

Competition Authority

Submission on Qualitative Improvements in Taxi Services and Future Regulation of those Services

to

**The Department of the Environment &
Local Government**

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1 INTRODUCTION

On the 21st November 2000 the supply of taxi services in Ireland changed dramatically. Previously, entry to the market was seriously restricted to replacing an existing licence holder or acquiring one of the rare additional licences issued by local authorities. Following the Murphy ruling in *Humphrey et al v. Minister for the Environment et al*, the Minister instituted S.I. 367 of 2000 which provided that any suitably qualified individual may provide taxi services.

While the freeing of entry is extremely welcome and has benefited consumers, more systematic regulatory reform is required if the taxi market is to function efficiently and deliver the maximum benefit to consumers, the taxi industry and the overall economy. The Competition Authority considers it important that regulatory reform should be thorough and effective; otherwise there is a risk that the deregulation of entry to the taxi market, in isolation, could undermine support for regulatory reform more generally. We therefore welcome the opportunity to contribute to the continued reform of taxi market regulation.

The terms of reference set out in the Department of the Environment and Local Government Consultation Paper¹ are as follows:

“The review will encompass –

- (i) consideration of the regulation of taxi services including the standards to be applied to taxi vehicles in the future;
- (ii) the licensing arrangements to be applied to taxi drivers and operators of taxi services;
- (iii) the provision of services at particular times of the day; and
- (iv) how best to secure quality cost effective taxi service which meets a wide range of needs including those of disabled passengers.

The merits of the rationalisation of the current regulatory regime and the roles of various State and Local bodies will also be considered in the review.”

In what follows, the guiding principle is that the rationale for regulation must be the protection of consumers and not, as has frequently been the case in the past, the protection of incumbents. The OECD in its report on regulatory reform in Ireland

¹ Consultation Paper [Ref. RST 20/62].

recognised that policy biases of producer over consumer interests remained in some cases.²

The structure of the remainder of the document is as follows. Section 2 looks at how the liberalisation of entry to the taxi market took place and what has been its effect. Section 3 looks at the current system of regulation. Section 4 looks at the measures required to complete regulatory reform. Section 5 examines the issue of wheelchair accessibility and finally, Section 6 concludes.

2 THE EFFECT OF ENTRY LIBERALISATION

The effects of entry deregulation on the taxi market are difficult to determine precisely, since the size of the industry (in terms of revenues or passenger miles) was not measured precisely either before or after deregulation. Over one year on, the market can hardly be said to have reached a new ‘equilibrium’. That this is so is evident from the rate at which new licences are being issued each month. According to a report commissioned by Dublin City Council and carried out by Goodbody Economic Consultants, since deregulation new licences have been issued at an average rate of 340 per month (December 2001).³ At that time there were in total 6,891 taxis (there are now over 8,000), up from the pre-deregulation figure of approximately 2,720 in 2000.

It would be wrong to infer from this development that actual supply has increased by the same magnitude for a number of reasons. First, prior to deregulation it was virtually universal practice for licence holders to hire out their licence to ‘cosy’ drivers. Thus, any individual taxi was likely to be on the road twenty-four hours a day, seven days a week. The phenomenon of the ‘cosy’ driver is much less prevalent post-deregulation. Many such drivers have now simply acquired a licence of their own and the taxi is used only when they choose to operate. Thus, to the extent that ‘cosy’ drivers have acquired their own licences, the increase in supply to the taxi market is not as large as the rise in the number of licences would indicate. Second, hackney drivers satisfied much of the excess demand that existed prior to deregulation. To the extent that hackney drivers have acquired taxi licences, the increase in supply to the taxi market is not as large as might appear. According to the Goodbody report, prior to deregulation there were approximately 3,920 hackney cabs. The corresponding figure for December 2001 was 3,000.

