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The Economic Determinants of Strategy under de-regulation

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Executive Summary

Until recently Manx Telecom (MT) had long held a monopoly to provide telecommunications on the Isle of Man.

However, the Isle of Man Regulator granted two new telecoms licenses —a move which introduced competition to the market. Cable and Wireless entered in July 2007, and Wire9 with a failed entry in June 2007 are muted to re-enter sometime in 2008. This paper discusses the strategies of the three companies, primarily focussing on MT.

Before the announcement of competitor licenses, management focus at MT revolved around preserving monopoly conditions against a backdrop of a parent company always looking for growth.

During this period:

- MT has been able to maintain supernormal profits up market entry;
- Technical and allocative inefficiencies are observable;
- pricing was below optimum, hence MT were not profit maximising;
- MT created information imperfections in order to maintain public perception of good value for money;

Under contestable market conditions, since 4th May 2006, the imperative for MT was to discourage the market entry of competition. A limit pricing strategy was employed, prices were reduced stimulating demand and output. However, the limit pricing strategy was not effective due to the inefficiencies in revenues during monopoly conditions. Imperfections in information were also encouraged by MT.

Since the successful entry of one competitor in July 2007, MT has reported another year of growth. However, on inspection it can be seen that competition has affected profitability - 1st half 2007 Net Margin was 28.3%, 2nd half 20.9%. A price war has begun, and will likely continue until MT is forced to exit. MTs strategic imperatives urgently need to include the future industry structure and profitability.

MT is also exposed to the finance sector and at risk to being held-up by the Island's regulator. This and the exposure to high quasi-rents of the regulatory relationship and could be combated by entering other geographic markets. They could also use this mechanism in the same vein as JT to discourage disruptive competitors, such as Wire9.

MT may be exposed to the micro market environment, but it is the actions of management during times when the environment was not so competitive that are critical to its choice of strategy now.

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1 Introduction to Manx Telecom

Manx Telecom (MT) was set up as a license vehicle by BT in 1986 – the twenty year license gave MT the rights to be the sole operator of telecommunications services on the Isle of Man, but also certain service obligations such as the provision of emergency services.

In 2000, MT was demerged from BT as part of the mobile operator mmO2 plc (O2), and remains part of the portfolio since being taken over by Telefónica in 2006. MT differs from O2 in that it offers both fixed line and Internet services as well as mobile telephony.

Table displays key financial indicators of Manx Telecoms performance.

	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005[1]	2006	2007
Turnover £m	35.6	38.5	43.2	47.4	49.6	53.3	54.5	59.9	63.1
Investment £m	10.5	17.0	4.8	7.5	8.7	10	10	12	8.3
EBITDA %	25.1	20.2	23.4	25.1	30.7	28.9	26.1	24.1	22.6
Net Margin %	21.4	20.0	23.0	23.7	32.8	27.1	23.4	34.7	24.7

Table 1.1 - Selected Financial Indicators for Manx Telecom
(Source data 'Manx Telecom Annual Reviews' 1999/00–2004/05 and Financial Reports 2005-2007)

The license was renegotiated in 2003; MT was granted a license to continue for a further 15 years – however, changes were made allowing the potential for market entrants, hence making Island telecommunications contestable.

In 2006, the Regulator announced that two telecoms operators had been granted licenses to compete with Manx Telecom (Isle of Man Government, 2006):

- ***Cable & Wireless Islands*** (CWI) – responsible for Cable & Wireless operations' on Guernsey, Jersey and now the Isle of Man. However, C&W Islands share resources with much of the Global Company who are active in 26 small economies (Preliminary Results, 2007a).
- ***Wire 9*** – a start-up. Wire 9 are using newer and cheaper technology (Isle of Man Government, 2006).

Comparisons are drawn throughout this document. A further comparator, Jersey Telecom (JT) is used as Jersey has both a similar geography and a similar telecoms market. Jersey became contestable in 2004, and competitive in mid 2006 when a market entrant - Cable & Wireless - entered.

[1] 2005 and 2006 figures have been annualised.

2 Strategy of Monopoly

MT was under monopoly conditions until 2006 protected by a license to provide telecommunications services to the Island. A time line of events is included as appendix D.

2.1 Monopoly Profits and Inefficiency

Figure 2.1 shows the net profit margin, which is indicative of operational performance. Figure 2.2 compares the asset turnover ratio - an indicator of how productively assets are being utilised to generate revenue.

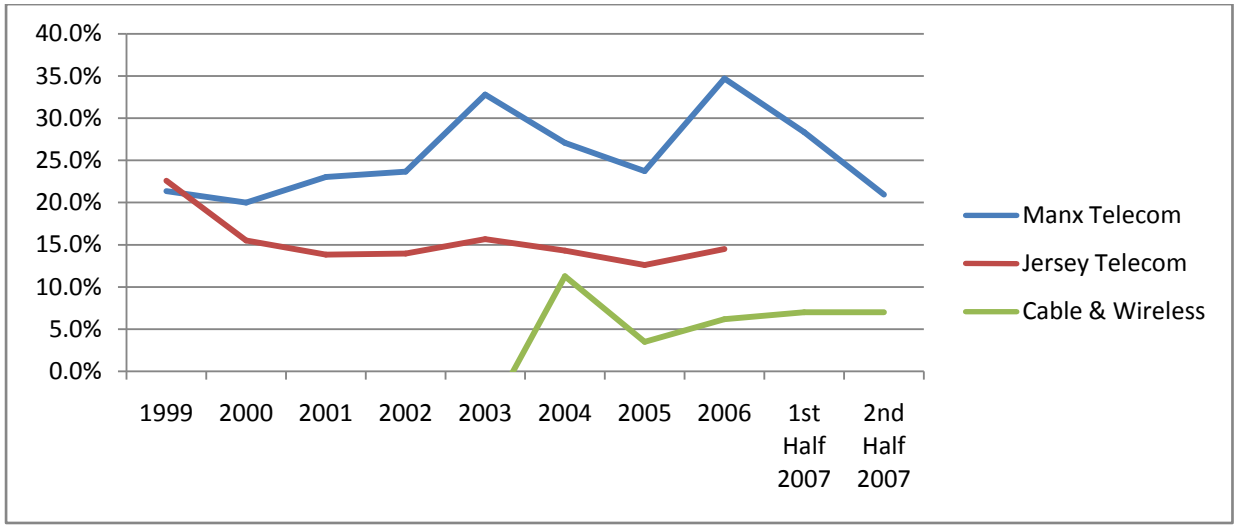

Figure 2.1 - Comparison of Net Profit Margins (Source Data: MT, C&W and JT Annual Reviews and Accounts 1999 - 2007)

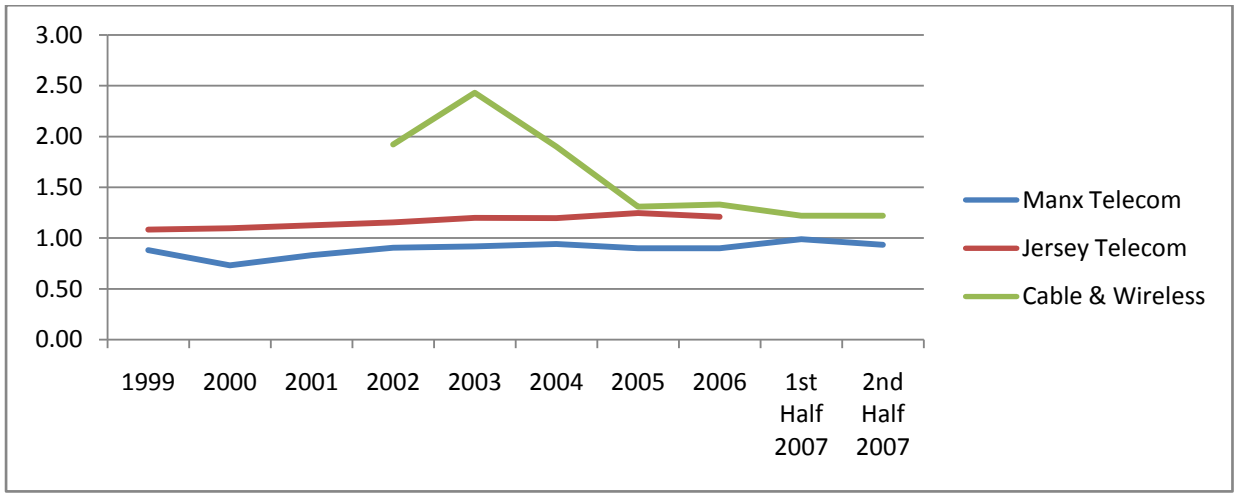

Figure 2.2 - Comparison of Fixed Asset Turnover (Source Data: MT, C&W, JT Annual Reviews and Accounts 1999 - 2007)

At the outset, it can clearly be seen that MT is both significantly more profitable, but also less capitally efficient than the two comparators. In economic terms, Manx Telecom is making *supernormal* profits (Begg & Ward, 2007).

