

Instituting Fare Regulation

LOOI Teik Soon and TAN Kim Hong

Abstract

This paper provides a practitioner's perspective of how Singapore established a fare regulation framework. It examines the formulation of the fare cap model and associated measures to allow for exceptional intervention, when necessary, to address concerns with fare affordability and excessive profitability of the operators. Pegging the fare cap formula to macro-economic factors and sharing of productivity gains protect commuters' interest, while at the same time encourage operators to be cost efficient and maximise non-fare revenue. Periodic recalibration of the formula ensures its currency and provides certainty for both the commuters and operators.

Early Years of Fare Regulation

Historically, bus fares were regulated by the government. Whenever there were cost increases, operators would apply to the government to adjust fares to cover their costs.

In 1987, the Public Transport Council (PTC) was set up as an independent body to regulate public transport fares. PTC's role is to safeguard commuters' interest by ensuring adequate public transport services at affordable fares, and at the same time ensure the long term viability of public transport operations. It comprises members from a wide cross-section of the society: union representatives, academia, grassroots leaders, and professionals from the public and private sectors. This facilitated a wide representation of views aimed at making PTC's decisions more acceptable to the public.

Mandating PTC as a public agency with independent decision making power is a unique feature in Singapore's fare regulatory

framework. The underlying assumption is that commercial operators are best placed to optimise services and yields if they bear full farebox revenue risks, as long as the minimum standards for service delivery and universal service obligations continue to be regulated. If revenue risks are to be borne by the government, as in some other cities, PTC's role would become less relevant (Looi and Tan 2007).

Mandating PTC as a public agency with independent decision making power is a unique feature in Singapore's fare regulatory framework.

Price Cap Regulation (1998)

In 1998, PTC adopted the price cap model for the regulation of public transport fares. The fare adjustment formula was "CPI + X", where CPI was the change in the Consumer Price Index over the preceding year and "X"

was set ex-ante for a number of years, taking into consideration inflation rate, wage changes and national productivity gains. "X" was intended to compensate the operators for net cost increase (after considering wages and productivity) beyond inflation.

The price cap model was not meant to allow automatic fare adjustment as it was reckoned that the public would not accept this. As such, fare adjustments (within the cap) were determined and approved by PTC based on operators' cost justifications (Looi and Tan 2007).

In 2002, there was a heated public debate on the approved fare increase because of the poor economic conditions then. The main unhappiness centred on the issue that the fare adjustment formula of "CPI + X" lacked transparency and was not responsive to economic conditions. There was also a perception that the formula favoured the public transport operators as optically, it looked like a cost-plus formula. This led to a review of the fare mechanism in 2004 by the Committee on the Fare Review Mechanism (the Committee)¹.

A New Fare Review Mechanism (2005)

Fare regulation or the exercise of oversight on fare setting by an agency is common in other cities. Singapore is no exception. The price cap model is also not new. It has been used elsewhere, though more commonly adopted in the utility industry rather than in the public transport sector. When designing the regulation, it is crucial to pursue an acceptable approach, with political support and inputs from relevant stakeholders.

The Committee considered various economic models on price regulation. No evidence pointed to a single superior model. It therefore decided to retain the price cap model as it provided incentives for the operators to be cost efficient and it was also the model preferred by various stakeholders which the Committee consulted in the course of the review (Committee on the Fare Review Mechanism 2005).

Establishing a new fare cap formula

For any price cap model, the challenge lies in determining the appropriate price index and the level of productivity extraction. The Committee studied the cost structure of the operators and found that manpower cost was the largest component, constituting about half of their total operating costs. The other half comprised of maintenance, fuel and energy costs, depreciation and other operating expenses. Thus wage changes were captured separately in the price index while the rest of the cost items were accounted for using the Consumer Price Index (CPI). This separation would improve the responsiveness of the fare adjustment formula to CPI and wage changes. The price index used, as shown below, mimics this cost structure:

$$\text{Price Index} = 0.5(\Delta\text{CPI}) + 0.5(\Delta\text{WI})$$

In this formula, ΔCPI is the change in the Consumer Price Index over the preceding year; and ΔWI is the change in the Wage Index, defined as the national average monthly earnings adjusted for any change in the employers' contribution to the government's Central Provident Fund².