A much more indicative gauge of the effects of entry deregulation on the taxi market than simple licence numbers would be the actual increase in taxi usage. Accurate statistics on taxi usage do not exist. However, some survey data is presented in the Goodbody report. The study indicates that the cab (taxis and hackneys) penetration rate has remained

² See Regulatory Reform in Ireland, OECD 2001.

³ *Review of the Taxi and Hackney Market, 2001 (Demand and Supply)*, Goodbody Economic Consultants, January 2002.

relatively constant since 1997 at approximately 50%.⁴ However, among cab users, the rate of use has increased with 50% of users taking at least one trip per week compared to 40% in 1997.

Waiting times have also decreased. Of those interviewed for the survey, 48% of those interviewed had only to wait less than five minutes. This compares with a corresponding figure of 23% in 1997. When asked were cabs more easily available at peak times 18% of those surveyed agreed strongly, as compared to 13% in 1997. On the question of whether the taxi service had improved, some 50.5% believed that it had with 43.9% believing that it remained unchanged. Only 5.7% believed that the service had disimproved. Finally, two thirds of those surveyed believed that *deregulation* was a good idea.

Thus, it appears from the Goodbody report that deregulation of entry to the taxi market has improved service levels and general satisfaction among consumers. However, there still exist a number of problems: waiting times at certain times of the day are still long and vehicle quality may have fallen.⁵ For the full benefits of entry deregulation to be realised, further reform of the taxi market and in particular, the manner in which it is regulated, is required.

3 THE CURRENT SYSTEM

The Minister for the Environment and Local Government is empowered by the Road Traffic Act, 1961 (as amended) to make regulations in relation to the control and operation of taxis. The regulation of taxi markets has three dimensions: the regulation of entry; the regulation of fares; and the regulation of quality. These regulations are implemented and enforced by a number of different bodies.

Prior to November 2000 there were two ways of gaining entry to the taxi market. First, someone seeking to enter the taxi market could do so by purchasing a licence from an existing licence holder. On this secondary market, licences often traded for amounts in excess of €100,000. The most notable feature of this system of entry to the market was that there was no increase in supply associated with the new entry. The second way of gaining entry to the market was by acquiring one of the rare new licences issued by the relevant authority. From 1978, when quantitative restrictions on taxi licences were first put in place⁶, to 1995, the relevant authority was the Department of the Environment. In 1995, the responsibility for issuing new licences was transferred to local authorities.⁷ In the Dublin taximeter area between 1978 and 2000, approximately 900 new licences were

⁴ In this case, Goodbody's define the *cab penetration* rate as the percentage of adults having taken a cab in the previous six months.

⁵ See for instance, a report commissioned by the National Taxi Drivers' Union and written by Michael Punch of Trinity College Dublin's Centre for Urban and Regional Studies.

⁶ S.I. 292 of 1978.

⁷ S.I. 136 of 1995.

issued, the bulk of which were issued in the years immediately prior to 2000 (between 1978 and 1991, no new licences were issued).

In November of 2000, S.I. 367 of that year removed all quantitative restrictions on entry so that now any suitably qualified individual may provide taxi services. Entry to the taxi market is now possible subject to a relatively small fee. An ordinary taxi licence will now be issued, to any suitably qualified individual, by the relevant local authority upon payment of €6,350. The corresponding fee for a wheelchair accessible taxi is €127.

Local authorities regulate taxi fares. Fares are controlled by a schedule of maximum fares for hiring, per mile, baggage, unsociable hours etc. Any change in the level of fares is a reserve function of the local authorities, i.e. it must be voted upon by its elected members. Enforcement of fares is undertaken by the Garda Carriage Office and metering by the Legal Metrology Service.

Quality standards of both driver and vehicle are regulated. All taxi drivers must hold a PSV licence issued by the Garda Carriage Office. Vehicles must pass standards relating to roadworthiness, safety, size and seat capacity. Previously, these standards were the responsibility of the Garda Carriage Office and the National Car Testing Service (NCTS), but were transferred to the NCTS only in May 2001.

Finally, local authorities declare taximeter areas and the Garda Commissioner designates taxi ranks after consultation with the relevant local authority.