Figure E.1 in the appendix depicts a derived cost curve and shows the firm operating below the minimum efficient scale, further supporting the notion that MT is displaying x-inefficiencies (Leibenstein, 1966).

Over-investment seems to have the most convincing provenance as a source of technical inefficiency - MT invests approximately 20%[2] revenues, comparable to C&W's 14% (Cable & Wireless plc, 2007b). The results of this over-investment can be seen in redundant technology, for example - a 3G network installed in 2001, and de-commissioned in 2004 (Pritchard, 2004).

2.2 Strategic Imperatives

Towards the end of the first licensing period, management focussed on the maintenance of public perception and the relationship with the regulator.

Information asymmetries were created by using 'independent' consultants to produce pricing surveys against other economies. The 2004 pricing survey, published by the Isle of Man Government, but commissioned by MT is a good example of this (Pure Pricing, 2004).

2.3 Monopoly Pricing Strategy

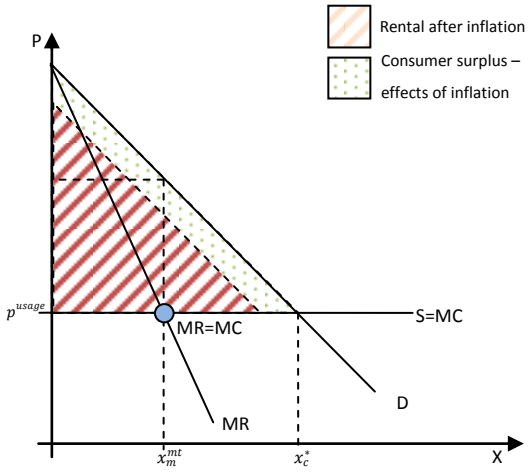

Figure 2.3 - Inflationary Effects on Two-Tier Pricing

MTs had not adjusted the rental component of its tariff between 2001 and 2006 despite inflation, leading to a real drop in the rental pricing (Pure Pricing, 2004). Figure 2.3 depicts the inflationary effects on MTs pricing, leaving unnecessary consumer surplus, and hence introducing price inefficiency.

Tariffs offer a consumer the ability to pay a higher rental, but lower usage fee or vice versa were introduced in 2006 in response to regulatory pressure (Pure Pricing, 2004).

[2] Source: MT Annual Reviews 1999-2006 (average).

The maintenance of a lower rental price could have been a useful headline to regulatory bodies. However, it is evidence that MT were not optimising pricing.

2.4 Social Costs

The market was operating at a point below *allocative* efficiency – implying a welfare cost of monopoly known as deadweight loss (Begg & Ward, 2007).

However, this underestimates the social costs to the economy. High telecoms prices affect the comparative cost of businesses on the Island, which implies a further social cost in terms of the Island's competitiveness.

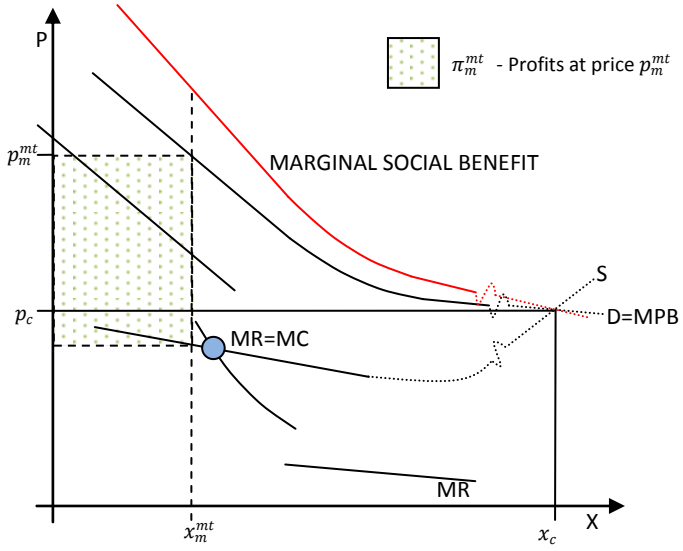

Figure 2.4 - Further Social Costs of a Telecoms Monopoly

Figure 2.4 depicts an additional Marginal Social Benefit curve, showing higher losses at higher prices – effectively the telecoms costs acting as a disincentive to living and operating business in the Isle of Man – the area between the verticals x_m^{mt} and x_c and the marginal social benefit and marginal cost curves representing the total societal losses.

2.5 Industry Structure

Figure 2.5 depicts that during the course of the initial monopoly the Island's population has grown shifting the demand curve from $D_{IOM\ 1986}$ to $D_{IOM\ 2007}$.

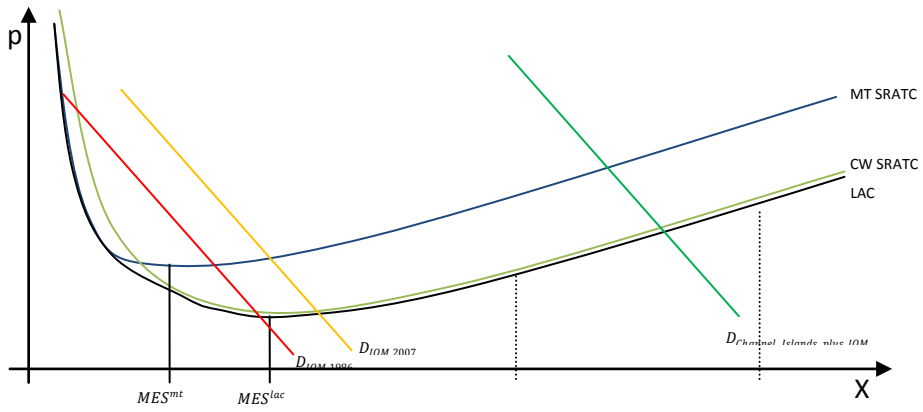

Figure 2.5 – Determinants of Industry Structure

Furthermore, the liberalisation of geographic boundaries, fuelled somewhat by industry privatisation, has caused a two pronged effect on the long-run average cost curve.

Firstly, the long run average costs indicate a technology change which effectively depicts the capability to run a single infrastructure over three Islands. Secondly, a further shift right to $D_{Channel\ Islands\ Plus\ IOM}$ represents the total market size of the Channel Islands and the Isle of Man.

The regulator would have concluded that MT could be encouraged to be more technically efficient supporting the efficient allocation of resources in the Manx economy.

3 Strategy during Contestable Conditions

On 4th May 2006, the regulator announced two new licensees. MT responded by reducing prices, in an effort to implement a 'Limit Pricing' strategy (Besanko, Dranove, Shanley, & Schaefer, 2007).

Appendix B graphs the demand over the period, and evidences stimulation by price decreases since December 2006. Table 1.1 shows profitability for MT rose sharply from 23.4% (2005) to 34.7% (2006). MT was not maximising its profits during its monopoly period.