In setting the productivity extraction, the Committee had to balance the need to motivate the operators to be productive and allow the commuters to benefit from the productivity gains. If the year-on-year productivity gains were fully extracted, the operators would be discouraged from maximising productivity gains since the greater the productivity gains achieved, the smaller the fare cap would be. It was thus decided that the extraction level would be based on an equal sharing of the operators' past average annual productivity gains (defined as the change in value added per unit of labour input) with the commuters. Between 1997 and 2002, the average productivity gain of the operators was about 0.6%. Hence, the extraction was set at 0.3% and fixed for a period of three years (2005-2007) in the first instance. The new fare adjustment formula was therefore:

$$\text{Fare cap} = \text{Price Index} - 0.3\%$$

In setting the productivity extraction ... had to balance the need to motivate the operators to be productive and allow the commuters to benefit from the productivity gains.

Protecting commuters' interests

The previous practice of relying on cost justification for fare adjustment gave the operators little incentive to reduce cost and improve efficiency. It blunted the price cap mechanism and created confusion on the economic rationale behind the fare regulation regime (Looi and Tan 2007).

The new framework, based on the fare cap formula above, is more deterministic. However PTC could moderate the quantum of fare adjustment under two explicit circumstances:

- When there are adverse economic conditions (in terms of GDP growth and unemployment rate); or
- When there is a significant deterioration in the overall affordability of public transport fares.

To further safeguard commuters' interests, the operators' Return-On-Total-Assets (ROTA), i.e. net profit after tax divided by total assets, would be benchmarked against companies in a similar industry and of comparable risks during the annual fare review. This serves as a reality check on the fare levels approved by PTC.

Two key reasons for not adopting the rate of return model for fare regulation is the difficulty in prescribing an acceptable or allowable rate of return, and the lack of incentives for the operators to contain costs under such a model. As the public transport services are provided by commercial operators, every fare adjustment tends to be accompanied by persistent public calls for the profitability of the operators to be regulated. This is not surprising, especially given the current lack of contestability in the industry. Such calls to rein in the profitability of the operators contradict the price cap model (Looi and Tan 2007). Hence the operators' ROTAs are used to address this feedback, i.e. the ROTA is used as a reality check and PTC will use it to intervene in the fare cap mechanism when there is a compelling reason to do so.

Two key reasons for not adopting the rate of return model for fare regulation is the difficulty in prescribing an acceptable or allowable rate of return, and the lack of incentives for the operators to contain costs under such a model.

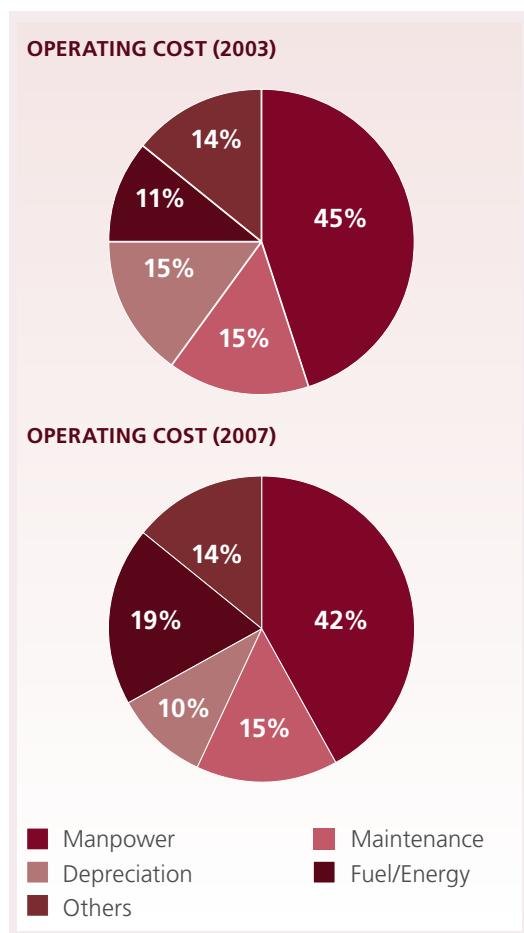
Having a form of reality check on profitability can help to alleviate the public's concern over profiteering by the operators. In any case, the fear of escalated runaway profitability is unfounded as the regular review of the productivity extraction level in the fare cap formula will allow the operators' returns to be shared with commuters (Looi and Tan 2007).

