Economic Studies at BROOKINGS

Life Sciences Start-Ups Losing Steam as Job Creators, Impacting Rest of Economy, New Brookings Paper Finds

Sector's Decline in Start-ups Higher than the Rest of Economy; Device Sector Struggling, Dragging Down Rest of Industry's Dynamic Economic Impact

The life sciences industry—generally thought to be a major contributor to America's innovation engine—has in fact suffered a steep decline in entrepreneurship and job creation, according to a new paper by Brookings Nonresident Senior Fellow Robert Litan and Ennsyte Economics' Ian Hathaway released today. Because this sector, and in particular its start-ups, has historically been a driver of innovation in human health care and an outsized driver of new job creation economy-wide, the decline in entrepreneurship and therefore job creation is a troubling trend, the authors warn.

In a follow-up to an earlier paper that highlights the decline of entrepreneurship and business dynamism across the entire private sector, Litan and Hathaway find that the life sciences industry experienced a relative 23 percent decline in startups and subsequent job creation over the two decade period of 1990 to 2011—higher than the 15 percent decline across the economy as a whole. New and young firms are the primary source of new job creation in the economy, and the life sciences sector has traditionally outperformed the total private sector on this metric. Net job creation comes from new firms, as opposed to "small businesses" per se: those start-ups that have been in existence less than 6 years are particularly high-growth, creating a lot of jobs. Life sciences firms—and each of their subgroups (drugs and pharmaceuticals; medical devices and equipment; and research, testing, and medical laboratories) —have traditionally been even better at this than firms across the board, they note.

However, as the authors demonstrate, there is significant variation across three key life sciences industries, although all were hit particularly hard in the Great Recession. The medical devices and equipment sector saw a steady and persistent decline in entrepreneurship and net job creation, with firm formations down more than 50 percent over the period studied—and those firms that were born created fewer jobs. The devices segment represented about one out of every two life science startups in 1990, but fell to one in three two decades later—a remarkable decline that was both steep and fell from was a large base, dragging the rest of the sector down overall.

On the other hand, the drugs and pharmaceuticals sector has been particularly dynamic, the authors find, with over 50 percent growth by 2011 thanks to steadily increasing firm formation. Further, while the other groups (devices and labs) saw new firm formation rates fall during the 21-year period, drugs and pharmaceuticals increased by one-tenth of a percentage point—although a small increase "any increase at all may indicate a highly entrepreneurial sector," they write. The level of new research, labs, and medical testing firms grew 38 percent between 1990 and 2007, but was also hit hard by the Great Recession. Growth contracted after 2008, and by 2011 growth was just 4 percent higher than in 1990.

Overall, the recession slammed all parts of the sector with the four years between 2007 and 2011 accounting for the entire drop in startup rates over that cover the two-decade period, they find. However, the decline in new firm formations in new medical device and equipment firms in particular appears to stretch beyond the cyclical effects of the Great Recession. Litan and Hathaway suggest several regulatory and policy changes that may be influencing the medical device industry in particular, including new insurance reimbursement models, regulatory restrictions, greater competition, and venture funding scarcity.

The impact of this decline in number of new firms holds implications for the economy as a whole. The decline in net job creation rate of life sciences startups overall appears to be about the same as for the rest of the economy, but despite the overall decline, the life sciences sector demonstrated a higher net job creation rate among startups relative to the rest of the private sector. In fact, life sciences startups were key drivers of job creation in the sector during the period of 1990 to 2011, whereas the effect of job creation and destruction among medium and mature firms mostly canceled each other out.

The emergence of new firms was also important for creating new jobs in the industry and within the sector. The authors found that net job creation in drugs and pharmaceuticals expanded by an average of 17 percent annually among during this period, compared to just 7 percent for the private sector as a whole.

"New and surviving young firms play an outsized role in net job creation in the U.S. economy. This is especially true for the life sciences sector, where the forces of job creation are great enough to offset the substantial job destruction of early-stage failures. A variety of factors may have contributed to these developments—some specific to life sciences. For example, the innovation-by-outsourcing model of research and development activities by large pharmaceutical companies may be a contributing factor to increased entrepreneurship in that segment. But they also can't explain the entire decline in business dynamism and entrepreneurship, which has occurred in a wide variety of sectors throughout the U.S. economy—even in other high-tech segments. While the specific cause of this decline in dynamism and entrepreneurship is still unknown, it is clear that the life sciences sector has not been immune," they conclude.

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