

POLICY OPTIONS FOR KEEPING FARMERS ON THE FARM

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Agricultural research and Cooperative Extension programs helped more than 137,000 farmers stay on the farm, over 25 years.

The long-term release of labor from agriculture and associated farm-productivity increases over time are two remarkable outcomes of the scientific industrialization of U.S. agriculture. While it once took more than 80 percent of the population to produce the nation's food, less than two percent of the workforce is now engaged immediately in agriculture, growing more than enough food to feed all Americans. This profound transformation happened very quickly, in the span of less than 100 years or three generations.

Recent USDA Economic Research Service data show that labor use in agriculture declined by 78 percent between 1948 and 2011, even as agricultural output more than doubled, increasing by nearly 250 percent.¹ This is illustrated in Figures 1 and 2. Sustaining these productivity increases into the future, and ensuring a stable and safe food supply, is one of the great policy challenges facing the nation. At a minimum, ongoing investments in agricultural research and development, and extension of the research to farmers, are required to meet the nation's growing demand for food. That the net returns to society of this research are substantial, and that the benefits far exceed the costs, has been documented in many academic papers.² At the same time, there is an unsettled debate in the literature over whether productivity growth has recently slowed or continues unimpeded.³

In parallel to the generally accepted idea that ongoing investments in research and Cooperative Extension are needed to ensure that farming remains profitable has been the notion that agricultural commodity programs or subsidies are necessary to support or stabilize farm incomes, in turn allowing farmers to remain on the farm. Farming is inherently more exposed to production uncertainties such as diseases and unpredictable weather, and so support for these kinds of federal farm programs has remained robust over time. Given the importance of food to meeting basic human needs, domestic food production is also recognized as vital to national security.

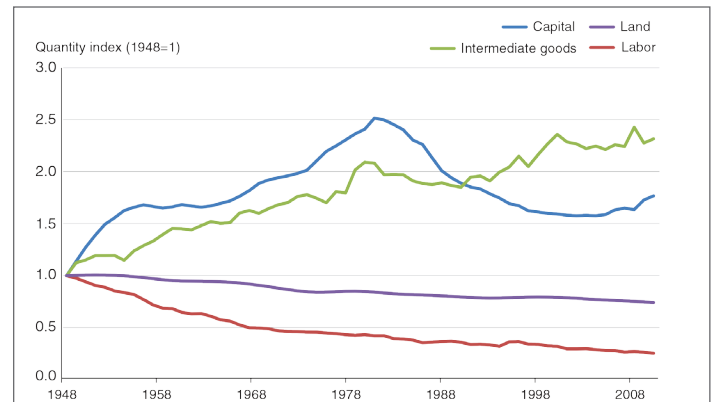


Figure 1. Since 1948, labor and land inputs have fallen in U.S. agriculture while use of intermediate inputs has risen. Source: USDA, Economic Research Service. Reprinted with permission.¹

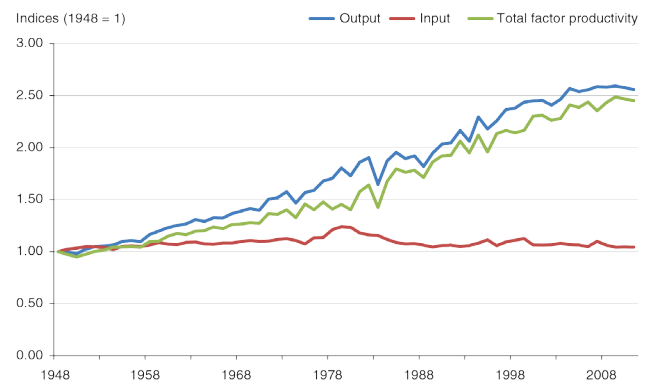


Figure 2. Agricultural productivity growth accounted for most output growth between 1948 and 2011. Source: USDA, Economic Research Service. Reprinted with permission.¹

This discussion suggests that there is a benefit to keeping farmers on the farm, and that there is a limit to how many should exit given the long-term trends in farm labor. There may be a critical minimum number of farmers, representing a tipping point beyond which keeping a viable agricultural industry could be problematic. This is especially true given the tacit (as opposed to codified) and often geography-specific, local knowledge needed to grow crops and produce livestock, which is best passed on inter-generationally, and in person.

