Source of Data

The data in this report come from the 1997 Census of Agriculture Longitudinal File. NASS merged data for individual farms from five censuses (1978, 1982, 1987, 1992, and 1997), allowing analysts to follow individual farms over a 20-year period. The longitudinal file is described in detail in appendix I.

The longitudinal file follows individual farm businesses associated with farmland rather than operators (see box, "Glossary of Farm-Related Terms"). A farm is considered to go out of business (exit) when there is no response to the census questionnaire or the questionnaire is returned with a statement that the establishment is no longer operating as a farm. A farm that is not matched or linked to a previous longitudinal record would be considered a new business (an entry) and added to the longitudinal file as a new record. A farm existing at both the beginning and end of an intercensus period is considered to be a survivor.

A farm changing hands does not necessarily mean that the original farm exited and a new farm entered on the longitudinal file because the file follows farm businesses rather than operators. Farm businesses can continue, even if the operator leaves the business. For example, if an adult child assumes operation of a farm upon retirement of an operator, the farm would be classified as a survivor in the longitudinal file. Likewise, if the farm is sold to an unrelated operator, who continues the business as a separate entity, the farm also would be classified as a survivor. Cases like this—where the farm operator and farm do not exit together—complicate

Glossary of Farm-Related Terms

Farm. An establishment that has—or normally would have—agricultural sales of $1,000 in a given year. The farm definition has changed nine times since 1850, when "farm" was first defined for census purposes. The current definition was introduced in the 1974 Census of Agriculture (USDA, NASS, 1999, p. VII).

Farm Business. Each farm is also a farm business. Most farms are small businesses; more than 90 percent have sales less than $250,000, the threshold between small and large farms (USDA, National Commission on Small Farms, 1998). About half of all farms are very small, with sales less than $10,000. Operators of very small farms may have goals other than to generate income.

Farmland or Land in Farms. Acreage operated by farms. The land may be owned by the farm or rented from others. The amount of land in a given farm may vary from year to year as the amount of rented land changes. Note that farms are more than a tract of farmland. They include other resources and the people who run them.

Farm Operator or Farmer. The person making day-to-day decisions about the operation of a farm. The 1997 longitudinal file assumes one operator per farm. The operator on a particular farm may change over time as the original operator ages and leaves the business.

life-cycle analyses. Nevertheless, life-cycle changes can trigger exits. In a common pattern, farm operators become elderly, stop farming, and rent or sell their land to other farmers who incorporate it into their operations. The original farm businesses no longer exist.

Exit Rates Calculated From the Longitudinal File

Gross exit rates calculated from the 1997 longitudinal file are presented in table 1. Exits amount to about 9 or 10 percent of all farms annually, with no strong trends over time, and cover a substantial share of land and sales (7 or 8 percent). The fact that the sales exit rate is lower than the farm exit rate means that larger farms are less likely to exit.

Farm size matters, with the exit rate declining with sales. Nevertheless, even among the largest farms (sales of $250,000 or more), 6 or 7 percent of farms exit per year. The age of the operator also matters. Exits generally decline with age until farmers reach 45-54 years old. After that, exits rise and peak at 12-13 percent for farmers 65 years old or older.

Relatively high gross exit rates (table 1) but relatively low net exits since 1974 (fig. 1) imply substantially high farm entry rates at any given time.

Table 1
Exit rates by operator age and sales class, 1978-82, 1982-87, 1987-92, and 1992-97

