

Forecasting LCD TV Based on Past Product Cycles



Thoughts on the LCD TV market for
TV 3.0—The Future of TV at Display Week
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Historical trends reveal the forces of nature at work in the LCD TV market

As LCD TV consumes more of the global LCD capacity...

LCD TV becomes more like the global LCD industry.

AMLCD prices fall 21% a year on an area basis...

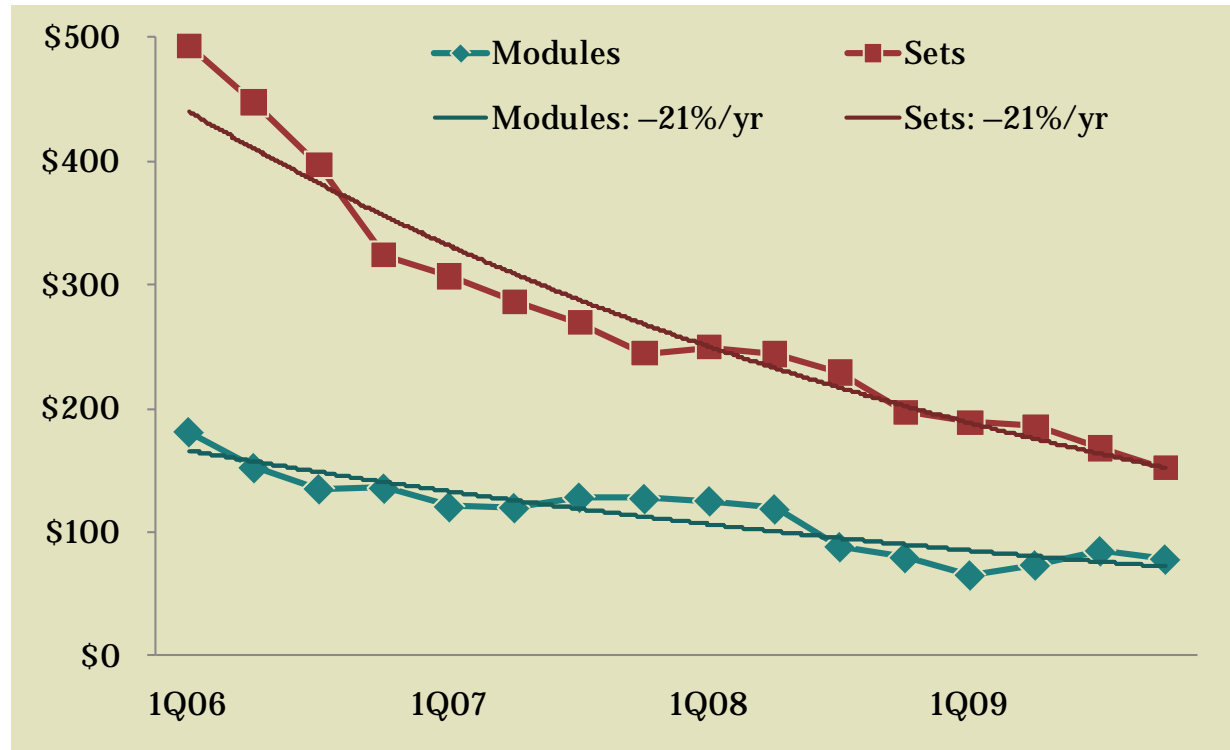
So LCD TV prices fall 21% a year on an area basis.

That is a price half-life of three years.

As panel production moves to China, commodity pressures will remain as strong, at least.

The TV business has become like the PC business: needy for new value propositions every three years or so...

