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Stable Farm Count Masks Turnover

The U.S. farm count has been relatively stable in recent decades. The net decline in farm numbers totaled 185,000—or 6 percent—between the 1974 and 2002 Censuses. The small net change, however, masks substantial turnover in farms. About 40 percent of U.S. farms exit the farm sector (that is, go out of business) between agricultural censuses, which are taken every 5 years. Entrance rates are similar and also fairly high, between 31 and 37 percent, partially offsetting exits. ERS researchers examined trends in exit rates using data from the 1997 Census of Agriculture Longitudinal File.

In creating the longitudinal file, USDA's National Agricultural Statistics Service merged data for individual farms from several censuses. The longitudinal file follows individual farm businesses associated with farmland, rather than operators. Thus, when an adult child takes over from a retiring operator, the farm is classified as a survivor rather than as an exit. Nevertheless, life-cycle changes can



Ken Hammond, USDA

trigger farm exits. In a common pattern, farm operators become elderly, stop farming, and rent or sell their farmland to others who incorporate the farmland into their operations. The original farm business no longer exists.

Exit rates vary substantially by farm size (measured by annual sales) and by the age of the farmer. Exit rates decline as farm size increases, but 25-30 percent of the largest farms—those with sales of \$250,000 or more—still exit between censuses. The exit rate hits bottom for farms with operators 45 years old, then increases, and peaks at more than 40 percent for

farms with an operator at least 65 years old. Additional factors (besides the operator's age and farm size) may influence a farm's likelihood of exit, most notably the operator's prior farming experience.

Annualized U.S. farm exit rates (not accounting for offsetting farm entry) are about 9-10 percent per year. These rates are comparable to exit rates for Canadian farms, after adjusting exit rates for differences in the size distribution of farms in the two countries. Also, the U.S. farm exit rates are within 1 percentage point of those for all U.S. small nonfarm businesses with no employees. In general, small businesses have a high exit rate, and most farms are small businesses. *W*

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For more information . . .

Structural and Financial Characteristics of U.S. Farms: 2004 Family Farm Report, edited by David E. Banker and James M. MacDonald, AIB-797, USDA, Economic Research Service, March 2005, available at: www.ers.usda.gov/publications/aib797/

The Questions and Answers Page of the ERS Farm Structure Briefing Room, available at: www.ers.usda.gov/briefing/farmstructure/questions/farmnumbers.htm

Net exit rate masks high turnover in farms



Note: The base for calculating exit and entrance rates is the number of farms at the beginning of the period. Part of the increase in the entrance rate between 1992 and 1997 occurred because of a minor change in the farm definition. After adjusting for the definition change, the net exit rate was 4.6 percent, still less than the earlier declines.

Source: USDA, Economic Research Service analysis of the 1997 Census of Agriculture Longitudinal File.

Patenting and Licensing Are Tools for Technology Transfer

Public sector research generates scientific and technical knowledge that is needed to meet important challenges in today's agriculture. When researchers at USDA's Agricultural Research Service (ARS) make a discovery with commercial potential, ARS finds ways to transfer the technology to the private sector. Sometimes ARS makes its discoveries available in scientific journals for firms to use. Other times, ARS obtains patents on the technology and licenses use of the patent to one or more companies.

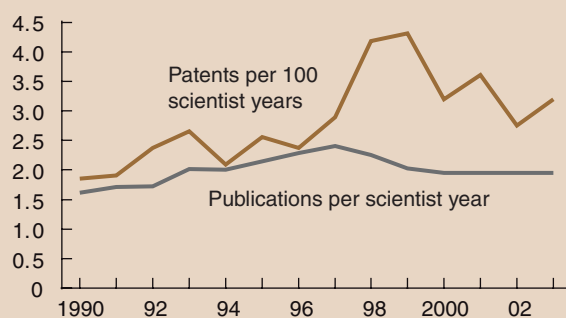
An objective of public sector research is to distribute its benefits as widely as possible. Although patents restrict the use of a technology, they are consistent with the objective of transferring technology for a number of reasons. When a technology is difficult to commercialize or requires additional development, patents that limit competition for a period of time provide companies with a greater incentive to take the necessary next steps. Patents have other uses, too: They can raise awareness of public research results and attract interest from potential technology partners. Patents might even be used defensively, establishing a clear right for licensees to use Federal research when other firms hold patents on similar technologies.

An additional advantage of patents in technology transfer is that they generate licensing revenues. But those revenues were probably not a major motivation for ARS patenting, since licensing revenues in 2000 were less than one-half of 1 percent of USDA's



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Patenting increases but not at the expense of publications



Source: U.S. Patent and Trademark Office; Institute for Scientific Information Current Contents; USDA Current Research Information System.

research budget. Furthermore, more widespread use of patenting and licensing by ARS has not reduced the use of traditional instruments of technology transfer, such as scientific publication. From 1990 through 2003, the ratio of publications to scientific personnel has remained fairly steady, even though patents and technology licenses increased in the mid to late 1990s.

Once the decision has been made to patent and license a technology, the structure of the licensing agreement affects technology transfer outcomes. For example, ARS can issue licenses to multiple firms to speed technology development, but segmenting the market geographically or by field of use might provide greater incentives for private sector participation than an agreement in which all licensees compete for the same market niche. The ability of ARS to revisit terms of some licensing agreements can also contribute to technology transfer. As commercial partners gain experience with the technology and learn more about its market, mutually advantageous revisions to license terms can maintain the incentives through which private companies distribute the benefits of public research. W

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For more information . . .

The ERS Agricultural Research and Productivity Briefing Room,
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