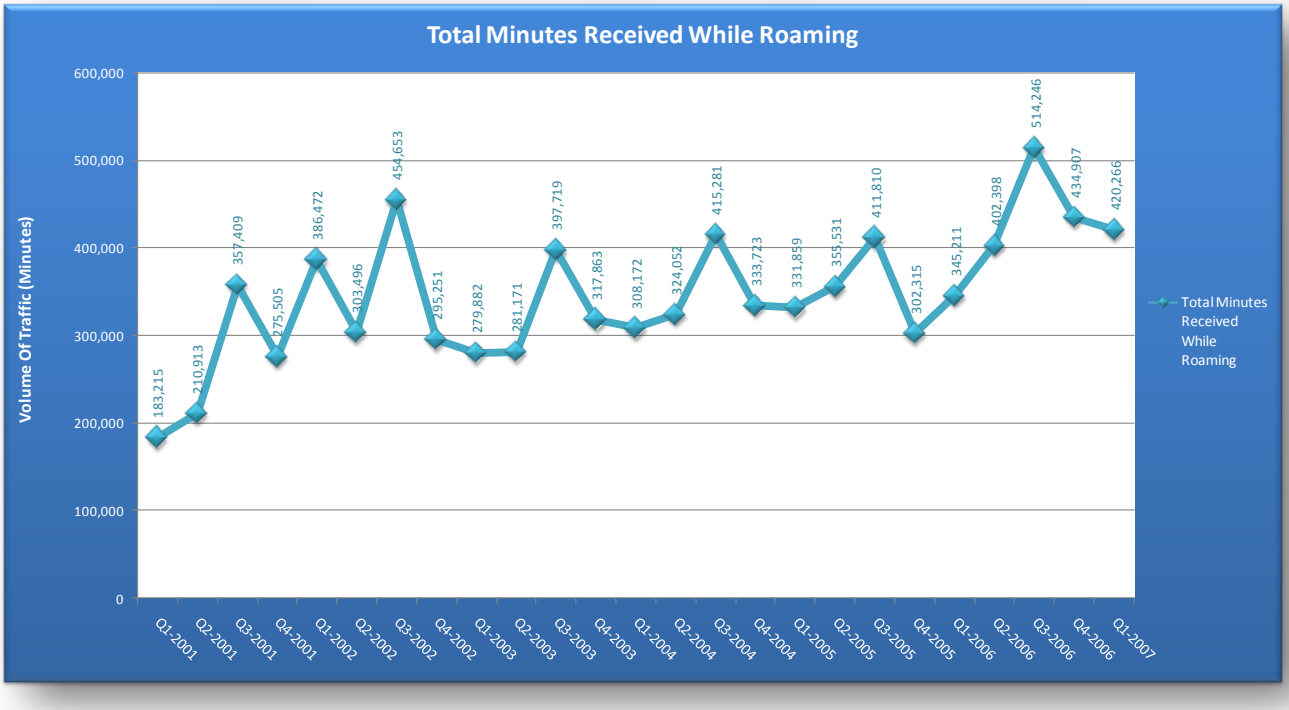

Chart 27. Total Voice Traffic Received By Maltese-Registered Subscribers Roaming On Foreign Networks.