ASP per Square-foot of Display Area, TV Sets and Modules



The global price of LCD TV sets tracks the average price of LCD

Source: DisplaySearch, BizWitz analysis

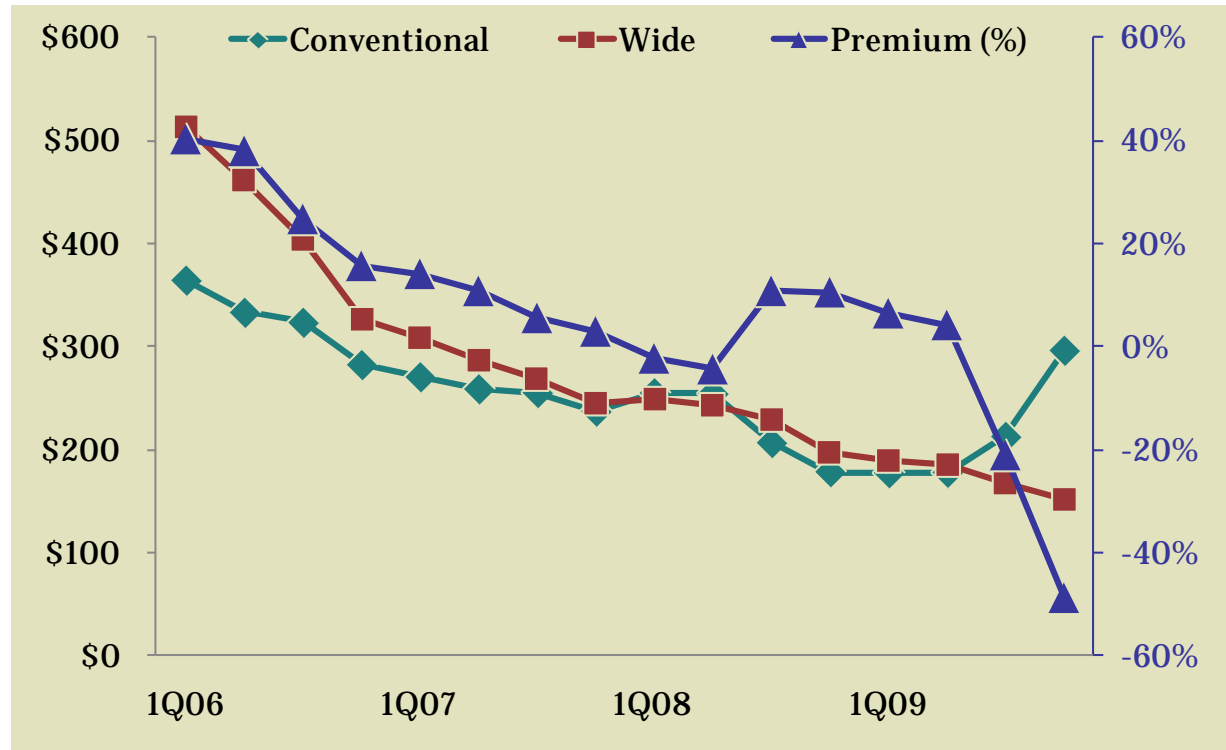
The shift to Wide panels illustrates commodity pressures at work

The price premium for wide-format LCD TV sets declined to zero over three-years from 2005 to 2007.

After a period of confusion, we see conventional VGA-type LCD TV sets priced above HD sets because most are smaller screens.

Such dynamics are associated with capitulation in the past.

ASP/ft² Premium for Wide-format LCD TV Sets



The feature premium declines until it becomes commoditized

Source: DisplaySearch, BizWitz analysis

The shift to quad frame-rates illustrates rapid premium decay that presages 3D

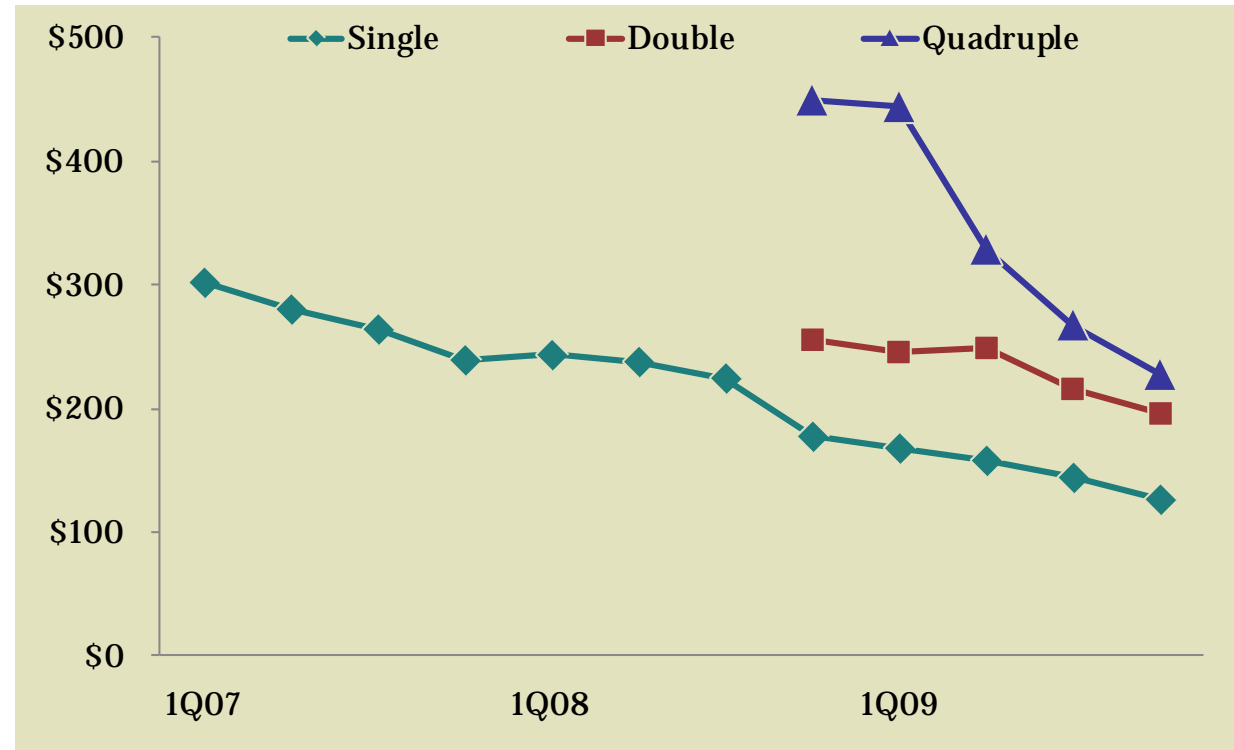
We see double-rate (120 Hz) sets retaining a premium because most 42" and larger sets offer this feature.