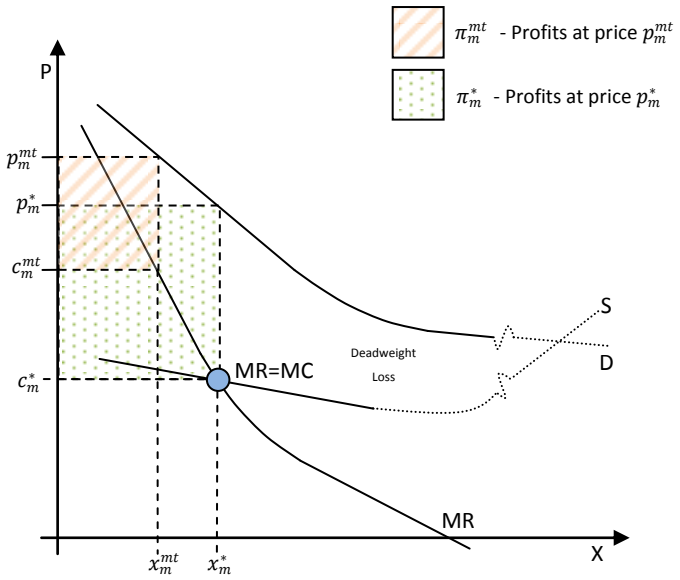

Figure 3.1 - MT Profits Comparison under Monopoly vs. Announced Competition

Figure 3.1 depicts the profits under monopoly conditions, where price was set at p_m^{mt}, against the profit maximising price at p_m^*. Hence efforts to reduce the attractiveness of the market by reducing prices below the profit maximising point conversely made the market more profitable and hence having the opposite effect to the intended limit pricing strategy.

Further strategies employed by MT management include:

- ceased publication of annual reports, creating information imperfections;
- delayed the implementation of number portability[3];
- signalled commitment to invest £25m (3g.co.uk, 2006), although whether the intention was to signal is not clear.

[3] the ability for a consumer to take their number with them when transferring operators. In the Channel Islands, this issue has needed significant regulatory attention (Cable & Wireless plc, 2007).

4 Strategy on Competitor Entry

4.1 Micro-Economic Environment



Figure 4.1 - Competitive Market Exposure using Porter's Five Factor model (Porter, 1979)

Figure 4.1 depicts the market forces on Manx Telecom upon C&Ws successful market entry.

4.1.1 The Current Industry

The industry is characterised by price competition between two competitors in mobile, whereas the fixed network remains temporarily protected by licensing.

4.1.2 Threat of Substitutes

As technologies develop, and the telecommunications and IT worlds collide, technology is becoming less specialist, reducing the most formidable capital cost barrier.

Direct competition from IT technologies in consumer communications has been low due to the limitations of its quality. However, the coming of age of this technology is at the heart of Wire9's value proposition.

4.1.3 Threat of New Entrants

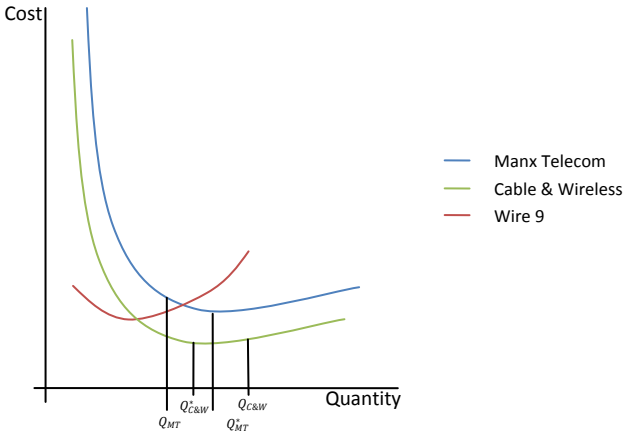

Figure 4.2 - Comparison of Cost Curves (IOM Competitors)

Figure 4.2 depicts a comparison between cost curves of MT, C&W[4] and Wire 9. High fixed costs of traditional telecoms present a formidable barrier to entry, but these costs must be depreciated over periods as long as 25 years. Telecoms firms are highly exposed to potential obsolescence depending on rates of technology advancement. Furthermore, this acts as an incentive to invest in technologies that preserve the economic status quo.

In comparison, Wire9s technology is *disruptive* (Christensen, 2000) – commodity technology takes advantage of the incumbents' disincentives[5] to abandon old technology investments.

There are technical barriers however, which have so far led to a failed entry.

4.1.4 Customer Power

A handful of customers have market power with Manx Telecom due to the size of the revenue streams.

The Isle of Man Government is the largest whose direct spend on telecommunications represents 5% of MT revenues (Company Accounts 2006). This relationship is characterised by very high specific investment on behalf of MT, and also relatively vague contracting. MT is frequently 'held-up' as is frequently asked to provide additional benefit[6].

[4] Lower average costs are assumed as C&W are in competitive markets, whereas Manx Telecom is clearly showing inefficiencies of monopoly. Q(C&W) is estimate higher than its optimal costs, Q(C&W)* as they are exploiting economies of scale by expanding into similar geographies (Cable & Wireless plc 2006), using centralised infrastructure (Cable & Wireless plc 2007).

[5] Disincentives are resource-specific investments and include undepreciated assets, relative experience in sustaining technologies, and customers' equipment.

[6] …bitter personal experience!

4.1.5 Supplier Power

The size of Manx Telecom's parent company, Telefónica, is enough to counter the bargaining power of the largest of network vendors.

One aspect of supplier power not considered in the diagram is the supplier power of the IOM regulator.

Since MT has made significant local investment, there is a significant relationship-specific investment. This asset-specificity cannot easily be removed and employed elsewhere, and hence leaves MT with a high *quasi-rent* associated with business on the Isle of Man (Besanko, Dranove, Shanley, & Schaefer, 2007).

MT are therefore exposed to being held-up by the IOM regulator. In comparison, C&W and JTs expansion into different jurisdictions has reduced their exposure to this vulnerability.