Characteristic[1]	1978-82		1982-87		1987-92		1992-97	
	4-year period[2]	Annualized	5-year period[2]	Annualized	5-year period[2]	Annualized	5-year period[2]	Annualized
	Percent							
All farms	33.0	9.5	40.4	9.8	38.5	9.3	37.2	8.9
Land in farms	26.3	7.4	32.6	7.6	29.7	6.8	32.5	7.6
Sales	26.0	7.3	33.3	7.8	29.3	6.7	30.1	6.9
Farms by sales class:[3]								
Less than $1,000	32.3	9.3	53.7	14.3	53.0	14.0	48.8	12.5
$1,000-$9,999	39.2	11.7	44.5	11.1	42.9	10.6	40.6	9.9
$10,000-$49,999	32.5	9.4	37.8	9.0	36.7	8.7	35.7	8.5
$50,000-$99,999	27.6	7.7	34.8	8.2	31.7	7.3	33.0	7.7
$100,000-$249,999	22.5	6.2	30.5	7.0	27.5	6.2	30.1	6.9
$250,000 and over	24.0	6.6	30.3	7.0	25.8	5.8	26.5	6.0
Farms by operator age:								
Younger than 35	34.1	9.9	42.1	10.4	37.8	9.1	36.9	8.8
35-44	30.1	8.6	39.8	9.7	36.7	8.7	33.8	7.9
45-54	28.1	7.9	36.1	8.6	34.7	8.2	32.9	7.7
55-64	32.9	9.5	38.5	9.3	37.0	8.8	35.4	8.4
65 or younger	42.7	13.0	47.8	12.2	46.0	11.6	45.7	11.5

Note: Rates are based on data that are weighted by nonresponse weights from the beginning year of the period, except for the 1978-82 period. Nonresponse rates do not exist for the 1978 data, so exit rates between 1978 and 1982 are based on unweighted data. See appendix I for more information.

[1]Farms classified by characteristics at the beginning of each period.

[2]Calculated as the percentage of farms in the group at the beginning of the period that no longer exist at the end of the period.

[3]Sales class is expressed in constant 1997 dollars, using the Producer Price Index for Farm Products to adjust for price changes.

Source: Compiled by ERS from the 1997 Census of Agriculture Longitudinal File.

Entry and exit rates have been fairly close to each other during the past three intercensus periods (fig. 3). In fact, the stabilization in aggregate farm numbers between 1992 and 1997 resulted from an increase in entry.

Exit Rates in Perspective

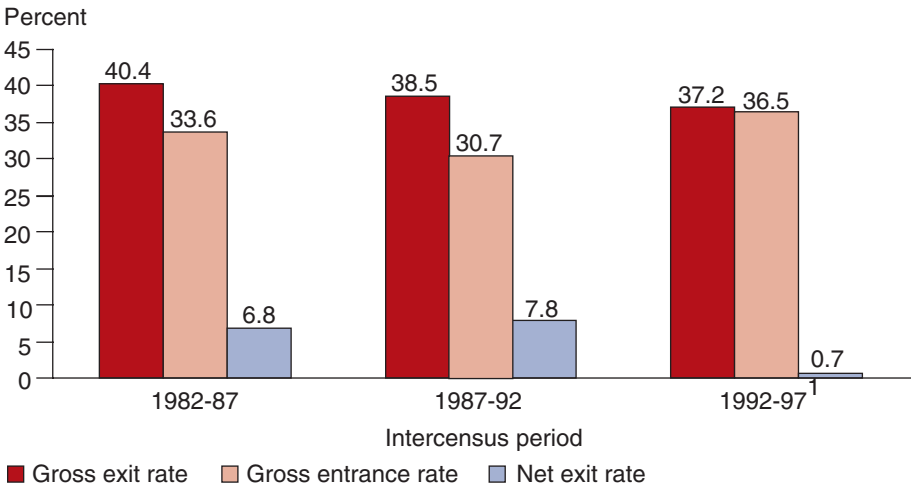
Although annualized exit rates of 9 or 10 percent may seem high, they are comparable to exit rates for Canadian farms, small U.S. nonfarm businesses, and businesses in other countries. Annualized Canadian exit rates range from 6 to 8 percent for each census period, or 2 to 3 percentage points lower than the U.S. rates, depending on the period (fig. 4).