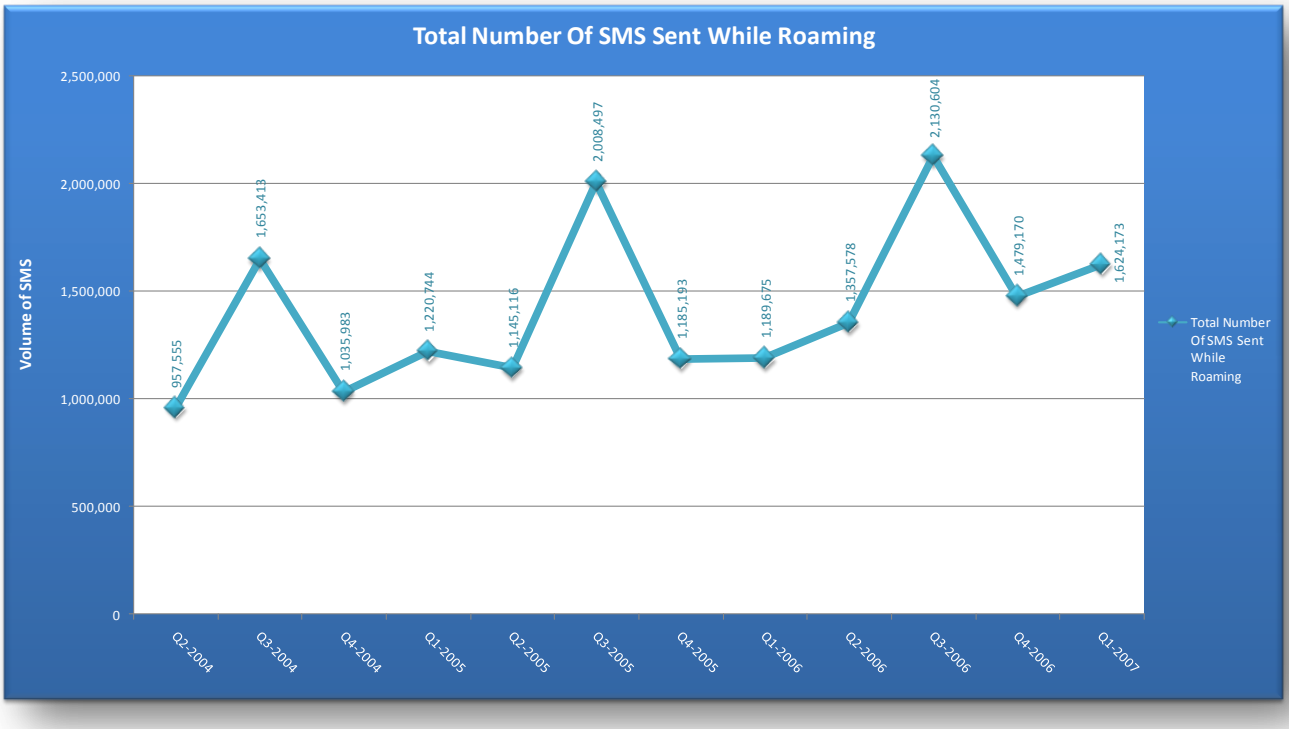

Chart 28. Total SMS Traffic Originated By Maltese-Registered Subscribers Roaming On Foreign Networks.

3.8 Inbound Roaming (Visitors)

Inbound roaming activity refers to activity by foreign mobile telephony subscribers generated on domestic networks. These are usually referred to as visitors in industry vernacular.

Roaming voice traffic originated by foreign roamers on domestic cellular networks, shown on chart 29, exhibits an upward trend with distinct seasonal fluctuations that seem to be accentuating themselves with time. The year-on-year rise registered amounted to 530,653 minutes, which constitute 10.7%.

Incoming visitor minutes, shown on chart 30, also exhibit a mild upward trend in the medium-term. Notwithstanding this, in comparison to quarter 4 of 2005 and quarter 1 of 2006, traffic has gone down by 449,263 minutes, representing 12.7 % of total visitor-terminating voice traffic.

Chart 29. Total SMS Traffic Originated By Maltese-Registered Subscribers Roaming On Foreign Networks.

Chart 30. Total SMS Traffic Originated By Maltese-Registered Subscribers Roaming On Foreign Networks.

3.9 Mobile Number Portability

Mobile number portability is the facility to port a Mobile Subscriber Integrated Services Digital network Number (MSISDN)[14] from one mobile operator to another. Such a facility was introduced in Malta in April 2006.

Mobile number portability has several beneficial effects on the market. Among other things, it slashes the cost to the subscriber of switching between mobile operators, thereby eliminating the consumer lock-in element inherent in a system wherein inter-operator migrations could come only at the cost of having to change the MSISDN. As a corollary, it also has competition-enhancing supply-side effects since the market is made to be less lethargic, and therefore more responsive to changes in tariff structures, offers and other factors of benefit to the consumer.