4.2 Pricing in the Competitive Market

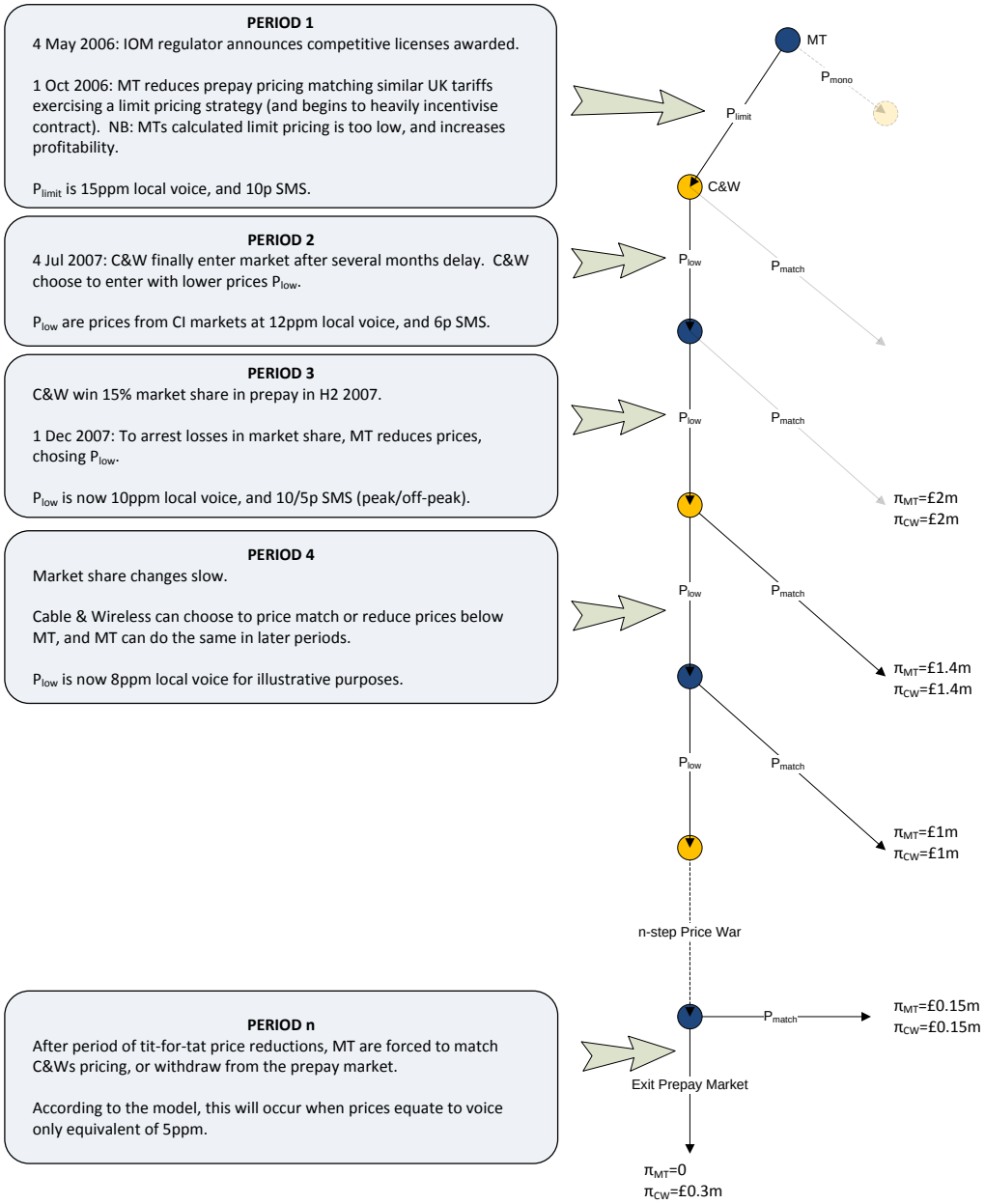

Figure 4.3 - Game Illustration of the Current Market/Price Situation[7]

Figure 4.3 depicts a multi-period game theory illustration of the prepay telephony market during the past eighteen months, with period 1 representing MTs attempt at limit pricing.

[7] The simple model detailed in Appendix C provides the payout information.

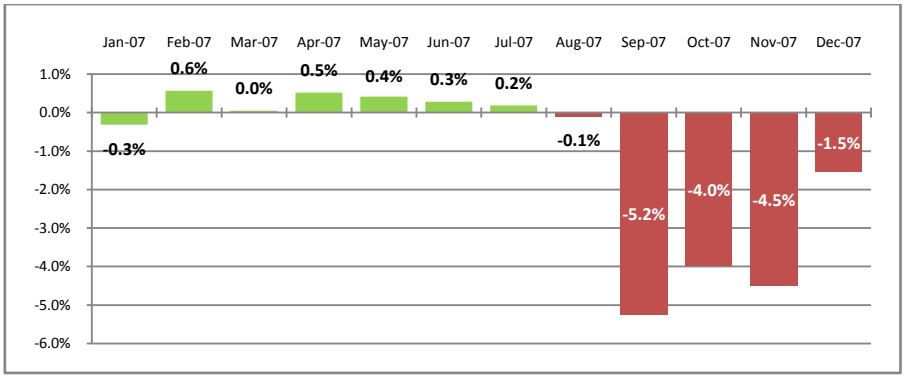

Figure 4.4 - MT 2007 Prepay Net Additions

Figure 4.4 depicts the trends in MTs prepay base over 2007, and shows that MT lost some 16% of the prepay base to C&W[8] in their first six months of operation.

The payouts calculated in Appendix C indicate a classic Prisoners' Dilemma – both MT and C&W would benefit from co-operating and match pricing at 10ppm, giving each an outcome of £1.4m profit. However, both competitors are compelled individually to 'cheat' and reduce prices, ultimately leading to the exit of the firm with the highest underlying costs – here, this is assumed to be MT.

4.3 Signalling

Figure 4.5 depicts an extract from Wire 9's marketing literature. It is apparent that Wire 9 have the intention of matching tariffs.

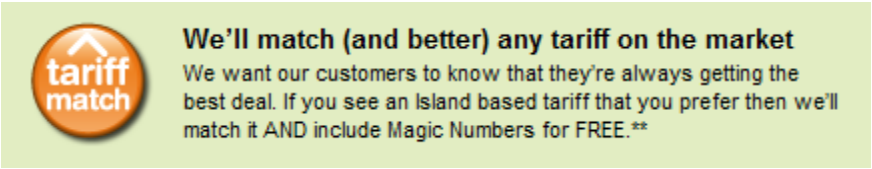

Figure 4.5 – Wire 9 Signalling "Tariff Match" Source: (Wire 9, 2007)

C&W on the other hand are not openly signalling. However, the following quote indicates MT recognise C&Ws actions – they too are signalling a price matching strategy.

"So far, Cable & Wireless have ... copied each of our successful products with little visible success."

SOURCE: MT INTERNAL REPORT TO O2, JANUARY 2008

[8] This graph does not take into account migrations from pre to post paid, so perhaps over-estimates this figure.

4.4 Macro-Market Considerations

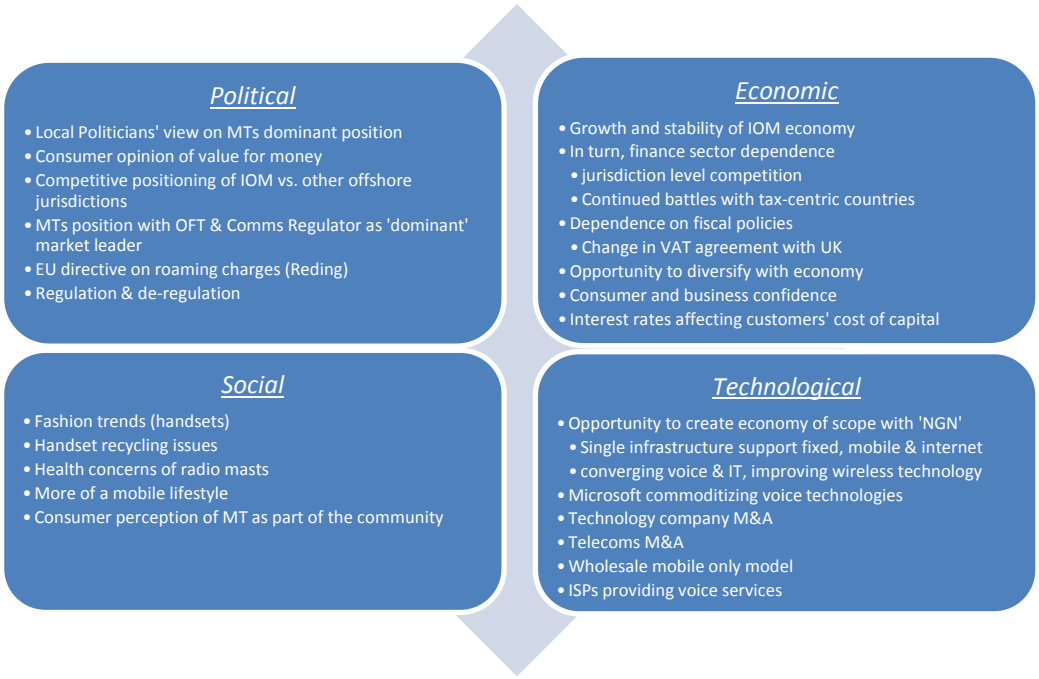

Figure 4.6 - PEST Analysis of MTs Macro Marketing Environment

Figure 4.6 depicts a PEST analysis of Manx Telecom's macro marketing environment – which divides the macro factors into Political, Economic, Social and Technological issues.

4.4.1 Technological Factors

The current and future state of technology ought to influence a telecoms firm's choice of strategy, as pertinent choice of technology by a competitor could totally undermine a traditional telecoms company such as MT. A firm with such potential is Wire 9, but other such as Skype and Joost remain important.

4.4.2 Social Factors

Fashion trends, and the elasticity of handsets drive consumers to sign up to new mobile contracts that they otherwise wouldn't be interested in. Furthermore, there are many news articles on the somewhat questionable health benefits of spending too much time close to a transmitter (British Broadcasting Corporation, 2007).

