MHRI Brief July 28, 2017

Is replacement demand for construction investment feasible under the condition of labor shortages?

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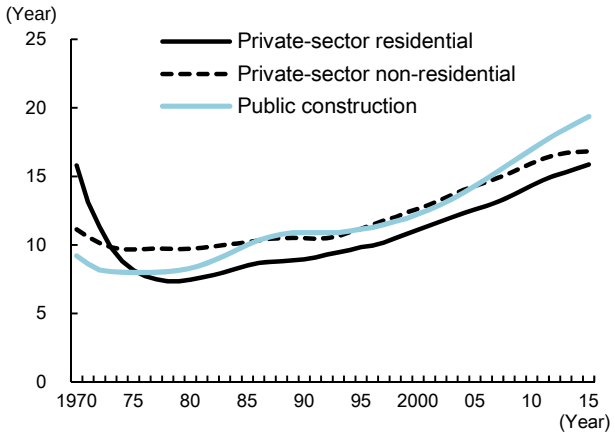
While Japanese construction investments trended lower after a peak in the mid-1990s, it started rising again after bottoming out around 2012. Public investments firmed on rebuilding and revitalization demand as well as disaster prevention and reduction measures after the Great East Japan Earthquake, and private-sector construction investments recovered along with improvements in domestic and overseas economies following the global crisis (triggered by the Lehman collapse). Currently, some observers are even projecting a construction boom amid acceleration of redevelopment projects linked to the Tokyo Olympics in 2020.

Furthermore, potential construction demand should be expanding even if focus is narrowed to just investments in maintaining and replacing construction stock. This outlook takes into account manifestation of aging in recent years with a steady upward trend in public construction stock as seen in segment estimates of construction stock age (**Chart 1**). It is assumed that decline in public investments as part of efforts to improve fiscal condition in the late 1990s delayed facility upgrades. Construction stock age also continues to rise at a moderate pace in the private sector. Especially, residential stock has been aging in recent years. This trend seems to stem from the fact that housing investment decreased since 2000, when population growth peaked, after increasing (reduction of aging) on stronger home demand through the early 1990s.

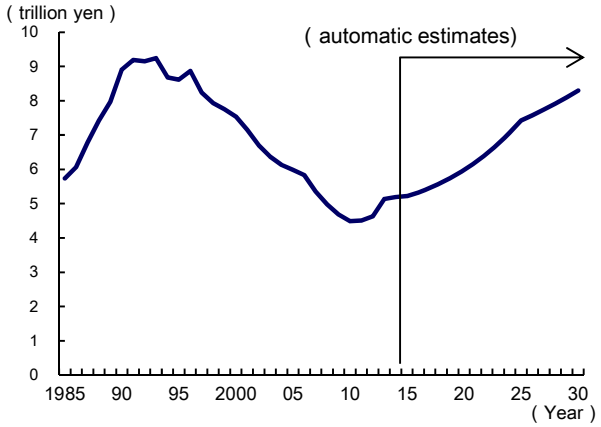
Large potential replacement demand exists given steady aging of construction stock, mainly in the public sector. Construction investments could rise substantially if this demand is realized. We estimate construction demand through 2030 assuming progress in scrap & build of construction stock that stops aging trend by 2025 (in other words, upturn in stock age stops in 2025 and aging is constant thereafter). The results show an increase in construction investment to the level from the late 1990s (**Chart 2**). Average annual growth in construction investments during 2015-2030 works out to +3.1% in this scenario, the same pace seen in 2010-2015.

[Chart 1: Construction Stock Age by Segment Figure]



Source: Made by MHRI based on the Cabinet Office's "*National Wealth Survey*" and "*System of National Accounts*" and RIETI's "*JIP Database*"

[Chart2: Outlook for Real Construction Investment]



Note: Assumes that vintage becomes a constant value in 2025

Source: Made by MHRI based on the Cabinet Office's "*National Wealth Survey*" and "*System of National Accounts*" and RIETI's "*JIP Database*"

In the meantime, construction industry worker is trending lower and labor shortages are serious. The Bank of Japan's Tankan Survey results show rapid advances in shortages for construction industry labor assessment DI from 2012 and shortage in the survey on June 2017 was the highest level since 1992. Going forward, further labor shortages are inevitable, and the related impact is a concern.