Recalibrating the Fare Cap Formula (2008)

In 2008, PTC reviewed the fare cap formula. It looked into the relative weights for ΔCPI and ΔWI , and the productivity extraction component. As manpower cost had remained a large part of the operators' cost structure (*Figure 1*), the relative weights of 0.5 for both the ΔCPI and ΔWI were retained.

In setting the new productivity extraction component, the same principle of sharing of the productivity gains equally between the operators and commuters was used. Based on the average productivity improvement of 3.0% achieved by the public transport operators in the past five years (2003 - 2007), the extraction level was revised from 0.3% to 1.5%.

Figure 1: Cost structure of the public transport operators



Source: PTC

In view of the impending changes to the public transport industry announced in the 2008 Land Transport Masterplan (LTA 2008), the validity period of the revised formula was also lengthened from three years to five years to provide greater certainty to both the commuters and operators. The revised fare formula, which applies from 2008 to 2012, is now:

$$\text{Fare cap} = 0.5(\Delta\text{CPI}) + 0.5(\Delta\text{WI}) - 1.5\%$$

The determination of the relative weights for ΔCPI and ΔWI in the Price Index and the productivity extraction in the fare cap formula should not be arbitrary. To ensure currency and certainty, they should reflect changes in cost structure and the productivity achieved. A balance has to be struck in fixing the validity period for the formula. Recalibrating it too frequently will increase its responsiveness but at the expense of certainty. It could also undermine the operators' incentives to enhance productivity. If there are plans to introduce greater competition in the market, it is important to provide some certainty to avoid undue risk pricing by operators under a new competition regime. This is even more crucial in Singapore's case as the operators will continue to bear full revenue risk.

Implementing Fare Adjustments (2005 to 2009)

Since 2005, there has been three rounds of fare revision using the $\text{Fare cap} = \text{Price Index} - 0.3\%$ formulation. The average fare increase was 2.4% in 2005, 1.7% in 2006 and 1.1% in 2007. In absolute terms, the increases were small, ranging from one to three cents for users of contactless smart cards and ten cents for cash fares.

For the two revisions in 2005 and 2006, PTC did not intervene to vary or reject the fare adjustment amounts determined by the fare cap formula given the favourable economic conditions and a relatively stable affordability indicator. Moreover the operators' ROTAs were also deemed acceptable then. In 2007, although the fare cap was 1.8%, PTC did not approve any adjustment for rail fares after taking into account that the ROTA of SMRT Corporation

Ltd (the main rail operator) was relatively strong compared to overseas companies of similar risk profile. This rejection brought the overall fare adjustment for public transport down to 1.1%.

The 2007 decision was the first time that PTC has rejected a fare adjustment proposal using ROTA as a reality check. Some sceptics challenged the decision but commuters were more receptive. More importantly, it demonstrated that PTC has executed its prerogative that is consistent with what it has been entrusted to do based on the revised fare review mechanism. In short, the reality check in the mechanism is not an empty threat or promise.

In 2008, the recalibrated formulation of $\text{Fare cap} = \text{Price Index} - 1.5\%$ was used for the first time. Besides the regular revision due to the fare cap formulation, the existing transfer rebate was also increased from 25 cents to 40 cents as part of the transition towards the distance-based throughfare structure³. In this fare adjustment, the operators were given the increase of 3.0% based on the fare cap. However they had to bear the major portion (i.e. 2/3rd share) of the cost for the 15-cent increase in transfer rebate. This resulted in a net fare increase of 0.7% for that year.