4.4.3 Political Factors

Historically, management have protected supernormal profits by sustaining the political environment against the backdrop of a parent company always looking for growth. The political environment does not disappear with the introduction of competition, MT are dominant in the market therefore are the top of the regulatory agenda, and rely upon public perception.

4.4.4 Macro Economic Factors

An introduction to the Manx economy can be found in Appendix A. The IOM is a net exporter with the UK as the major market. GDP growth is compared in figure 4.4.1.

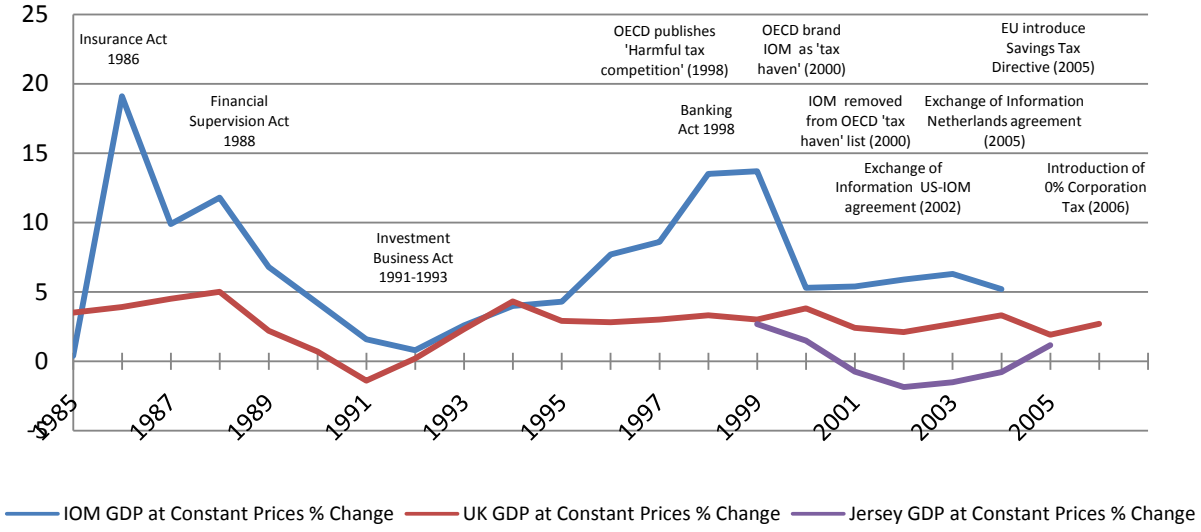

Figure 4.4.1 - Comparison of UK & IOM GDP Growth (Sources: IMF, GOV.IM, OECD and Jersey Treasury)

The IOM follows UK economic trends, which is of no surprise considering that the IOM and UK are in Monetary Union, are a common customs area, and the proportion of IOM exports sold to the UK is high.

Figure 4.4.1 also shows a number of legislative stimuli employed by the IOM Government, and some of the external threats.

The Manx economy is subject to two major structural weaknesses.

4.4.4.1 Finance Sector Dependency

The first weakness is the Island's dependent on its finance sector, which has been under much scrutiny from international bodies such as the European Savings Tax Directive (Corlett, 2005/2006). Table 4.1 shows the composition of Manx GDP.

Sector	% GDP
Finance	35
Professional & Scientific Services	18
Other Services	17
Construction	8
Manufacturing	8
Tourism	6
Public Administration	4
Information & Communication Technology	3

Agriculture & Fisheries	1

Table 4.1 - Sectoral Composition of IOM GDP (Isle of Man Treasury, 2007)

Clearly, if any major political or economic event were to harm the Isle's finance industry, it would have a knock-on effect on Manx Telecom. It is a priority of the Manx Government to diversify the economy (Isle of Man Government, 2004), but it will take several years to show tangible effects.

The finance sector is in turn largely dependent on those countries in which services are exported – primarily the UK (Nnachi & Cooling, 2003), but also on the competitive position of the Isle's economy with respect to other offshore finance centres.

MT is exposed to a single economy. C&W and JT have spread their risks across multiple jurisdictions. Hence, C&W and JT's jurisdictional risks are lower but not entirely offset as both Channel Islands are exposed to the same offshore finance centre risks as the Isle of Man.

4.4.5 Inflation

The second structural weakness is limited land – only 221 square miles. This shortage of land and houses combined with a net import of people equates to inflationary pressure on homes, and a limit to economic expansion.

Inflation therefore moves at a different rate on the Island than it does within the UK, primarily driven by the differing demands on house prices.

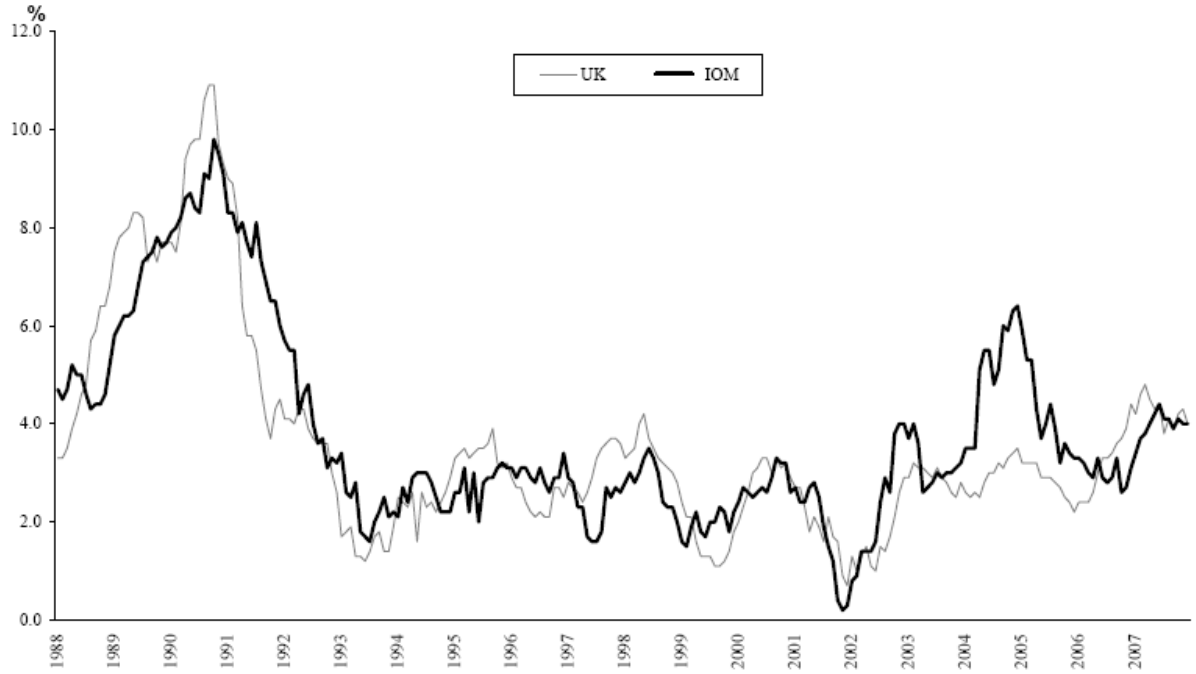

Figure 4.7 - Comparison of UK and IOM Inflation (Source: IOM Treasury, 2008)

4.4.6 Inflationary Effects on Strategic Choice

As discussed earlier, inflation has an effect on pricing. In this case, mis-management of inflationary pressures on pricing structures may have caused strategic failures on the introduction of competition to the telecoms market.

However, inflation also has an impact on the balance sheet. In the Island's case, property prices inflation is perhaps the most significant. Inflation in recent years means that MTs property portfolio may be significantly undervalued. This would have an impact on capital employed, and hence mask key performance measures employed by MTs parent company. Real Return of Capital Employed is perhaps markedly lower than what is reported, and hence exaggerating management performance. However, it is not in the interests of management to re-value the property, and hence incentives are not strictly aligned – there is potential for a principal-agent issue here (McAleese, 2004).