We see quad-rate (240 Hz) sets losing their price power over double-rate sets.

Consumers seem less willing to pay premiums for features they cannot see (easily).

So, while faster frame rates support 3D, they may not support prices.

ASP/ft² Premium for Faster Frame Rates



The feature premium declines until it becomes commoditized

Source: DisplaySearch, BizWitz analysis

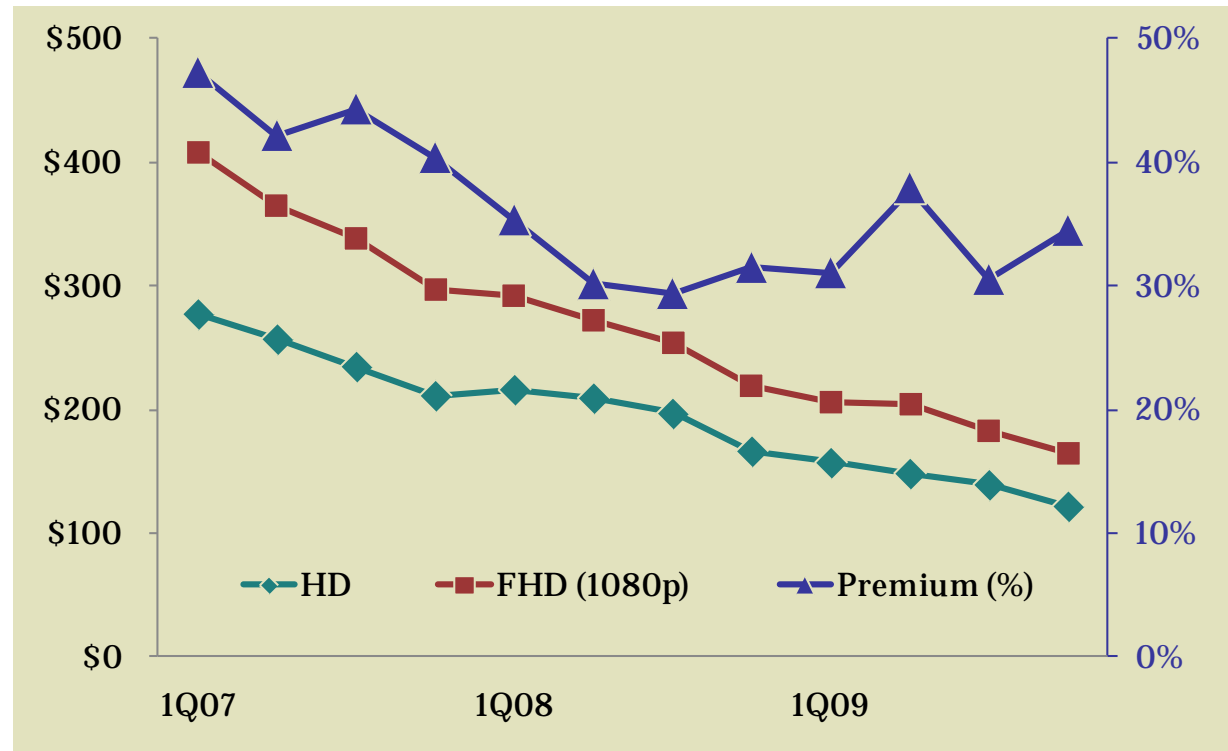
The shift to full-HD appears to be a sustainable value proposition

The fact that most 42" and larger LCD TV sets are 1080p skews the results.