There are at least two striking features of this system of regulation. The first concerns the number of independent bodies involved in the regulatory process. The second concerns the extent to which local authorities are involved – previously, deciding on taxi numbers and fares, and currently still involved in deciding fares. For instance, seven independent bodies regulate the Dublin taximeter area: four local authorities, the Garda Carriage Office, Legal Metrology Service, and the NCTS. Thus, to effect a change in fare structures in Dublin, for instance, the agreement of four local authorities must be obtained, meters changed by Legal Metrology Service and the new structure enforced by the Garda Carriage office.

4 COMPLETING REGULATORY REFORM

In a report published by the Trinity Policy Institute in 1998⁸, a *re-regulation*, as opposed to a *deregulation*, of the taxi market was advocated. The recommended re-regulation comprised four basic elements: (i) the removal of entry controls; (ii) the retention of fare controls, but a reform in the manner in which they are determined; (iii) the strengthening of quality controls; and (iv) a reform of the overall regulatory process. The report stressed that only a re-regulation of the taxi market that comprised each of the four elements

⁸ Fingleton, J., Evans, J. & Hogan, O., *The Dublin Taxi Market: Re-regulate or Stay Queuing*, Trinity Policy Institute, 1998.

would deliver the full benefits of liberalisation to consumers and the economy in general. The deregulation of entry to taxi markets was an essential and very welcome first step in the process of regulatory reform. However, further regulatory reform is required if the market is to be supplied efficiently and the full benefits of liberalisation to be realised.

4.1 Entry Regulation

There are a number of possible economic rationales for regulating entry. First, imperfect competition⁹ may result in a level of entry above that which would be socially optimal. Second, the opposite result, i.e. a tendency toward insufficient entry may occur when individuals value product diversity.¹⁰ A third reason is that restrictions on entry may be used to correct for market failures other than excess or insufficient entry. The traditional argument here might be that raising return at the margin might alter behaviour in a socially beneficial direction. For instance, with products where some dimension of quality is crucial, for safety reasons for example: by raising the return at the margin, the incentive to cut costs and skimp on the important aspect of quality is reduced.

The first two possible justifications clearly do not apply in the taxi market. Whether the tendency toward excessive or insufficient entry dominates depends on the specifics of supply and demand. In most circumstances it would be doubtful whether a regulator could have enough information to determine which effect dominates. Even where the tendency is purely toward excessive entry, it is again likely that the regulator would lack sufficient information to determine accurately the precise level of entry that would be socially optimal. Only in circumstances where the negative welfare effect of free entry is particularly severe, might the restriction of entry be justified. Such circumstances may arise where there is a particularly large fixed cost of entry. The taxi market is not such a market; indeed the fixed costs of entry to this market are, relatively speaking, very low, even for wheelchair accessible vehicles.

The regulation of entry can generate its own inefficiencies, particularly if incumbents are allowed to capture the system of regulation. Indeed, regulatory capture is the most likely explanation for the quantitative restriction placed on taxis between 1978 and 2000. Regulatory capture is said to have occurred when the regulator's actions tend to reflect the preferences of industry participants, and not those of consumers. In the Dublin taxi market between 1978 and 1998, despite unprecedented levels of economic growth, the number of taxis remained relatively static. The Trinity Policy Institute report is illustrative in this regard:

“At the end of 1997 the [taxi] market was characterised by excess demand, the result of a virtually stagnant number of taxi licences with rapidly growing demand. New licences issued in 1998 are wholly insufficient to meet this demand ... The immediate cause of the problem is that the authorities have failed to issue

⁹ An imperfectly competitive market is one in which firms retain a degree of market power.

¹⁰ For a discussion of these results the reader is directed to Appendix I.

new licences, in a climate of strong opposition from the taxi industry. The fundamental problem is that any system that restricts entry to a market in this way is susceptible to this type of lobbying.”

