SHANGHAI—China announced details of a long-awaited property tax in two of its largest urban centers, but the move intended to crack down on speculation and curb rising prices that are fueling public anger was relatively mild and analysts said it would have only a limited impact on investment.

The trial tax, the closest thing yet to the style of tax levied annually on residential property in countries like the U.S., will be applied differently in Chongqing and Shanghai, apparently to see which one works best, before being rolled out across the country.

The tax comes after the country's cabinet on Wednesday raised the minimum down payment on second-home purchases to 60% from 50%, and imposed limits on home purchases as part of efforts to cool the overheated real-estate sector and rein in inflation.

"The tax, by itself, is not very harsh," said Remy Chan, managing director of CBD Commercial Investment Management, a 3 billion yuan ($456 billion) private-equity property fund in Shanghai. "But together with the new limits on home purchases and higher down payment for second homes, it shows the government is determined to rein in speculation."

The tax, which comes into effect Friday, "can guide residents toward more rational housing consumption" and "promote social equality," the Ministry of Finance said Thursday in a statement issued jointly with the Ministry of Housing and Urban-Rural Development and the State Administration of Taxation.

"Levying property tax on residential housing can help reasonably adjust income allocation and promote social equality," the statement added. It will be expanded to other cities "when the time is ripe" it said, without giving a timetable.

Late last month, Premier Wen Jiabao said the property-cooling measures announced so far hadn't been implemented well enough and prices had yet to meet his expectations. Property prices rose 0.3% in December from the previous month, and 6.4% from a year earlier. Property prices slowed for the eight months to December on an annualized basis.

Chongqing Mayor Huang Qifan said the city would levy a real-estate tax on villas owned by individuals—usually luxury, stand-alone homes—and on newly purchased high-end homes at three rates: 0.5%, 1%, and 1.2%, depending on market transaction prices.

Three to five years after a purchase, the tax may be based on the appraised value of the property, he said. In addition, the city will levy a tax on second homes newly bought by non-Chongqing residents who don't own companies or aren't employed by any company in the city, a move that apparently targets speculators.

Separately, the Shanghai government said it would levy a temporary 0.6% real-estate tax on homes and may cut the rate to 0.4% for properties whose transaction prices are below certain—unspecified—levels.

A statement by Shanghai's housing department said the tax would apply to second homes newly bought by Shanghai-resident families or to first homes newly bought by nonresident families.

"It's a mild plan overall, and the primary impact will be psychological rather than economic," said Michael Klibaner, head of research at Jones Lang LaSalle China,."We finally have some clarity. It's a surprise that the tax will be in effect tomorrow, but the tax rate came in line or slightly lower than the recent rumors," Mr. Klibaner said. He said it seemed the aim was to support end-user demand, but it likely will have a limited impact on investment demand, as the tax is lower than the investment yield of about 2% in Shanghai. The progressive tax in Chongqing and flat tax in Shanghaitaxes show that the government wants to experiment before rolling out a real-estate tax to other cities, he said.

One of the intentions of the tax is to provide a recurring source of income for local governments to reduce their reliance on income from land sales, which encourages high prices.

Both cities said the tax revenue would be used to support public-housing construction. However, Mr. Huang, the Chongqing mayor, said the trial tax "carries more symbolic significance" in reforming people's consumption habits and promoting better income allocation, and may not generate much fiscal revenue in the near term.

He estimated that the tax could bring in around 150 million yuan of fiscal revenue this year, only a fraction of the 100 billion yuan that the city needs to invest in public housing construction over the next three years.

He also played down public expectations about the short-term impact of the tax, saying it can only curb speculation and property prices "to some extent".

"Maintaining a good local property-market order isn't something that can be achieved overnight. Rather, it's a complicated project," he said. "Nobody believes that the real-estate tax can hit the Achilles' heel" immediately by pushing down property prices, he said.

Analysts have said that if the tax doesn't push down housing prices, it will lead to even more public resentment. Some also raise the possibility of more rampant speculation in cities that have yet to be included in the trial program.

The government currently charges a 1.2% annual tax on 70%-90% of the value of commercial properties. The commercial real-estate tax is largely based on the cost of developing properties, excluding the cost of the land, industry observers have said.

China introduced a series of measures last year to rein in property-price rises, including limiting home purchases, raising down-payment requirements and twice raising interest rates. Analysts say a real-estate tax could help stabilize the market.