Nevertheless, panel makers can see the value, just as consumers can...

which suggests that more pixels means more premiums.

ASP/ft² Premium for Full-HD (1080p) Sets



The feature premium remains viable if it can remain distinguished

Source: DisplaySearch, BizWitz analysis

The three-year cycle suggests future features: more pixels and 3D without glasses

2004

Wide—
16:10 and 16:9
aspect ratios start
replacing 4:3

2007

1080p—
Full-HD starts
replacing HD
(e.g. 1366 x 768)

2010

3D (I)—
The conversion to
3D with glasses
begins

2013

QHD—
Higher LCD pixel
counts may start
to appear

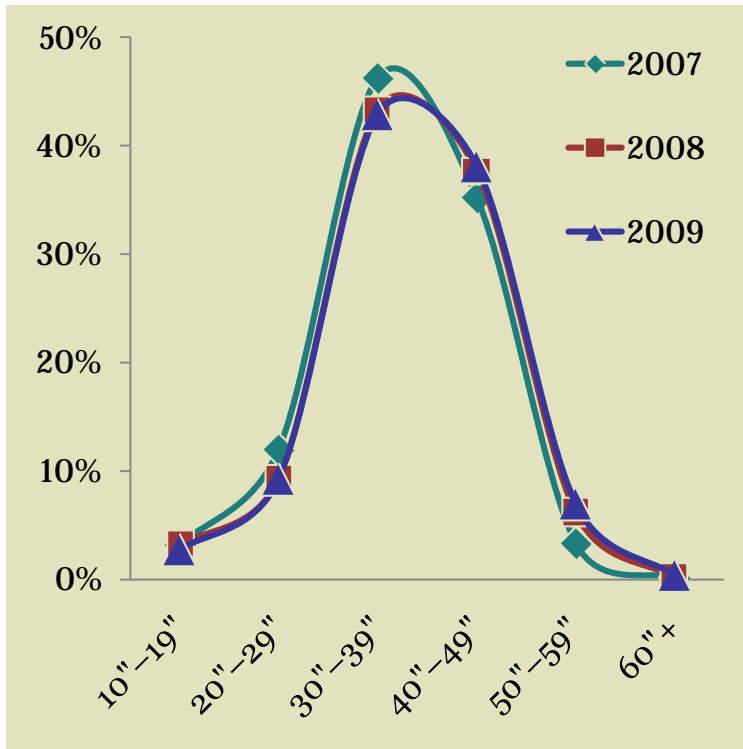
2016

3D (II)—
The conversion to
auto- 3D may
begin

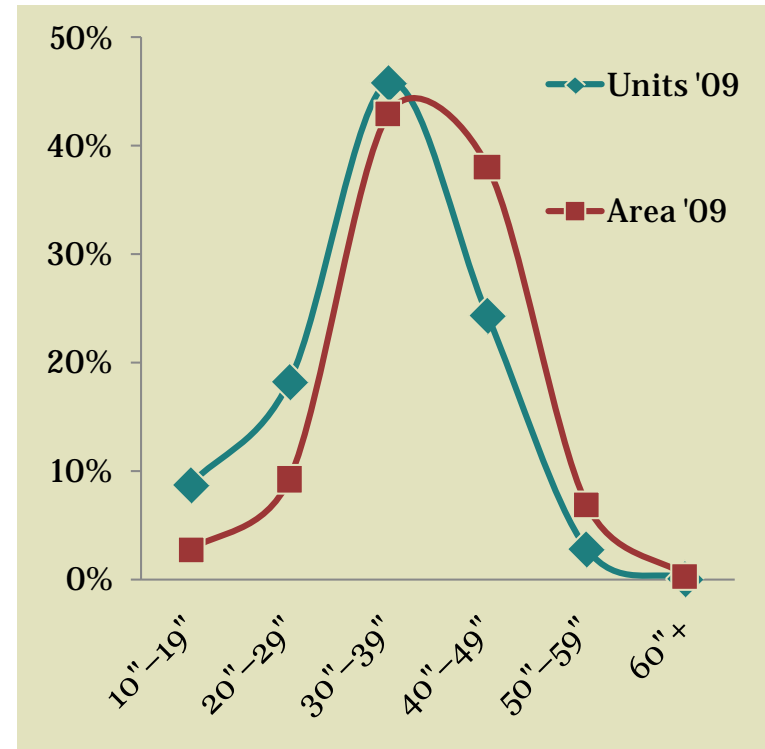
- We have seen major feature sets introduced every three holiday seasons.
- Product leaders enjoy price premiums; followers enjoy far less. New features become commodities over three years.
- Premiums for 1080p persist for sets smaller than 42" but full-HD is standard for larger LCD TV sets.
- LCD producers have driven new formats before and quad-HD seems attractive.
- Internet TV could support more pixels and more pixels would enable auto-stereoscopic TV sets.

