Tax-deferred exchanges of farmland: theory and evidence from federal tax data

James M. Williamson  
*Economic Research Service, US Department of Agriculture,  
Washington, DC, USA*

Michael P. Brady  
*School of Economic Sciences and IMPACT Center, Washington State University,  
Pullman, Washington, USA, and*

Ron Durst  
*Economic Research Service, US Department of Agriculture,  
Washington, DC, USA*

Abstract

**Purpose** – The purpose of this paper is to examine the use of Section 1031 of the Internal Revenue Code (IRC), a piece of US tax law that allows for tax-deferred exchanges of like-kind property.

**Design/methodology/approach** – The paper derives a theoretical premium value for exchanges and presents the first national level analysis of Federal tax data on the use of like-kind exchanges involving farmland between 1999 and 2005.

**Findings** – There is significant interest in Section 1031 from stakeholders in rural communities because there is widespread belief that the recent growth in farmland values may have, in part, been stimulated by Section 1031 exchanges of farmland. Despite these concerns, little is known about the extent of such exchanges.

**Originality/value** – This paper provides insight into the value and use of the IRC’s Section 1031 provision. Based on simulations of a theoretical model using plausible assumptions about asset growth, the paper shows how proposed tax changes will affect the tax value of the deferral.

**Keywords** United States of America, Rural areas, Farms, Land, Taxes, Legislation

**Paper type** Research paper

Introduction

While a growing body of research has looked at a number of factors to explain rapid growth in farmland values since 2000, including biofuels policy and commodity demand. However, a provision of the Internal Revenue Code (IRC) that allows for tax-deferred exchanges of like-kind property (Section 1031) is also believed to have played a part but has received relatively little analysis to date. Section 1031 of the IRC permits taxpayers to defer the recognition of gains or losses for tax purposes on the sale or exchange of property if the taxpayer engages in an exchange of like-kind property.

The potential effect on farmland values from Section 1031 derives from the fact that, under the provision, landowners may defer into the future the payment of taxes on capital gains from the sale of property. Further, the provision imposes strict time limits on the exchange. Section 1031 requires that a replacement property be identified within 45 days of the sale of the previous property and that the exchange is completed within 180 days. Coupled with the fact that a relatively small amount of...
existing farmland acreage (less than 2 percent) is available for purchase in any given year[1], someone planning to acquire land in order to complete an exchange may be compelled by the value of the deferral, which is essentially a free loan to the exchanger, and time pressure to pay more for a piece of property than someone that is purchasing the land without the tax advantage or time constraints. Therefore, Section 1031 could have provided a pathway for the housing bubble, which accelerated the sale of farmland for residential and commercial development, to affect farmland values.

The use of like-kind exchanges in all types of real estate increased significantly through the late 1990s and into the mid-2000s, perhaps because of several internal revenue service (IRS) revenue procedures which reduced the uncertainty of conducting a successful exchange. Recent research has shown that buyers who are acquiring property as part of a like-kind exchange pay more for commercial property and take on more risk than buyers not exchanging property (Holmes and Slade, 2002; Ling and Petrova, 2008).

While many parties have speculated about the extent and degree to which real farm property was being disposed of through like-kind exchanges and its effect on farmland values, there has been limited research on the topic. There are many reasons for concern about the provision. In general, the tax provision distorts behavior of the asset holder because it encourages investors to hold assets eligible for the deferral longer than they would without the tax advantage. For example, if a landowner sells land to a developer, he or she can either exchange the land for like-kind property and retain the investment in real property, deferring the capital gains tax, or pay the capital gains tax and purchase another type of asset[2]. On the other hand, bond owners are not eligible to defer gains, and therefore face no incentive to remain invested in bonds or like-assets. The deferral also encourages investors to hold assets that are eligible for deferral, particularly real property.