Having established that society benefits from retaining basic national food production capacity and farmers, a basic question is which kinds of policies are best for stemming the outmigration of farm labor, given the unrelenting pressure to also continually develop productivity-increasing forms of technology which inherently are labor-saving.

A new paper examines the effect on farmer exits of an alternative federal investment to farm commodity programs or subsidies.⁴ This is the federal Cooperative Extension program, set up in 1914 under the Smith-Lever Act to translate and transmit state-of-the-art research findings from the Land Grant Universities to farmers. Importantly, these Extension programs represent a partnership among local, state and federal government funders, which means support dollars are effectively leveraged across levels of government. Furthermore, the Cooperative Extension spending goes hand in hand with another important federal investment, namely Hatch research funds. Without the investment in research, Extension educators would have no new knowledge or insights to extend to farmers.

This new study finds that investments in Cooperative Extension have been remarkably effective in keeping farmers in agriculture, over the years 1984-2010. In fact, the authors estimate that 137,700 farmers stayed in farming over this period, who would have exited had they not benefited from the Extension and associated research programs. Furthermore, the study showed that Extension spending was directly associated with higher net farm income, which in turn allowed the farmers to keep farming. Over this period studied, nearly one-half a million (490,000) farmers actually exited, so that the numbers saved from exiting through Land Grant University programs are substantial.

The same study also found, counter to expectations, that higher levels of commodity payments or subsidies to farmers were associated with more farmers leaving, rather than staying in agriculture. While the exact causes are not known, one hypothesis is that farmers who receive subsidies use those funds to buy out other farms, thus contributing to the outmigration of labor. Thus, these kinds of subsidy payments are found to be counterproductive to keeping farmers in agriculture, a result also reported earlier in other academic papers.⁵

Because average subsidies per farm are so large relative to Extension spending (\$6,572 vs. \$266), shifting just a small share of federal subsidy funds to Cooperative Extension and research would have significant implications for keeping farmers in agriculture. For example, our model predicts that if a very small fraction of farm subsidies – only \$100 per farmer – had instead been shifted each year to Land Grant Research and Extension over the period 1984-2010, an additional 55,000 farmers would have stayed in agriculture rather than leaving. This analysis assumes state and local investments followed suit and Hatch research expenditures also increased proportionally.

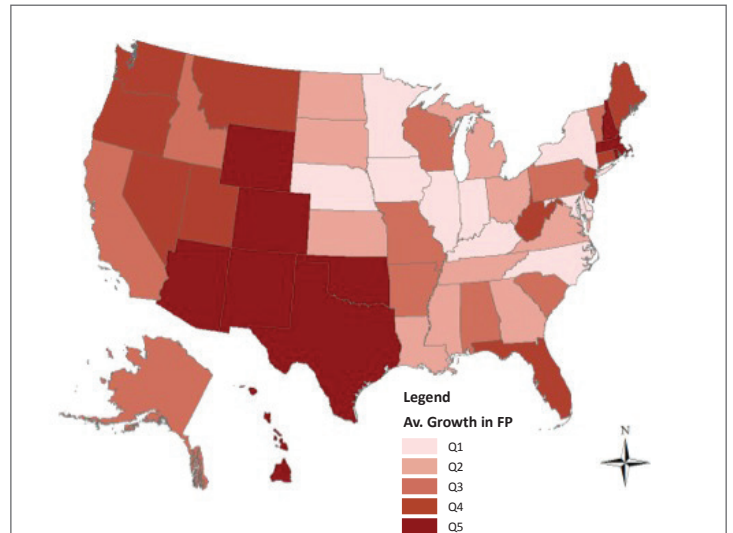


Figure 3. Net change in farmer numbers across states (average over 1983-2010); Q1 is the quintile with most losses, Q5 shows smallest losses or gains. Data source: BEA/REIS