In other words, a system of entry regulation that imposes quantitative limits on the number of industry participants will be the target of lobbying by incumbents and will be in danger of being captured.

The third rationale for quantitative entry regulation, i.e. that the restriction of entry might alter firm behaviour in a socially beneficial direction, cannot reasonably be applied to taxi markets. The use of entry restrictions for this purpose must be considered in the light of other available alternatives. In general, the restriction of entry as a mechanism for correcting for other market failures is a blunt instrument at best. There are more effective means of incentivising firms. In the context of taxi markets, vehicle quality would be the relevant factor. Proper enforcement of quality and safety standards is a far more effective means of maintaining standards.

Thus, as long argued by the Competition Authority¹¹, there are no convincing economic rationales for placing quantitative restrictions on the number of operators in taxi markets. Accordingly, any attempts to roll back on entry deregulation should be resisted strenuously.

4.2 Fare Regulation

Normally, prices are set freely in the market. In this way, the market can supply peaks and troughs in demand in a flexible and responsive way. However, the taxi market is unusual in that there are at least three compelling reasons to regulate fares. First, there are significant search costs associated with ‘shopping around’ in the taxi market. For instance, in the market for street hires, search costs include the uncertainty of waiting for another taxi, the waiting time, and the possibility that the next is more expensive. In such circumstances monopoly pricing is likely.¹² Second, many vulnerable customers (e.g., tourists and those unfamiliar with the journey) will generally be susceptible to over-charging. Finally, for practical reasons price competition is unlikely to work at ranks where the custom is to take the next taxi in the queue.

The regulation of fares can avoid these problems, but only if properly designed. Otherwise, it will be costly to run and costly to consumers because it will deny them the flexibility of a market response. For instance, if fares are set too low at times of high demand, too few taxi drivers will supply their services relative to what is required and there will be excessively large queues of consumers at ranks. Conversely, if fares are set

¹¹ *Solving Dublin Taxi Problems: Urban-Sharecroppers v Rentseekers*, Competition Authority Discussion Paper, November 1998.

¹² This is in contrast to the hackney market where jobs are initiated by phone contact and consequently search costs are much lower.

too high at times of low demand, too many drivers will supply their services and there will be an overcrowding of taxis at ranks. This would be very inefficient because it would mean that customers were paying too much and taxis were empty a high proportion of the time.

In order to avoid these costs, the reform of fare regulation should incorporate the following features.

- Fares should be regulated solely to ensure that supply meets demand. Ideally, an efficient system of fare regulation should attempt to mimic what would happen in a *normally* functioning market, i.e. one where monopoly pricing does not prevail and where certain groups of consumers are not susceptible to over-charging.
- A fare review process should be established that is both regular and systematic. Fares will need to be re-balanced on a regular basis, increasing them at times of the day or week when customers queue and reducing them when there is overcrowding of taxis at ranks. Accordingly, fare reviews should not be seen simply as an opportunity for lobbying the regulator. Changes in fares, up as well as down, should be based on objective evidence of excess supply or excess demand – and not because of pressure exerted by special interest groups.
- A reliable means of information gathering should be developed to assist the fare review process. In addition to the observation of ranks and *consumer satisfaction* surveys, detailed records of taxi usage should be kept. Meters could be used to assist this process.
- The technical task of setting fares should be free of direct political involvement. This policy has been implemented in the telecommunications sector, the electricity sector and most recently in the aviation sector.

The following features of fare regulation should be retained.

- Only maximum fares should be regulated (this is the situation at present), but the system should clearly allow individual taxi drivers to set fares below the metered level. This measure would ensure that, if regulated fares are set too high, price rivalry for the more competitive ends of the market (e.g., business accounts, call-out business) would bid away excess profits.
- Hackneys should not have their fares regulated. In contrast to the taxi market, hackneys are hired by telephone and mostly by regular users so that search costs are lower and exploitation less likely. For these reasons, price competition is likely to be more effective in the hackney market than in the taxi market. Moreover, the hackneys' freedom to charge whatever they wanted would be restrained by the controls on taxi fares, i.e. if hackneys attempted to charge excessively, they would find themselves losing business to taxis.