Section 1031 may also cause distortionary effects in the market for farmland. Intergenerational-equity and distributional concerns were raised in a 2006 article of the Farm Journal about Section 1031 “shaking up” rural America by creating a competition between young farmers and urban landlords (Bernick, 2006). The article suggested that younger farmers wishing to acquire farmland are often outbid by investors with “1031 money” who are in some cases older farmers who own large, valuable tracts and wish to avoid paying capital gains taxes and preserve their investment in land through an exchange until they can pass the land to heirs. In this example, Section 1031 makes acquiring land by young and limited resources farmers more difficult. These effects would be particularly pronounced in areas where farmland is under pressure from residential and commercial development. Further, effects by young and limited-resource farmers could also be felt in other regions if investor money flowing into the area is fueled by Section 1031 exchanges from the aforementioned real estate markets. Despite the claims, little is known about the actual number of such exchanges.

In this article, we first develop a theoretical model of farmland exchange that derives the value of an exchange relative to a sale-purchase strategy for a plausible range of farmland sale scenarios[3]. Our model reveals how much more a rational agent would be willing to pay for a parcel when using an exchange. Next, we present the first national analysis of tax data for like-kind exchanges deferring capital gains under Section 1031. Using data from the IRS’s Sales of Capital Assets (SOCA) Panel Study, we examine like-kind exchanges and total farmland sales for the years 1999-2003 and 2005[4]. We present a time series of number of exchanges as well as data on the characteristics of the exchange including the value of assets involved and the value of
gains deferred. Further, because of the detail of the tax data, we are able to examine the extent to which farmers are participating in Section 1031 like-kind exchanges. Together, these data provide insight into the relative importance of such exchanges.

Background
Section 1031 of the IRS Code\[5\] allows for the non-recognition of gain or loss from exchanges solely in-kind. The Code holds that property must be productive or investment property and exchanged for a property that is of like kind. Tax-deferred exchanges have been around in one form or another for a long time. The Revenue Act of 1921 established a provision that allowed for a tax-deferred exchange of assets that loosely resembled the Section 1031 of the Code as it stands today. Subsequently, revisions were made, and in 1979, in the case of Starker v. United States, clarification was given on the mechanics of a non-simultaneous exchange and a ruling established the meaning of term “like-kind.” Today, because of the broad definition of like-kind, an owner of a shopping center may sell the shopping center and buy agricultural land under Section 1031.

Recently, important actions by the IRS have helped to clarify how 1031 exchanges may be conducted, what types of ownership would be considered permissible, and how a request for a ruling from the Service should be structured. The practical effect for taxpayers of these actions was to reduce uncertainty about the exchange, therefore increasing the likelihood of successfully deferring capital gains\[6\].

Like-kind exchanges have received limited attention in the literature. The first research on the issue we have identified comes from Colwell and Dehring (2001). In their article, they develop a model of “tax-free” exchange for farmland under a simultaneous exchange scenario. They find evidence of a tax distortion as a farmer’s incentive to exchange with land based on the potential value of the capital gains deferral, and that a developer, for example, will agree to an exchange with a farmer if they can offer a replacement property of less value than what they would have to pay to buy the undeveloped property.

Other Section 1031 research has focused on commercial real estate. In 2002, Holmes and Slade examined the impact of tax-deferred exchanges in the commercial real estate market of Phoenix, Arizona. Using a hedonic analysis, they show that the “price pressure hypothesis” is responsible for increasing the price of the replacement property, though the price of the relinquished property is not affected.

Most recently, Ling and Petrova (2008) studied the effect of tax-deferred exchanges on transaction prices in multiple commercial real estate markets, focusing on the theoretical reservation price and observed market price. Their theoretical premium of such an exchange suggests a 5-10 percent price effect due to the tax-deferral. Empirically, results show that taxpayers pay a price premium to acquire the replacement property of 5-35 percent, depending on the local market – a figure far higher in many cases than their theoretical model predicts.

Model
The first step in examining the potential effect of Section 1031 on transaction prices of farmland is to derive an expression of the value of an exchange relative to a sale and purchase. This reveals how much more a rational agent would be willing to pay for a parcel when using an exchange as opposed to a sale and purchase, which we refer to as the exchange premium. To estimate the exchange premium we modify the model presented in Ling and Petrova to consider only farmland. This simplifies the analysis
because it minimizes the importance of capital depreciation that is much more relevant when buildings, rather than land, constitute a majority of the property value.