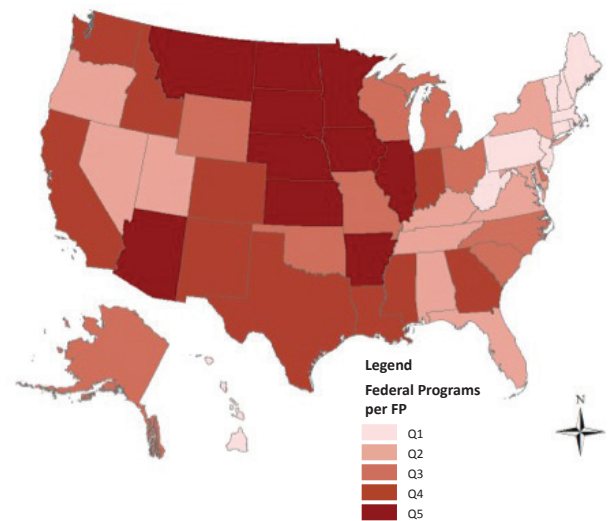


Figure 4. Federal program transfer payments per farmer, average over 1983-2010; Q1 shows smallest payments, Q5 the highest payments per farm. Data source: BEA/REIS

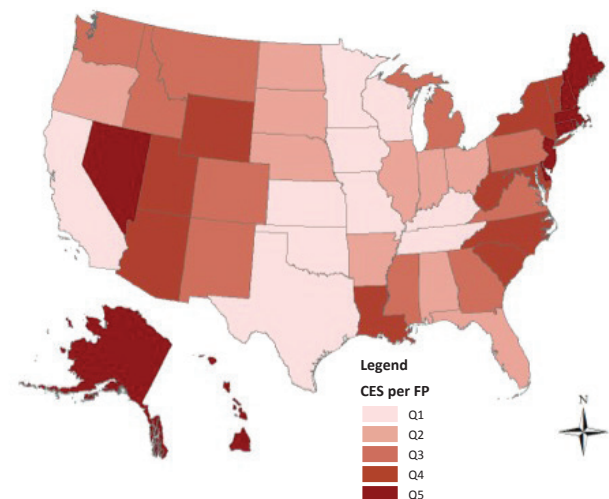


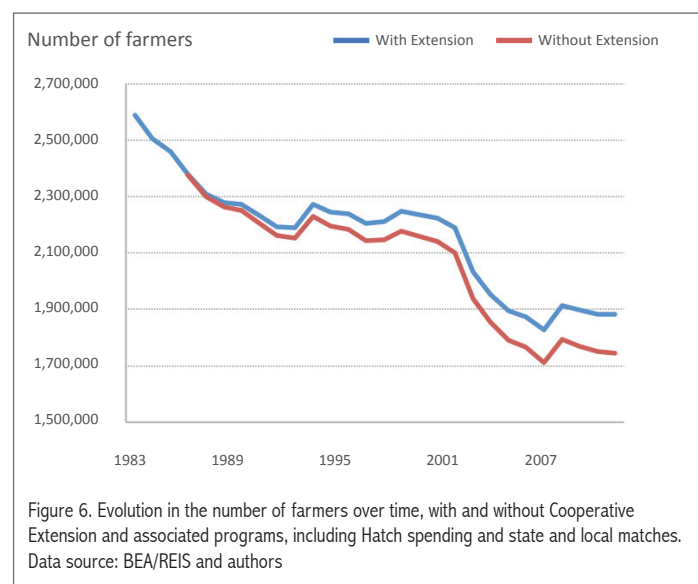
Figure 5. Cooperative Extension Service program spending per farmer, average over 1983-2010; Q1 shows the smallest amount per farm, Q5 the largest. Data source: CFFR

Figures 3-5 show, respectively, quintiles for changes in farm numbers, federal farm program payments and Cooperative Extension spending across states over the years 1983-2010. Figure 6 shows actual farmer exits and the exits that would have occurred in the absence of Land Grant University and affiliated programs.