In 2009, following the government's announcement of budget initiatives to help the economy tide over the downturn, the operators decided to pass the savings down to the commuters. A temporary fare reduction package of 4.6% was worked out between the operators and PTC although the fare cap was 4.8%. Table 1 summarises the fare cap and fare adjustments over the years.

Table 1: Fare cap and adjustments from 2005 to 2009

Year	2005	2006	2007	2008	2009
Fare cap	2.4%	1.7%	1.8%	3.0%	4.8%
Actual fare adjustment	2.4%	1.7%	1.1%	0.7%	-4.6%

Source: PTC press releases on fare revision 2005-2009

Tracking Fare Affordability

As fare affordability is one of the key factors considered by PTC in deliberating on the operators' applications for fare increase, a robust indicator to track fare affordability is needed. Until the review in 2005, fare affordability had been monitored through the 5-yearly Household Expenditure Survey (HES) conducted by the Department of Statistics (DOS). The indicators used then were:

Fare affordability is a perennial concern. A continued upward spiral in fare will increase the burden on lower income households who are practically captive public transport users. Therefore an indicator is crucial to track the affordability of public transport.

- Average monthly household expenditure on public transport as a percentage of the average monthly household income; and
- Average monthly household expenditure on public transport as a proportion of total household expenditure.

The 5-year time gap for such information was too long given the annual fare revision exercise. Therefore a new public transport fare affordability indicator was developed to allow PTC to track the affordability trend on an annual basis. The new fare affordability

indicator is computed based on the percentage of household income spent on public transport by a representative household that characterises the average public transport users:

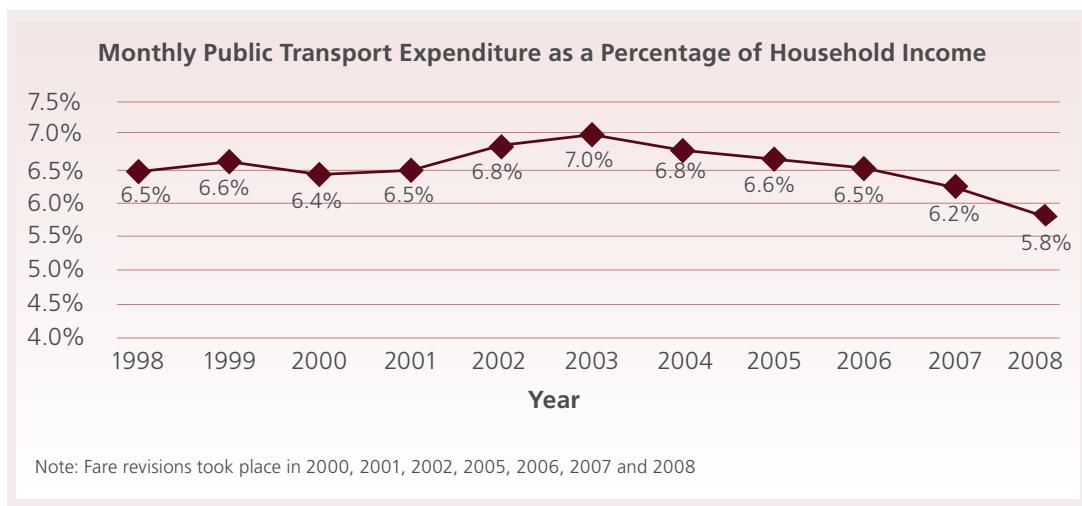
Fare Affordability (%)

$$\text{Fare Affordability (\%)} = \frac{\text{Monthly household expenditure on public transport}}{\text{Monthly household income}} \times 100\%$$

The representative household is constructed using information on the household income, expenditure and travel patterns collected by the HES and other surveys conducted by the Land Transport Authority (LTA). It corresponds to one whose average household income is in the second quintile of the household income distribution. This indicator is used to track year-on-year changes in public transport expenditure and is to be validated every five years based on the latest HES and LTA survey results. Figure 2 shows the fare affordability trend since the implementation of price cap regulation in 1998.