Some of the difference between U.S. and Canadian exit rates, however, reflects differences in the size distribution of farms in the two countries. Nearly half of U.S farms have less than $10,000 in sales compared with about one-fourth of Canadian farms, measuring sales in U.S. dollars in both countries (Whitener and Bollman, 1995, p. 22). Exit rates are higher for these very small farms than for larger farms, and the higher share of U.S. farms with sales of less than $10,000 raises the overall U.S. exit rate. Rough calculations suggest that about half of the difference in the overall U.S. and Canadian exit rates is from differences in the two countries' farm size distribution.[2] Part of the remaining differences between the United States and Canada may be because of the higher nonresponse rate in the United States. Some farms classified as exits in the U.S. file may actually have been continuing operations that did not respond to the census questionnaire. (See appendix I for additional information.)

Figure 3

Five-year gross exit rate, gross entrance rate, and net exit rate by intercensus period

Net exits masks turnover in farms



Note: Entrants are calculated as a residual. The number of entrants in a period equals exits during the period plus the net change in farms during the period. The denominator for calculating exit and entrance rates is the number of farms at the beginning of the period.

[1]Part of the increase in the entrance rate between 1992 and 1997 occurred because of minor changes in the farm definition. After removing the effects of the definition changes, net change in farm numbers is 4.6 percent, which is still less than the earlier declines. For more information, see appendix I.

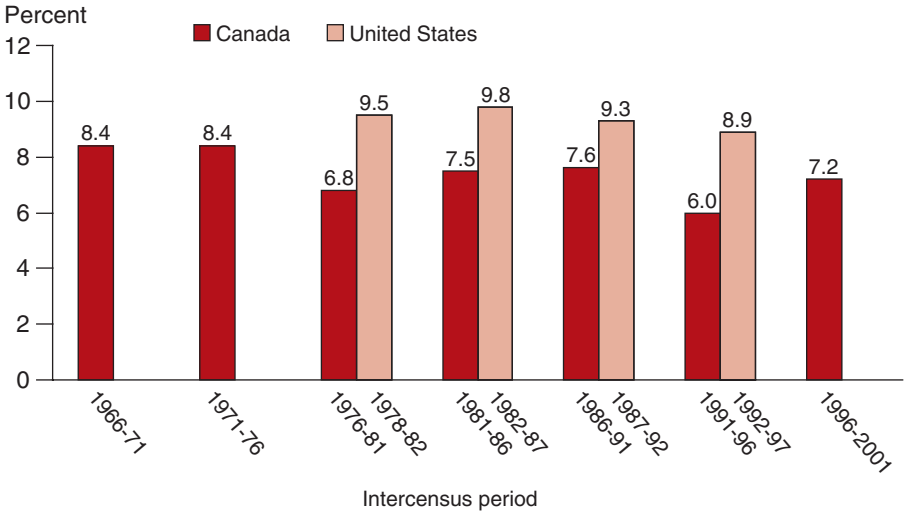
Source: Compiled by ERS from the 1997 Census of Agriculture Longitudinal File.

[2]The overall U.S. exit rate between 1992 and 1997 was adjusted to reflect the size distribution of Canadian farms rather than U.S. farms. The U.S. rate was recalculated as the weighted average of the U.S. exit rate for each sales class, where the weights were the share of farms in each class in Canada. After this adjustment, the annualized 1992-97 exit rate for the United States declined by 1.4 percentage points from 8.9 percent to 7.5 percent, halving the difference between the U.S. and Canadian exit rates.

Figure 4

Annualized exit rates for Canadian and U.S. farms by intercensus period

U.S. exit rates are somewhat higher



Source: Compiled by ERS from the 1997 Census of Agriculture Longitudinal File and from Statistics Canada, Census of Agriculture Match, 1966-2001.

Table 2

Annual entry and exit rates for the total business sector in 17 countries, various years

Country	Years	Entry rate	Exit rate
		Percent	
Argentina	1995-2002	10	8
Canada	1989-98	11	10
Denmark	1989-94	9	12
Estonia	1995-2001	11	6
Finland	1989-98	12	6
France	1989-97	11	7
Germany (East)	1989-99	12	9
Germany (West)	1989-99	7	7
Hungary	1992-2001	20	7
Italy	1989-94	9	8
Latvia	1996-2002	23	6
Mexico	1989-2001	16	11
Netherlands	1989-97	10	6
Portugal	1989-98	15	6
Romania	1992-2001	20	8
Slovenia	1992-2001	22	5
United States	1989-97	12	10

Note: The estimates are drawn from census, business register, industry survey, and social security records.

