Everyone knows that reputation matters when it comes to venture capital firms. But are limited partners making a mistake when they reflexively cast their lot with the industry’s bold-faced names?

"It amazes me to see certain funds raising money, and I look at their portfolio and wonder how they’re doing it," said Rodney Altman, senior partner at CMEA Capital. "Sometimes there is great branding and great charisma, and LPs are seduced by that."

Altman spoke Tuesday during a panel at the Dow Jones Private Equity Analyst Conference in New York where three VCs and one LP discussed the state of the venture industry.

VC partnerships are facing a difficult investment landscape marked by strained liquidity and poor returns. That makes it especially important, Altman said, for LPs to do better due diligence to keep from backing a fund that is more hype than results.

"Venture capital is like the Wizard of Oz," he said. "We think of the big people, but behind the curtain there is a little man."

Altman, whose firm raised a $400 million fund in early 2008, said too many firms are still driving on the fumes produced by the last tech boom, and LPs aren’t taking a close enough look at whether their more recent performance actually justifies continued investment - a problem exacerbated by the time lag between initial investment and eventual return.

"LPs should be looking not at what happened 10 years ago, but what’s happened more recently," he said. "Money seems to accrue to those with the best branding and the best personality, and not to those with the best returns."

But firms and fund managers may have a sterling reputation and an iconic name for a good reason, say some LPs - because they deserve it.

"We do firmly believe there is a deal flow, a quality of entrepreneur, a quality of investment staff," that is part of the package with most well-regarded firms, said Mel Williams, a general partner with TrueBridge Capital Partners, a fund of funds.

In other words, experience and reputation matter - especially since, according to Williams, one of the structural problems in the industry is the relative lack of barriers to entry for new firms.

"It’s possible for a firm that has performed well historically to have hiccups," he said. "But it’s more difficult for a newly established firm to consistently perform at a very high level relative to its peers."

Rick Kimball, founding partner of Technology Crossover Ventures, said he tends toward the view that the big names do deserve their laurels. "Brand, and I define that term very broadly, matters. Experience matters. Deal flow matters," said Kimball, whose firm raised a massive $3 billion fund in 2007. "But [LPs] have to do more than just check a checkbox on who is in the top quartile and who is not. Things change, people change."

As to the state of the venture industry, the panel's consensus was that industry had generally become overinflated and the downsizing occurring now is necessary and probably for the better.

"You just don’t need as much capital in tech companies today," said John Malloy, a partner with BlueRun Ventures, which in April closed on just under $250 million for its fourth fund, shy of its original target. "Starting an Internet company today, you can do it for one-quarter to one-fifth of what it took years ago."

While that may be true for early-stage tech companies, the view looks a little different for later-stage firms whose investments require more capital.