The study cited above also found that Cooperative Extension spending was remarkably inexpensive in retaining or creating (farm) jobs, compared to other economic development programs sometimes used by States. For example, industrial recruitment associated with the automobile industry routinely costs far in excess of \$100,000 for each job created. One study found that jobs created under the American Recovery and Reinvestment Act (ARRA) after the recent global financial crisis cost as much as \$400,000 per job, and it was not clear how long these jobs would persist.⁶ In comparison, investments in research and farmer education programs have clearly demonstrated benefits, and even if one adds the 3.5:1 match of non-federal to federal dollars, and the per farm expenditure of Hatch (research) funds, the annual cost per farm is only about \$1,000.⁷ In addition, agricultural research and Cooperative Extension programs provide many direct and indirect benefits far beyond the farm gate.

POLICY IMPLICATIONS

The general policy conclusion from this new research is thus that public investments in farmers are better made through the research and educational programs of the Land Grant University system, rather than through direct subsidies to farmers, if the policy goal is to keep farmers on the farm. Educational programs may be especially effective because farmers are known to widely share new knowledge gained. Thus, even if not all farmers participate in given educational programs, the knowledge is disseminated widely through word-of-mouth and by other means. In addition, the broader youth, family and community development programs offered by Cooperative Extension support rural entrepreneurship and innovation, thereby enhancing rural economic vitality. Because so many farmers also rely on off-farm income to supplement their farm income, these broader programs are also essential to farmers' economic well-being, and have contributed in critical ways to retaining farmers in agriculture over time. 🌱



ENDNOTES

1. S.L. Wang, P. Heisey, D. Schimmelpfennig, and E. Ball. Agricultural Productivity Growth in the United States: Measurement, Trends, and Drivers, ERR-189, U.S. Department of Agriculture, Economic Research Service, July 2015.
2. See, among many others, e.g., J.M. Alston, M.A. Andersen, J.S. James and P.G. Pardey. 2011. "The Economic Returns to U.S. Agricultural Research," *American Journal of Agricultural Economics* 93(5).
3. E. Ball, D. Schimmelpfennig and S.L. Wang. 2013. "Is U.S. Agricultural Productivity Growth Slowing?" *Applied Economic Perspectives and Policy*, 35(3):435-450. Also see C.R. Shumway, B.M. Fraumeni, L.E. Fulginiti, J.D. Samuels and S.E. Stefanou. 2016. "U.S. Agricultural Productivity: A Review of USDA Economic Research Service Methods," *Applied Economic Perspectives and Policy*, 38(1): 1-29.
4. Goetz, Stephan J. and Meri Davlasheridze (forthcoming). "State-Level Cooperative Extension Spending and Farmer Exits," *Applied Economic Perspectives and Policy*, doi:10.1093/aep/ppw007, available 19 April 2016.
5. For example, S.J. Goetz and D.L. Debertin. 2001. "Why Farmers Quit: A County-Level Analysis," *American Journal of Agricultural Economics* 83(4): 1010-23.
6. J. Feyrer and B. Sacerdote. 2011. "Did the Stimulus Stimulate? Real Time Estimates of the Effects of the American Recovery and Reinvestment Act," NBER Working Paper No. 16759, February. 32pp.
7. This does not count the local match, for which we do not have good national data.



More than 90 farmers and others attended a Penn State Extension-sponsored field day in June 2015, where they learned how to produce malting-quality barley for the rapidly growing craft-brewing industry. Attendees heard from researchers who are conducting malting-barley variety trials, and from industry representatives who explained marketing considerations. Credit: Penn State.



The National Agricultural & Rural Development Policy Center

(NARDeP) is organized by the Regional Rural Development Centers to provide information about the increasingly contentious and complex agricultural and rural development U.S. policy issues.

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