Fare affordability is a perennial concern. A continued upward spiral in fare will increase the burden on lower income households who are practically captive public transport users. Therefore an indicator is crucial to track the affordability of public transport. However as the indicator is pegged to households with income in the second quintile, the affordability

Figure 2: Fare affordability trend



Source: PTC

for those with income in the lowest quintile remains an issue.

Targeted Help for the Lower Income Group

A targeted community led approach is adopted to address concerns with affordability of public transport for the lower income group. Today, needy families can seek financial assistance from the grassroots or local community representatives on a whole range of basic needs such as healthcare, education, housing, jobs, food and transport. Notwithstanding this, targeted help is available for the lower income families to cushion the impact of public transport fare increase.

A public transport fund with contributions from the government and operators was set up in 2006. The aim is to provide transitional relief for the needy to adjust to fare changes. It is part of the government's "many-helping-hands" approach and it is disbursed through community organisations for wider and targeted outreach.

This has proven to be helpful in making the annual fare increases more palatable to the lower income households.

Conclusions

Whatever the fare cap formula, it should be reviewed at regular intervals to recalibrate the price index and productivity extraction. This ensures the formula remains updated by incorporating changes in operating cost structure and "clawing back" the productivity gains for sharing with commuters.

Even with a fare regulatory framework and a deterministic formula in place, it is not easy to deal with the emotive public reactions in the annual fare revision. The existence and experience of PTC placed it in a good position to implement the new fare review mechanism that is not only more transparent to the public, but also allows PTC greater certainty and clarity in achieving its challenging mission.

Notes

1. The Committee on the Fare Review Mechanism was appointed by the Minister for Transport and led by the chairman of the Government Parliamentary Committee for Transport.
2. The Central Provident Fund is a comprehensive social security savings plan in Singapore. Employees and their employers make monthly contributions to the Fund.
3. The current bus and rail fare structures are distance-based but are not fully integrated. A journey that involves transfers incurs transfer fare penalty as commuters have to pay a boarding charge again each time he makes a bus-bus or bus-rail transfer. A transfer rebate is given to partially offset the transfer penalty. The distance-based throughfare structure is an initiative announced in the 2008 Land Transport Masterplan. Under this new fare structure, commuters will pay a single fare based on the distance of his entire journey from origin to destination and the mode of service, regardless of the number of transfers made. It eliminates the existing transfer fare penalty.

References

Committee on the Fare Review Mechanism. 2005. *Report of the Committee on the Fare Review Mechanism*. Singapore. The full report can be viewed online at <http://www.ptc.gov.sg/public&papers.asp>

Land Transport Authority. 2008. *Land Transport Master Plan: A People-Centred Land Transport System*. LTA, Singapore. The full report can be viewed online at <http://www.lta.gov.sg/ltmp/LTMP.html>

Looi, T. S. and Tan, K. H. 2007. Striking a fare deal – Singapore's experience in introducing a fare review mechanism. Paper presented at 11th World Conference on Transport Research, 2007.

Public Transport Council. Press releases on fare revision on PTC website at www.ptc.gov.sg



Looi Teik Soon is the Secretary of the Public Transport Council (PTC). He heads the PTC office and his portfolio covers fare and ticket payment service regulation, penalty fee regime, licensing of bus services and regulating quality of services. He has in-depth knowledge of Singapore's public transport policies, regulations and licensing regime. He also has experience in public communications, road and rail planning and design, road operations and management. A civil engineer with an MBA, Mr Looi also holds a Masters in Public Management from the Lee Kuan Yew School of Public Policy, National University of Singapore.



Tan Kim Hong is a Deputy Director of the Policy Division in the Land Transport Authority. He has more than 10 years of experience in land transport policy formulation. He currently leads a team in formulating and implementing policies to reform the public transport industry in Singapore, in particular, the distance-based throughfare structure announced in the 2008 Land Transport Masterplan. Mr Tan is also a key person in providing technical advice to the Public Transport Council on fare and ticket payment service regulations.