Finally, one criticism that has been made of entry deregulation concerns the observation that the length of queues at taxi ranks does not seem to have fallen. As has been pointed out by some commentators, the length of queues at ranks is not a good indicator of the level of service being offered¹³. First, that waiting times have reduced, as it appears they have from the Goodbody report, indicates that the throughput at ranks has increased, i.e. the queues might not have shortened in length, but they are moving faster. Second, the greater availability of taxis may have encouraged more people to join ranks than would have before. The increase from 40% in 1997 to 50% in 2001 among cab users, of those having taken at least one trip per week, appears to support this conclusion.

There may also be a third reason. Many taxi users do not bother to join ranks: they begin their journey home on foot and hope to pick one up on the way. The greater availability of taxis since entry deregulation has made more people comfortable with this kind of consumption behaviour since they are more likely to pick up a taxi much earlier in their journey rather than later as would have occurred before. The implication is that despite there being more taxis available on the roads, many of them are not making it back to the ranks. Should this be the case, it may be appropriate to make a change to the fare structure and introduce an additional charge for picking up at ranks. This would have the effect of incentivising taxi drivers to pick up at ranks. This kind of issue is one that is ideally addressed by an efficient fare review process such as the one outlined above.

4.3 Quality Regulation

Quality standards should be tightened and enforced strictly. Free entry, intense competition and the incentive to cut costs may reduce vehicle quality. Accordingly, standards need to be enforced more strictly to maintain any given level of quality. Examples of such enforcement should include regular maintenance checks, spot checks and meaningful fines for offenders.

The quality standard chosen will always affect the number of operators who enter a market. That is, qualitative standards have quantitative effects. Incumbents might exploit this mechanism as a means of restricting entry, i.e. by setting the quality standards so high as to have the same effect on supply as the historical quantitative restriction. It is important therefore to have objective quality standards set by an independent body, which is impervious to lobbying.

4.4 The Regulatory Process

The current system of taxi regulation is fragmented with several different agencies responsible for regulating different aspects of the market. These include the local authorities, the Legal Metrology Service, the Gardaí, the NCTS, and the Department of the Environment and Local Government. The effective regulation of the market therefore

¹³ Irish Times, 21st June 2001.

requires a high degree of co-ordination and a unity of purpose among these various agencies. A single regulatory body with responsibility for determining maximum fares and quality standards, awarding taxi and hackney licences to suitably qualified individuals, and enforcing the regulations would, if done in a light-handed way, represent a vast improvement.

Although bringing the various aspects of regulation under one body makes the system more rational and efficient, it still leaves the risk of regulatory capture by the industry being regulated. That is, by creating a single body responsible for all aspects of taxi market regulation, special interests within the industry can focus all their lobbying effort at a single target, thus increasing the probability that the regulator will be unduly influenced, and make regulatory decisions that reflect the preferences of the industry and not, as it should, consumers. Avoiding regulatory capture requires changes in both the structure of regulation and its process.

With regard to institutional structure, the system of regulation should be open and transparent. It should combine political accountability for its overall work with independence from the political system in terms of its technical operation. The regulator should be required to present an annual report on the state of the market to appropriate public representatives. With regard to process, all regulatory decisions should be the subject of an open and transparent consultation process. Consultation papers should be published, contributions from the public invited and final decisions published with the rationales behind those decisions included.

Embedding a single taxi and hackney market regulator inside a larger regulator responsible for transport more generally may also help to guard against regulatory capture. In this way, various conflicting transport interests will have to compete for influence over a regulator, making it much less likely that the regulator will succumb to any individual single interest.