By the end of the period covered by this ECMR, 10,886 number portings[15] had been registered[16]. These are charted below in chart 31.

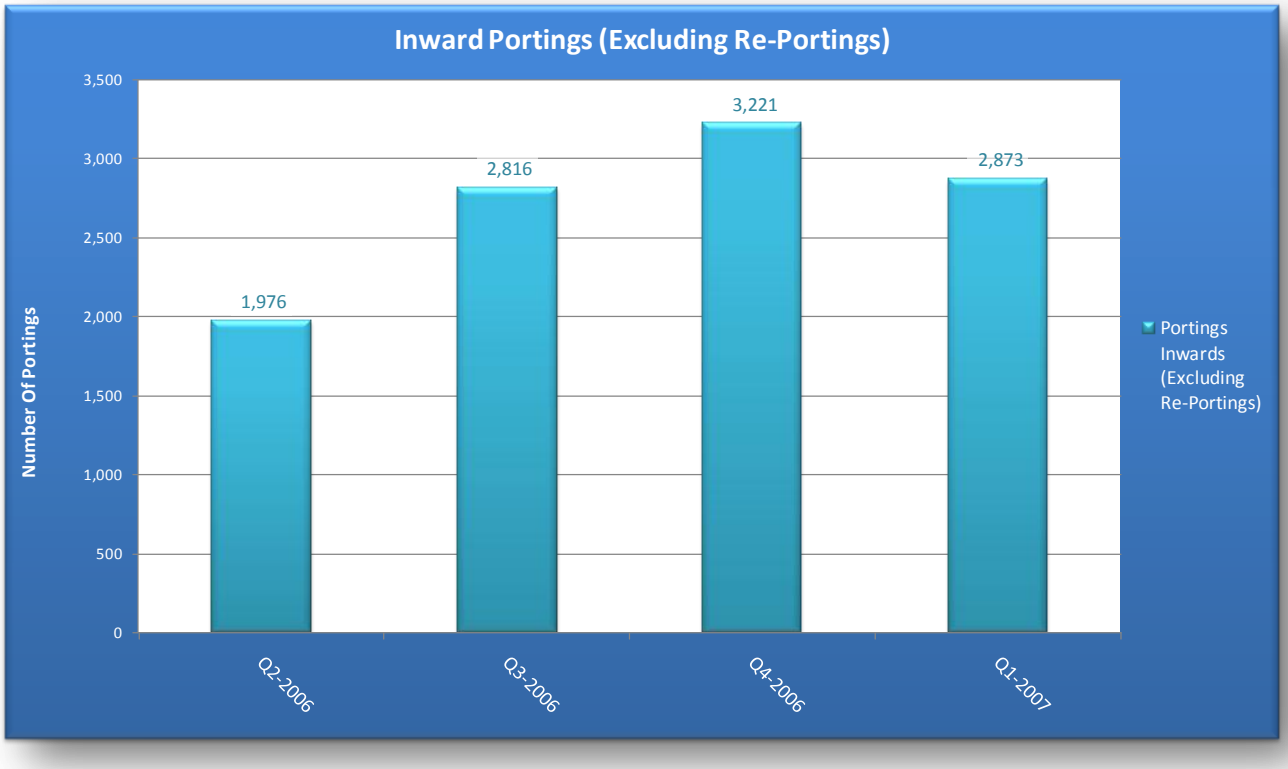

Chart 31. Total MSISDN Portings To-Date.

[14] This may be thought of, in layman's terms, as the mobile line number.

[15] The nature of the reporting being used to generate this figure is fickle and any re-portings done in subsequent periods will yield a change in the figures quoted. The MCA will be trying to publish the figure for number portings including re-portings in future ECMRs after a time-series of reasonable length is constructed.

[16] This figure excludes the number of re-portings. If these had to be included, the number of registered portings would increase.