Chart 3 presents estimates of future worker using cohort analysis (a method for determining the change rate from past population trends and conducting a future forecast based on this rate) in a base scenario and a labor recruitment scenario (the former assumes continuation of worker composition change rates in 2010-2015 and the latter assumes that in 2005-2010). Construction industry worker declines through 2030 in both cases, but the base scenario indicates a drop to about 2.68mn workers (down 40% from the 2015 level). Labor productivity (real construction investment value/construction industry worker volume) must significantly exceed the past all-time high in the case of early realization of replacement demand from **Chart 2** according to estimates of labor productivity to achieve construction investments in the case where worker volume changes following the base scenario (**Chart 4**). The results show that it is still essential for the construction industry to realize labor productivity on par with the all-time high even with an assumption of zero growth in construction investments.

As explained above, severe constrains on labor supply are likely to make it difficult to achieve early realization of potential replacement demand for construction investments. Private-sector companies are already accelerating efforts to obtain workers and improve productivity. In addition, policy assistance, such as promoting ICT usage, should also be needed as further support to these efforts, and thereby help, even modestly, in recruiting replacement demand for construction stock. Additionally, more aggressive public investment will pressure private-sector business by bolstering labor supply constraints in the construction industry. So,

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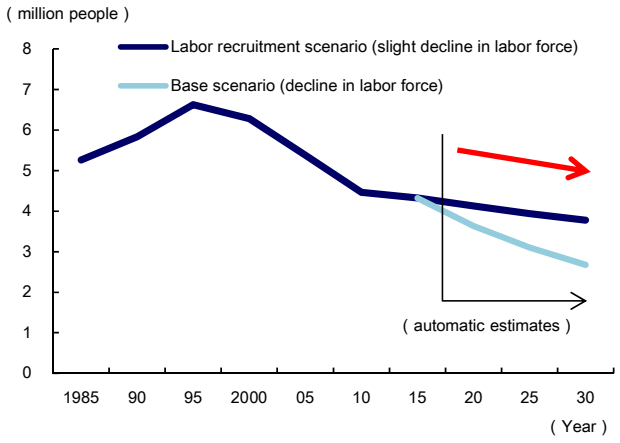
*Refer to the following report for more details on the content of this article: Kentaro Arita and Takayuki Miyajima, "Is Replacement Demand for Construction Investment Feasible under the Condition of Labor Shortages? – Need to Improve Productivity and Secure Workers" (Mizuho Research Institute's Mizuho Report, July 7, 2017).

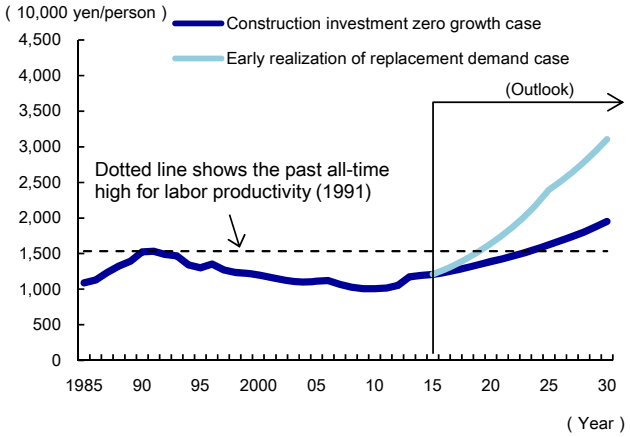
authorities should place more emphasis than in the past on selection of truly necessary public investments, in light of concerns about fiscal burden. Consideration should be given to the point that prioritizing construction investments will become inevitable.

[Chart 3: Construction Industry Worker Outlook]



Note: Regarding the labor participation rate and employment rate in the construction industry, the labor recruitment scenario and the base scenario assume continuation of change in 2010-15 and 2005-10 respectively.
Source: Made by MHRI based on the Ministry of Internal Affairs and Communications' *"Population Census,"* National Institute of Population and Social Security Research's *"Future Population Estimates,"* etc.

[Chart 4: Labor Productivity Outlook]



Note: 1. Labor productivity = Real construction investment/construction industry worker volume
2. Construction investment in the early realization of replacement investment case from Chart 2
3. Worker volume from the base scenario in Chart 3.
Source: Made by MHRI based on Cabinet Office's "*System of National Accounts*," the Ministry of Internal Affairs and Communications' "*Population Census*," National Institute of Population and Social Security Research's "*Future Population Estimates*", etc.