4.4.7 Interest Rates

Interest rates set in the UK have a huge bearing on the Island in that an increasing interest rate would directly reduce the disposable incomes of consumers. However, in developed countries, telephony is inelastic to changes in income levels (Wheatley, 2006).

Interest rates have further strategic impact on investment planning – a high interest rate would raise WACC and present a higher hurdle rate for investment, although MT does not adjust its WACC to interest rates.

Profits after financing in most business would also be affected by interest rates. Again this has little bearing on MT, as it is funded entirely from its own cash position as part of its arrangement with the parent company.

4.4.8 Exchange Rates

Exchange rates have a small bearing on the revenues of MT. Equipment is typically purchase by MT in US currency, hence can be used to affect prices offered to customers.

It does not affect MTs capital decisions as these are made several years in advance without regard for financial markets.

4.4.9 The Island's Fiscal Policy

The main economic control of the Island is its fiscal policy, or more specifically direct taxation, as indirect taxation is effectively managed by an agreement between the UK and the Island.

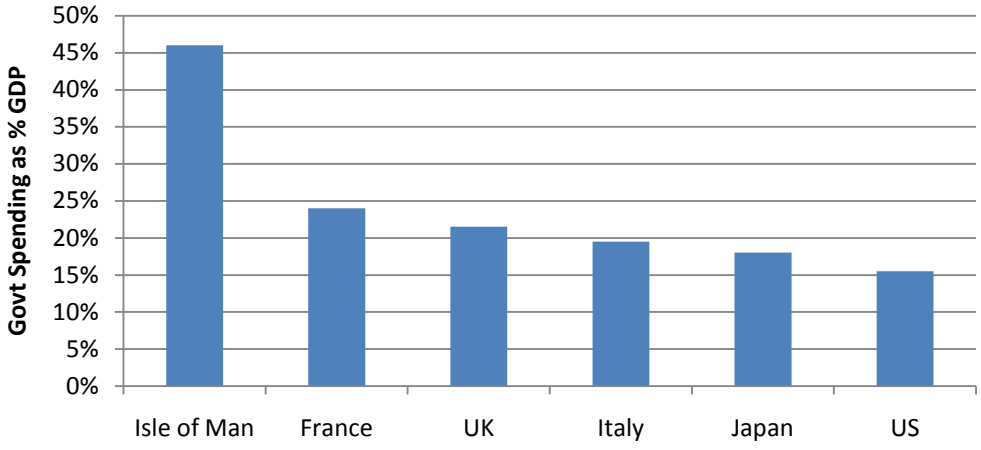

Figure 4.8 – Government Spending as a proportion of 2004 GDP (Source: OECD, Isle of Man Treasury)

The Island's Government spending represents 46% GDP - almost double most developed economies. Government must be considered as a key client on the Island, and represent over 5% of MT revenues.

5 Conclusion

During the period of regulated monopoly, MT earned supernormal profits, and were highly inefficient when contrasted with similar companies. The paper found and disclosed:

- Existence of a pricing inefficiency – two-tier pricing was not amended during several years of inflation;
- Presence of x-inefficiency;
- Evidence of over-investment, which remains today;

Towards conclusion of the initial license, MTs strategy focuses upon holding public and regulatory opinion. Methods employed include the creation of information imperfections, such as 'independent' pricing surveys, and self-published annual reviews. These methods ultimately failed.

In 2006, the regulator saw fit to introduce competition in line with similar sized economies. MTs strategic imperatives changed to entry deterrence and concealing evidence of market profitability. Annual Reviews ceased to be published, technical delays to number portability have been erected and an attempt at limit pricing is evident. The revenue-side inefficiencies of monopoly countered any deterrence affect of the limit pricing policy.

Furthermore, the signalling, intentional or otherwise, of large-scale investment by MT during the contestable period has caused the market to be more attractive to a company with a markedly disruptive cost structure – Wire 9.

Both JT and C&W responded to regulatory changes in their own markets by expanding into similar geographies affording them the benefits of larger economies of scale, lower exposure to any single economies situation, but also reduced exposure to high quasi-rents associated with having a single regulatory relationship.

Furthermore, JT have used the opportunity to implement and gain experience of disruptive technologies into Guernsey.

In July 2007, C&W successfully entered the mobile telephony market and won 15% of the prepaid market within their first six months of operation. A price war now seems likely, although not inevitable. If a price was continues, MT will most likely exit the low margin prepay market in favour of higher margin contract customers. It will not end here however.

The model fall short of disclosing all possible alternatives – the most likely being that the competitors will soon market below-the-line as opposed to above. Still the sentiment of the

outcome is the same, that either both competitors come to a co-operative outcome, or one will ultimately be forced to exit.

The sensible action would be to price match, give up 50% market share, and remain profitable – this seems unlikely though. Competition has already significantly affected MTs profitability - 1st half 2007 (monopoly) net profit margin was at 28.3%, 2nd half 2007 (competitive) at 20.9%.

Although telecoms is generally inelastic to income, MT is exposed to macro-shocks which determine the economic well-being of the Island – particularly those regarding the Island's dependence on the finance sector.

A high degree of property price inflation on the Island, combined with a disincentive to update their valuations on the balance sheet leads discloses a mis-alignment of shareholder/management goals. The potential for a principal-agent problem exists, especially considering that MT is so small compared with the scale of Telefónica, that a share based incentive scheme is not likely to be effective.

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Appendix A - Introduction to the Isle of Man Economy

The Isle of Man is a British Crown Dependency located just an hour's flight from Central London. It is internally self-governing, and has the longest continuous democratic Government at 1,028 years old. Known as Tynwald, the Isle's Government has a long history of forming policy by consensus of elected, independent parliament members.

The British Crown is the Head of State and ultimately responsible for the Isle's good governance, defence and foreign affairs.

The Isle has a special relationship with the UK and EU but is not part of either Union. Protocol 3 of the UK's Accession to the EC places the Island in the same customs area as the UK. This allows free movement of goods within the EU, but not people, capital or services (Department for Constitutional Affairs, 2006). The Isle is also a member of the OECD via the UK, so has access to markets where this is an entry requirement.

The Island has a monetary union and shares indirect taxation policy with the UK. Furthermore, 95% of the Isle's exports are destined for the UK (Nnachi & Cooling, 2003). This leaves the Manx economy absent of any independent exchange or interest rate mechanisms and critically linked to that of the UK.

Figure A.1 depicts the GDP growth of the UK and IOM since 1985, which is the year that the IOM's growth took off (possibly due to the Banking Act 1983). The trend in growth is very similar between the UK and IOM. However, there are various industrial stimuli that have been used by the IOM Government that make the comparison unclear. However, it can clearly be seen that the UK led a slowing in growth in the Island economy in the early 90s, and the IOM following the UK into a boom in the late 90s.

Additional shocks have been documented on the diagram. These can be categorised as either IOM Government legislation designed to stimulate the finance sector, or the wider economic community imposing a means to close loopholes in the global taxation system, harmful or otherwise.