The principle of subsidiarity suggests that regulation should be as ‘local’ as possible, i.e. decisions should be taken as close as possible to those most directly concerned, since such decisions are likely to be based on better local information than those taken at a more central level. Accordingly, it may be appropriate that local authorities retain some control over some of the features of taxi market regulation. Specifically, it may be more efficient to allow local authorities have a degree of control over the designation of ranks, the declaration of taximeter areas and possibly also the setting of maximum fares. If this is the case then the local authorities should have clearly defined guidelines and procedures to follow and these should be drawn up at a national level by the central authority responsible for the other aspects of taxi market regulation. Moreover, should a dispute arise over decisions made at local level, the parties involved would then be able to appeal to the central authority. In such circumstances, the local authority would then have to give reasons for its decision and in particular show that it followed the procedures and guidelines as set out by the central authority.

5 ACCESSIBILITY

The last decade has seen a move toward a greater accessibility of the taxi fleet to those with limited mobility and in particular to those using wheelchairs. In November 2000, when entry to the taxi markets was liberalised, the Minister for State at the Department of the Environment and Local Government gave an informal undertaking to ensure that by the end of 2003, measures would be taken to require 100% wheelchair accessibility of the taxi fleet. The Disability Bill, 2001 also proposes measures relating to taxi accessibility.

Few would disagree with the principle that taxis should be as available to and as easily used by disabled people as they are by the public at large. However, requiring 100% wheelchair accessibility of the taxi fleet is an expensive option. Moreover, it is not clear that a 100% accessibility requirement is either necessary or sufficient to achieve the stated objective. In what follows, some of the issues are outlined (for a comprehensive review of the issues surrounding taxi accessibility the reader is directed to *Economic Aspects of Taxi Accessibility*¹⁴).

First, there are additional fixed costs in providing wheelchair accessible vehicles and these additional costs are, to a large extent, sunk, i.e. they are not recoverable by selling on the vehicle. The reason is that there is not a well developed second hand market for the type of wheelchair accessible vehicle required by legislation here at the moment, presumably because of the highly specialised nature of the vehicle. The implication is that the rate of depreciation is substantially greater for the accessible taxi. In a market where fares are not regulated, this extra cost would be reflected in the fare. Thus, a requirement that the taxi fleet is 100% accessible would have to be accompanied by an appropriate rise in fares. The IRU and ECMT¹⁵ estimate that the additional capital costs associated with wheelchair accessibility raise operating costs by 6% to 9%.

As a policy matter, such an increase might, of course, be considered acceptable if it led to a genuine increase in availability of taxis to the disabled. However, a second point is that even if all taxis are wheelchair accessible, drivers will still have little incentive to accept jobs from those most in need of that type of vehicle. The reason is that there are additional costs associated with picking up the disabled. In the absence of any positive incentive to accept this kind of job, simply requiring the entire fleet to be accessible may not benefit the intended group.

A third implication of requiring all vehicles to be wheelchair accessible will be to reduce the equilibrium total number of vehicles in the market. Economic theory indicates that in markets where there is 'free entry', as is the case here at present, the larger is the fixed cost of entry, the smaller will be the number of suppliers that will enter that market. The reason is that when there is free entry, new suppliers will continue to enter the market

¹⁴ *Economic Aspects of Taxi Accessibility*, IRU (International Road Transport Union) & ECMT (European Conference of Ministers of Transport), OECD 2001.

¹⁵ See previous footnote.

until the profit of each of the individual operators is competed away to a minimum. By increasing the amount of the fixed cost, the minimum return required to cover costs increases, i.e. the minimum level of profitability is reached with a smaller number of taxis. This point is analogous to that made in Section 4.2, i.e. qualitative standards have quantitative effects.