Appendix: the area share of 42" sets sustains the price premium of 1080p sets

Area Share by LCD Set Size, 2007–09



Unit and Area Share by Size in 2009



32–37" sets remain at the peak in terms of units while 40–42" sets have more influence on area metrics

Source: DisplaySearch, BizWitz analysis

Appendix: the pace of LCD TV screen size slows over time as commoditization continues

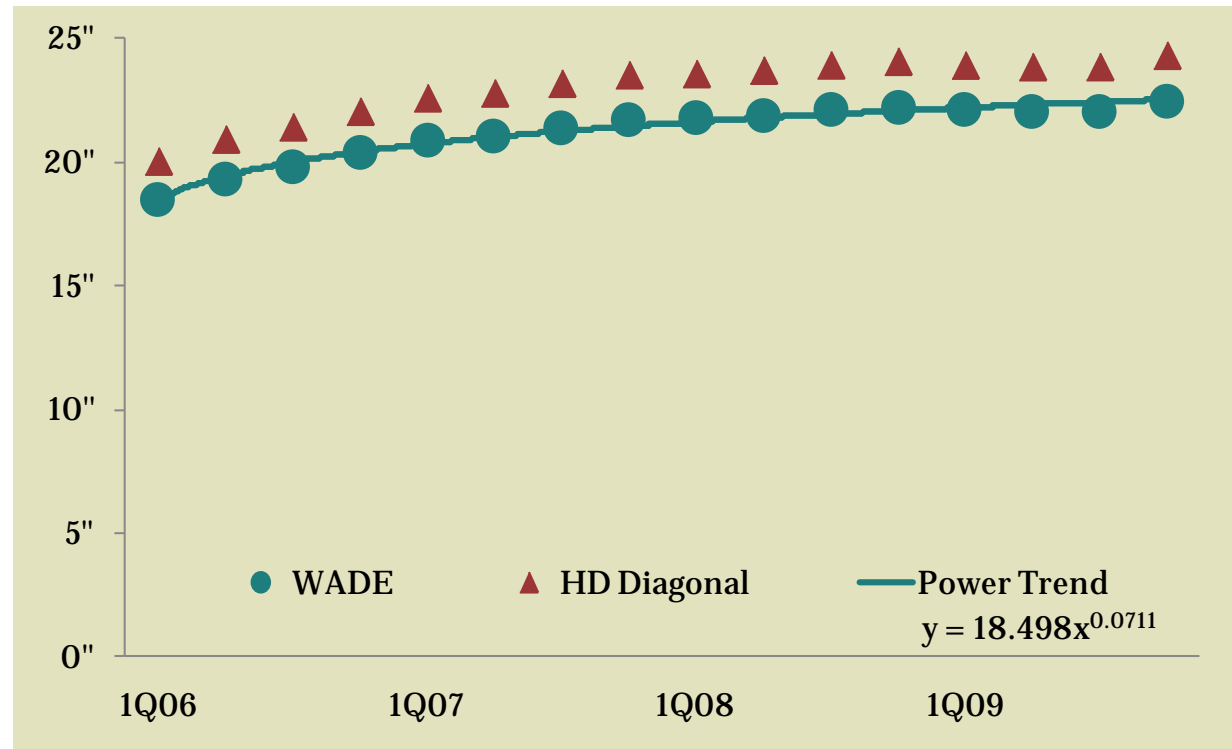
The weighted-average display edge is a format-neutral measure of screen size.

We saw the average screen size increase more quickly in the past than we see today.

Based on history, we expect the average LCD TV size will increase only 4% from Q4'09 to Q4'12.

Selling millions more sets in poorer countries will require more attractive price points.

LCD TV Size Development: Slowing Growth



The weighted-average display edge increases along a power trend line

Source: DisplaySearch, BizWitz analysis