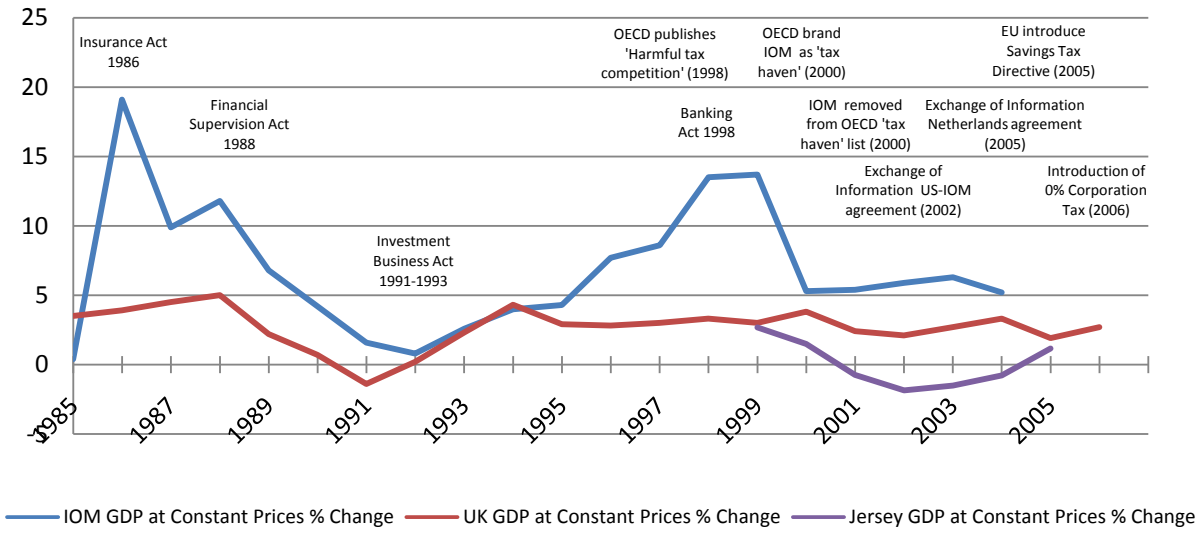


Figure A.1 - Comparison of UK & IOM GDP Growth (Sources: IMF, GOV.IM, OECD and Jersey Treasury)

Although indirect taxation makes up the majority of the Government income, control over indirect taxation policy is in the hands of the UK Government under the Customs & Excise Agreement (Isle of Man Government, 2004). This agreement is renegotiated every ten years, which provides consistent and predictable income for the Manx Government (Corlett, 2005/2006). Hence, the Island's main economic controls are the remaining fiscal levers – direct taxation and Government spending, although the Isle is also required by Law to budget for a surplus.

Direct taxation is low on the Island. There is no corporate tax, capital gains tax, and interest rate is at 10% (lower) or 15% (upper) with mortgage interest relief.

Competitive taxation policy combined with historical political and economic stability, the geographic proximity and economic controls imposed by the UK have attracted a significant finance sector to the Island, and a Standard & Poor's triple-A credit rating.

The Government has a strongly positive reserve position with £370m or 228 times national GDP in reserve funds (Isle of Man Treasury, 2008).

Finance Sector Exposure to Interest Rates

It is assumed that the IOM's financial products are diverse enough to retain investment in their portfolio although investment patterns would change.

Figure A.2 graphs interest rates against the funds base managed from the Island. It can be seen that the increasing rates have a dampening effect on growth, as it affects consumer disposable income in the Island's primary market.

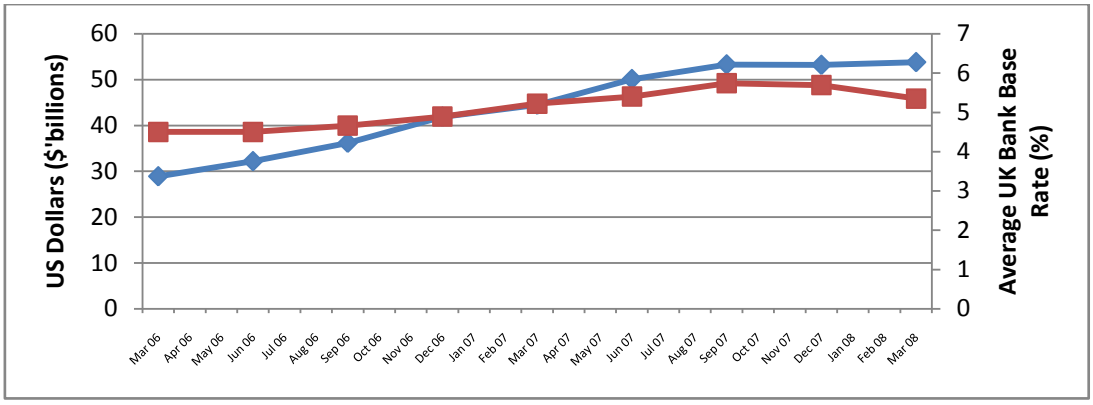


Figure A.2 - IOM Funds under Management vs. UK Base Rate (Sources: IOM FSC and Bank of England)

Expansionary Fiscal Policy

The effects of the Island's expansionary fiscal policy can be determined using the IS-LM model.

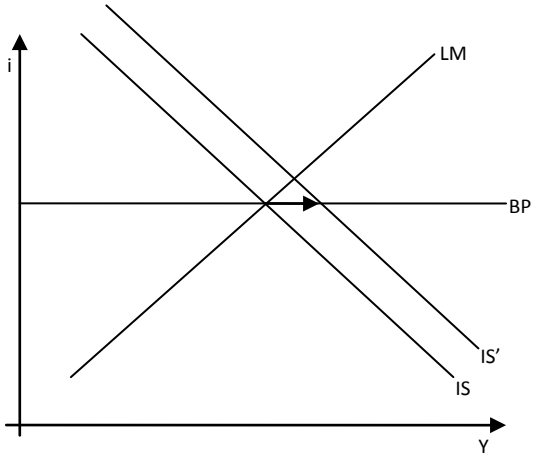


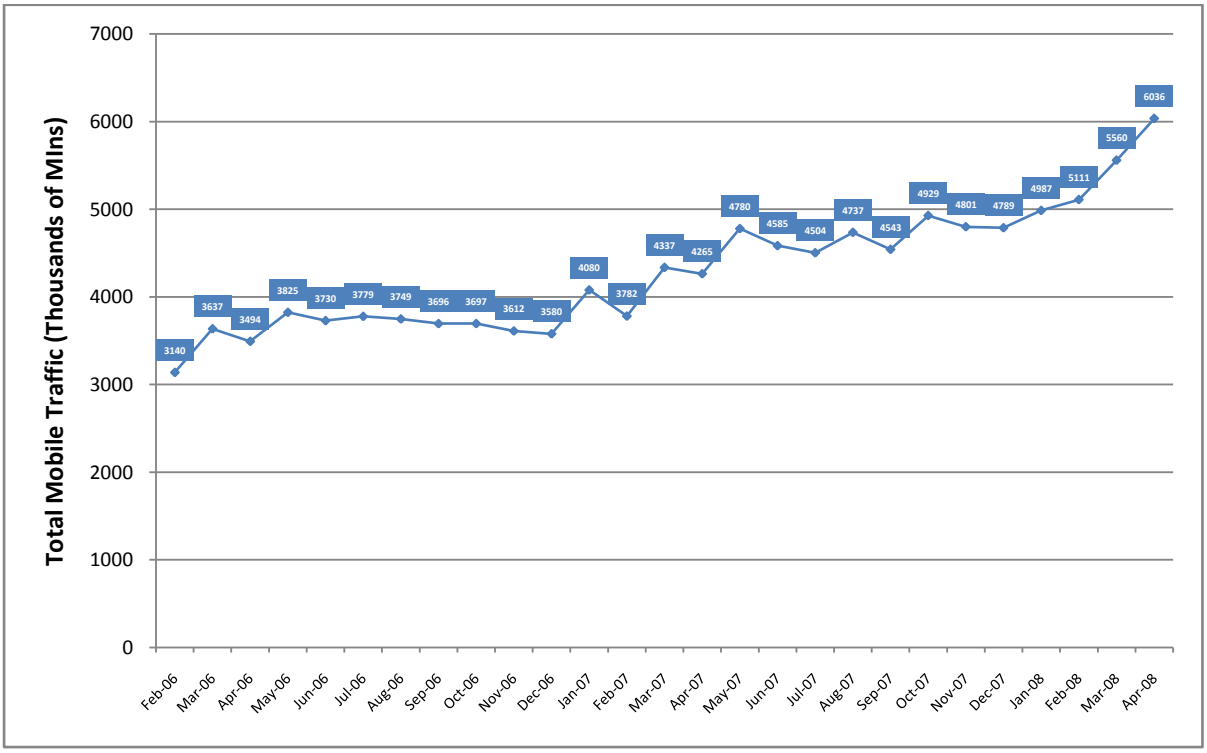
Figure A.3 - Effects of Fiscal Spend in IOM Economy

As the fiscal spend increases (or taxation reduces), aggregate demand and output increase and the IS curve moves to the right to IS'. Interest rates are maintained elsewhere, and hence the relative attraction of the Island is unaffected by the shift in the IS curve. The Island's balance of payments simply improves, as does the equilibrium output.