An alternative policy to requiring 100% accessibility would be to require (a) that a minimum proportion of vehicles were wheelchair accessible, 15% to 20% for example¹⁶, (b) that the drivers of those vehicles had a financial incentive to pick up those requiring accessible vehicles and (c) that the drivers were adequately compensated for the additional capital expense of having a wheelchair accessible vehicle. Subsidising the purchase of the wheelchair accessible vehicles and offering favourable fares for wheelchair journeys might achieve these objectives. At present, those operating wheelchair accessible vehicles pay less for the taxi licence than those operating regular vehicles. However, it is unlikely that the cost differential associated with the two types of licences is enough to adequately compensate those opting for the wheelchair licence. A system employing redeemable vouchers or swipe technology could be used in creating the favourable fare structure. This would involve direct government subsidy towards those in need of wheelchair accessible taxis, which would give them increased control over the service they use.

6 CONCLUDING REMARKS

It is important at this stage that the regulatory reform process, begun by the liberalising of entry in November 2000, is completed. Vested interests frequently resort to scare mongering tactics to build opposition to reform. For this reason, botched regulatory reform has the potential to undermine public confidence in future reforms in other markets. The deregulation of entry to the taxi markets has brought an improved service to consumers, increased employment in the sector and greater economic welfare more generally. If the reform process is completed as it should be, it could join the ranks of reform in the airline and telecommunications markets as examples of why change is something to welcome and embrace, not to fear and resist.

The completion of the regulatory reform process requires the following steps:

- A systematic fare review process should be developed and implemented;
- Fares should be re-balanced to reduce excess supply and ensure adequate service at all times;

¹⁶ While the precise proportion of wheelchair accessible vehicles that is appropriate will depend on the country in question, support for a figure of around 15% is reported in the IRU & ECMT report (in Finland and the UK).

- Maximum fare controls should be retained and fare competition below these levels should be encouraged;
- Quality standards should be tightened and the threat of enforcement made credible; and
- The structure and process of regulation should be reformed so as to make it efficient, rational and immune to capture.

These steps are necessary to deliver the full benefits to consumers and society generally of the regulatory reform undertaken so far.

APPENDIX I

The Excess and Insufficient Entry Results

In homogeneous product markets with a free entry regime, monopolistic competition will result in a level of entry above that which would be socially optimal. This result, originally due to Chamberlain (1933)¹⁷ and referred to as the ‘excess entry’ result, arises because a marginal entrant’s evaluation of the desirability of entry is greater than society’s. The marginal entrant’s evaluation is equal to potential profit, but society’s evaluation is equal to the potential profit of the marginal firm minus the reduction in social surplus that occurs because of the contraction in output of intra-marginal firms. So, provided there is a business stealing effect, i.e. provided the entry of new firms induces a contraction in output by incumbents, the marginal entrant values its entry more than society does and consequently there is a tendency toward excessive entry. The welfare loss associated with excess entry is related to the size of firms’ fixed set-up costs. Mankiw and Whinston (1986)¹⁸ demonstrate that as the magnitude of the fixed set-up cost tends toward zero, so does the loss in social welfare due to excessive entry.

The opposite result, i.e. a tendency toward insufficient entry may occur when product markets are differentiated. Spence (1976a)¹⁹ and Dixit and Stiglitz (1977)²⁰ show that if individuals value product diversity, a tendency toward insufficient entry may arise because the marginal entrant values its entry less than society does. This occurs because the marginal entrant creates a social surplus that it cannot entirely capture as profit. Whether the tendency toward excessive or insufficient entry dominates depends crucially on the precise supply and demand conditions. Mankiw and Whinston (1986) demonstrate that the welfare loss associated with the net-entry effect goes to zero as the fixed set-up cost goes to zero.

¹⁷ Chamberlain, E. (1933), *The Theory of Monopolistic Competition*, Harvard University Press, Cambridge, Mass.

¹⁸ Mankiw, N.G. & Whinston, M.D. (1986), ‘Free entry and social inefficiency’, *Rand Journal of Economics* **17**, 48-58.

¹⁹ Spence, M. (1976a), ‘Product selection, fixed costs and monopolistic competition’, *Review of Economic Studies* **43**, 217-236.

²⁰ Dixit, A. & Stiglitz, J. (1977), ‘Monopolistic competition and optimal product diversity’, *American Economic Review* **67**, 297-308.