Source: Bartelsman et al., 2004.

U.S. farm exit rates are also close to exit rates for small nonfarm businesses with no employees, according to the Small Business Administration. The annualized exit rate for these small nonfarm businesses between 1982 and 1986 was 8 percent, about 1 percentage point less than the annualized exit rate for U.S. farms during the 1992-97 period (U.S. Small Business Administration, 1998, p. A-17). In addition, a recent report by the World Bank (Bartelsman et al., 2004) reported exit rates for all businesses of 5-12 percent per year in 17 countries, a level consistent with exit rates for U.S. farms (table 2).

Some studies have found farm exit rates much lower than those from the longitudinal file. For example, four State- or county-level longitudinal surveys conducted during the farm financial crisis—dated from 1982 to 1986—estimated exit rates in the 3- to 5-percent range (Bentley et al., 1989), substantially lower than the rates calculated from the longitudinal file. Two of the four studies, however, excluded farms with operators 65 years old or older, one excluded farms with retired operators and operators

with fewer than 20 acres, and all excluded exits through death. Including these operators would have raised the exit rates.

An Economic Research Service study that used data from an annual American Bankers Association (ABA) survey of agricultural banks also reported relatively low yearly exit rates—in the 2- to 6-percent range—for 1982-99 (Stam et al., 2000. p. 48). The ABA survey excluded exits through death, which would lower the estimates of exits. In addition, bankers are likely to focus on commercial farms that are actual or potential customers—preferably creditworthy—rather than smaller farms, which would also be expected to lower the estimates of exits.

Finally, farm entry and exit rates can be calculated from published tables of agricultural census data that show counts of operators by the number of years on their present farm (Gale, 2003, pp. 170-71). The tables are based on the census question: "In what year did the operator (senior partner or person in charge) begin to operate any part of this place?"

Mathematically producing these cross-section-based estimates is fairly straightforward. The first step is to select two consecutive censuses. Entrants are estimated as farms with operators who reported 5 or fewer "years on present farm" in the later census.[3] The census publications, however, aggregate the years on the farm responses into five categories: (1) less than 2 years, (2) 3 or 4 years, (3) 5 to 9 years, (4) 10 years or more, and (5) not reported. Entrants are initially estimated by summing the first two categories and one-fifth of the third category. The initial estimate is adjusted upwards by adding a prorated share of "not reported," calculated by multiplying nonrespondents by the ratio of the initial estimate of entrants to respondents.[4] Exits are calculated as entrants plus the count in the earlier census minus the count in the later census.

[3]When the period between censuses is only 4 years, use 4 or fewer years.

[4]The years-on-this-farm question has a fairly high nonresponse rate, approximately 16 percent in 1997 compared with 6 percent for the question on off-farm work.

This procedure results in exit rates in the 4- to 5-percent range for the 1987-92 and 1992-97 intercensus periods (Gale, 2003), about half the corresponding rates calculated from the longitudinal file. The cross-section estimates may underestimate entrants, however, which in turn would underestimate exits, given the way exits are calculated (Gale, 1990). For example, how would a farmer report the year he began to operate "any part of this place" if he grew up on the farm and gradually assumed operation from his father over the last 10 years? When responding to the 1997 census, he may have reported 1992 as his initial year. Or, he may have responded with 1980, the year he assumed responsibility for the family's chicken flock—used for home consumption—which would bias the estimates of entry and exit downward.

What can we conclude from the wide range in estimates of farm exit rates? No one can provide an *exact* exit rate for farms in the United States. Estimates differ based on the data source and assumptions used when making the estimates. The main conclusion to take away from the various exit estimates is that turnover among farms is far greater than is indicated by the small net change in farm numbers between censuses (Gale, 1990).