It could be argued the Island's low taxation rate increases demand for UK currency, Sterling then appreciates and hence the UK feels a negative impact on its balance of payments when either the Isle of Man or Channel Islands reduce taxation.

Hence, in contrast to open economies with their own currency, fiscal policy is extremely effective at raising output in a small open economy with a pegged currency, but partly at the expense of the parent economy. This presents a risk that the UK Chancellor may implement measures of control.

Appendix B – Mobile Traffic Stimulation



Significant drops in pricing occurred in December 2006 and 2007. Demand for minutes has almost doubled over a two year period.

Appendix C – Prepay Revenue Model

Price in pence per minute is input cell

Price (ppm)	0.12	0.1	0.09	0.08	0.07	0.06	0.05	0.04
Avg mins demand	96.7	96.7	96.7	96.7	96.7	96.7	96.7	96.7
Annualised ARPU	£139	£116	£104	£93	£81	£70	£58	£46
Base Size	51800	51800	51800	51800	51800	51800	51800	51800

% Market Share	Revenue							
10%	£721,000	£601,000	£541,000	£481,000	£421,000	£361,000	£300,000	£240,000
40%	£2,884,000	£2,404,000	£2,163,000	£1,923,000	£1,682,000	£1,442,000	£1,202,000	£961,000
50%	£3,605,000	£3,004,000	£2,704,000	£2,404,000	£2,103,000	£1,803,000	£1,502,000	£1,202,000
60%	£4,326,000	£3,605,000	£3,245,000	£2,884,000	£2,524,000	£2,163,000	£1,803,000	£1,442,000
90%	£6,490,000	£5,408,000	£4,867,000	£4,326,000	£3,786,000	£3,245,000	£2,704,000	£2,163,000
100%	£7,211,000	£6,009,000	£5,408,000	£4,807,000	£4,206,000	£3,605,000	£3,004,000	£2,404,000

Revenue Check £5,956,000 83% Market Share Check (vs. est. 15-20% loss)

Costs table hidden, but assumes 5p + 10% is costs from UK (allowing for 'normal' profits)

% Market Share	Supernormal Profits							
10%	£391,000	£271,000	£211,000	£151,000	£91,000	£31,000	-£30,000	-£90,000
40%	£1,562,000	£1,082,000	£841,000	£601,000	£360,000	£120,000	-£120,000	-£361,000
50%	£1,953,000	£1,352,000	£1,052,000	£752,000	£451,000	£151,000	-£150,000	-£450,000
60%	£2,343,000	£1,622,000	£1,262,000	£901,000	£541,000	£180,000	-£180,000	-£541,000
90%	£3,516,000	£2,434,000	£1,893,000	£1,352,000	£812,000	£271,000	-£270,000	-£811,000
100%	£3,906,000	£2,704,000	£2,103,000	£1,502,000	£901,000	£300,000	-£301,000	-£901,000

Secondary effects: Cannibalisation of post-paid revenues (as contract users migrate to pre-paid).

Appendix D – Timeline of Major Events

Date	Act	Market Structure
1986	MT set up as (20 year) license vehicle for BT in the IOM.	Monopoly
2001	MT demerged from BT as part of mmO2 plc	Monopoly
November 2003	MT negotiated next (15 year) period of license beginning 2006. License allows for competition.	Monopoly (although clear threat of introduction of competition)
4 May 2006	Two additional telecoms licenses granted to C&W and Cloud9.	Contestable
May 2006 – June 2007	MT reduces prices, and provide availability of different usage tariffs.	Contestable
June/July 2007	Cloud9 enter and quietly exit market due to technology difficulties.	Contestable
4 July 2007	C&W enter mobile telecoms market. C&W enter with lower pricing, matching their pricing in the Channel Islands.	Duopoly
1 December 2007	MT reduces prices below C&W, to "arrest the loss of pre-paid customers".	Duopoly

Appendix E – Characteristics of MT Costs

The telecommunications industry is governed by very high capital costs – investment in telephone exchanges, network interconnects and copper cabling into every household. Furthermore, operating costs are dominated with those related to looking after these fixed assets. A short run cost curve has been estimated based on Manx Telecom's 2006 accounts, and is displayed in figure E.1.

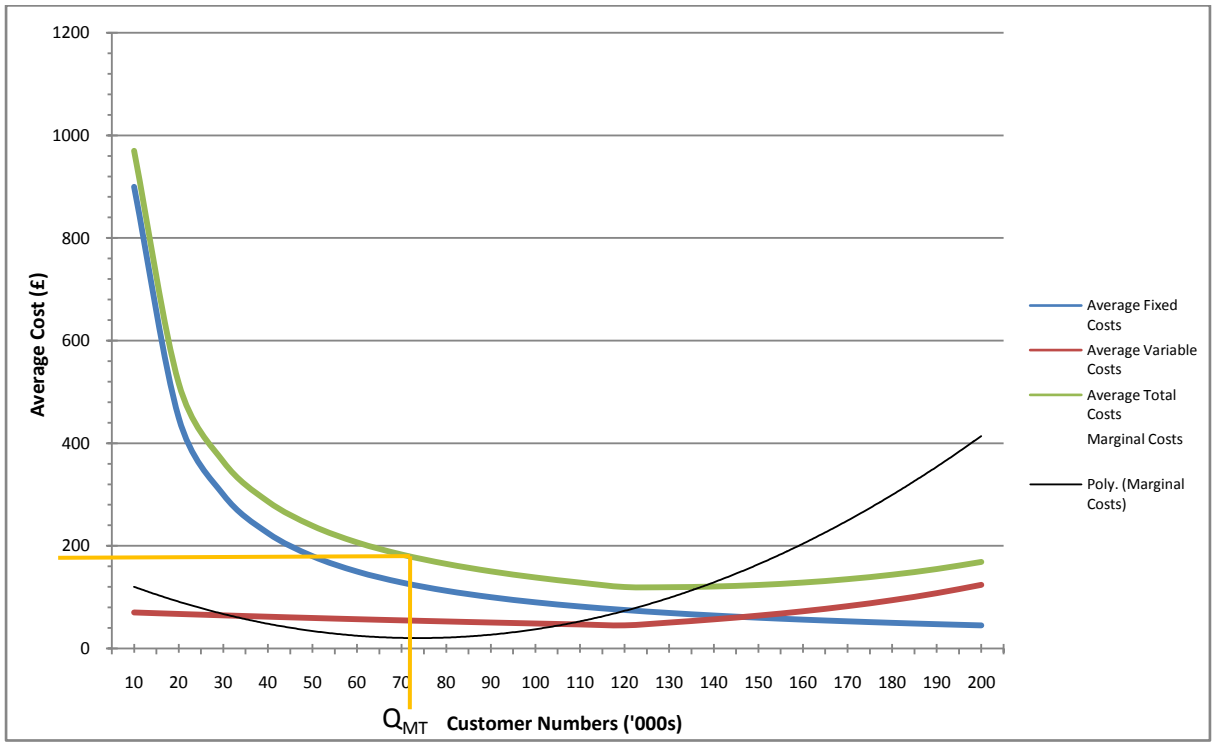


Figure E.1 - Estimate of Manx Telecom's Short Run Cost Curves[9]

Hence, it could be said that MT has very high operational gearing (McLaney & Atrill, 2005). That is, once the fixed costs are covered, a small increase in sales volume leads to a large increase in profit. Conversely, a large proportion of profits are endangered when there are small decreases in volume.

At Manx Telecom, short run economies of scale exist below 140,000 customers, where adding customers reduces the average costs (Begg & Ward, 2007), whereas diseconomies of scale exist above 140,000 customers. Manx Telecom has only 68,000 customers (marked as Q_{MT}) - it is operating in a position where profits are highly vulnerable to changes in customer demand.

[9] This particular graph assumes that Manx Telecom are operating on the Production Possibilities Frontier.