

Abstract

[Objectives] In response to the increased pharmaceutical prices, pharmaceutical price control has currently achieved interests of policy makers worldwide. This study investigates the effects of pharmaceutical price regulation on demand for anti-infective products in Japan where a nation-wide universal National Health Insurance Plan (NHI) has been adopted more than 50 years for the most transactions of medical products and services. The government surveys data on the “wholesale prices” of every pharmaceutical transaction and updates the “official prices” for the NHI purpose to be equated toward the wholesale prices. This promotes price competition among suppliers to lower the wholesale price to be used for transactions to hospitals and pharmacies. These institutional settings of price regulations and underlying price competition had established long-term trend of the declined prices. This would provide lessons how to constrain pharmaceutical prices in countries including Korea and Taiwan which have adopted similar institutional settings.

[Methods and Data] This study investigates two empirical questions. First is how the listed “official price,” market “wholesale price” and “price difference ratio” defined as the ratio of the official price to wholesale price, “*Yakkasa Hiritsu*” in Japanese) of an individual product are determined. Second, we estimate elasticity of demand with respect to the official price, wholesale price, and the price difference ratio relying on a theoretical framework of Hausman et.al.(1994) and Ellison et.al.(1997). We analyze anti-infective products data in the 1990-2001 period when their demand had declined sharply with tight price containment. Product family is classified by profiles including “ingredient”, “trade name” “form”, “strength” , “unit sales volume”, “corporation”, “co-marketing”, “co-promotion”, “access to generic product”. We use detailed transaction data in Metropolitan area (Tokyo, Chiba, Kanagawa whose demand constitutes a quarter of Japan) provided by a wholesaler, we construct seventy some anti-infective/antibiotics products we estimate two empirical questions (1) How the official-wholesale price ratio is related to product specific characteristics? (2) How demand for drugs is determined by the same characteristics and the official price and wholesale price? Data is constructed using original transaction data provided by a wholesaler. A potential endogeneity problem between transaction volume and price related variables are handled by using (i) the lagged price related variables, or (ii) price related variables of the same products except for “strength”.

[Results and Limits] The official-wholesale price difference ratio is found to play a significant role compared with the official price and wholesale price separately. We also find reasonable demand elasticity with respect to the “price ratio” along with the official price and wholesale price. Product characteristics such as “co-marketed/co-promoted products,” “higher strength products,” and “volume package” affect demand. The price difference ratio, which once exceeded 30 percent of the official prices in the 1980s, had declined significantly in the 1990s due to the “success” of the price regulation. This has changed demand determination in late 1990s. This study shows the need for further study for the period after the large price difference ratio has disappeared and a study for analyzing its impact on R&D.