We make two additional assumptions about the relationship between the acquired, or second, property in an exchange relative to a sale/purchase to be able to directly interpret the exchange premium on a per unit basis. First, the acquired property in the exchange and sale/purchase are assumed to consist of the same area. Second, the value per acre for the exchange property is greater than for the sale/purchase in proportion to the amount paid in capital gains tax for the sale/purchase. No assumptions are made about the relinquished, or first, property. In terms of the exchange premium all that matters from the first property is the total value. Another related assumption we make is that the value of the acquired property is solely based on agricultural use value. This assumption allows us to draw a direct link between the value of the land purchased and the rents acquired from leasing farmland. As with the value of the land acquired, combining all three assumptions means that the rent per acre for the exchange property is higher than for the sale/purchase proportionally according to the capital gains tax paid in period \( t \).

While we do consider different levels of income and capital gains tax rates they are assumed to be fixed in any one scenario. This is why there is no time subscript for the tax rates. Expectations about changes in tax rates are important considerations in the use of 1031 Exchanges but trying to model expectations about changes in the rates significantly complicates the model while distracting from the primary focus of deriving a relatively simple expression that captures the exchange premium.

Equations (1) and (2) show the present value of a sale-purchase and an exchange in period \( t \). Recall that the value of the original property is equivalent for an exchange and sale-purchase, and we formulate the expressions as being on a per acre basis:

\[
V^S_t = P^1_t - \tau_g (P^1_t - P^1_{t-m}) - P^S_t - C^S_t + \sum_{i=1}^{n} \beta^i (1 - \tau_o) R^S_i \\
+ \beta^o [P^S_{t+n} - \tau_g (P^S_{t+n} - P^S_t) - C^S_{t+n}]
\]

(1)

\[
V^E_t = P^1_t - P^E_t - C^E_t + \sum_{i=1}^{n} \beta^i (1 - \tau_o) R^E_i + \beta^o [P^E_{t+n} - \tau_g (P^E_{t+n} - P^1_{t-m}) - C^S_{t+n}]
\]

(2)

In the case of a sale, Equation (1) captures the amount received from the sale of the first property minus the capital gains tax due, the price paid for the second property, and the cost of the sale: \( P^1_t - \tau_g (P^1_t - P^1_{t-m}) - P^S_t - C^S_t \). The sale price of the relinquished property at time \( t \) is \( P^S_t; P^1_{t-m} \) represents the owner's adjusted basis in the relinquished property, the capital gains tax rate is \( \tau_g \), and \( P^S_t \) is the purchase price of the replacement property using the sale-purchase strategy. \( C^S_t \) is the transaction cost of the sale. This is followed by the rent, \( R^S_i \), received each year per acre for the second property following a sale-purchase that is taxed as income according to the individual's marginal tax rate \( \tau_o \). The last term is the value of the sale of the replacement property in period \( t + n \) discounted to period \( t \). Equation (3) is the discount factor \( \beta \) at rate \( \delta \):

\[
\beta = \frac{1}{1 + \delta}
\]

(3)
The value of an exchange, shown in (2), differs from (1) to reflect the fact that capital gains taxes are not paid after the first property is relinquished. Instead capital gains taxes are paid at the time of sale of the second property. Since we assume that all of the proceeds of the sale of the first property are used to acquire the second property, the value of the second property acquired when using an exchange will be of greater value than the sale. This is embodied in Equations (4) and (5), which we call the “no free money” restriction that rules out any outside financing in acquiring the second property. Equation (4) says that the price of the replacement property in an exchange is equal to the price of the relinquished property, i.e. investment is rolled into a new vehicle. Equation (5) shows that the value of the second property in a sale/purchase is less than the value of the sale by the amount equal to the payment of capital gains tax. Equation (6) is the assumption that transaction costs are equal. Equation (7) provides the basis for the remainder of the analysis by capturing the premium placed on an exchange by subtracting the present value of the sale from that of the exchange in period t:

\begin{align*}
P_t^E &= P_t^1 \quad (4) \\
P_t^S &= P_t^1 - \tau_{cg}(P_t^1 - P_{t-m}^1) \quad (5) \\
C_t^E &= C_t^S \quad (6)
\end{align*}

\begin{align*}
V_t^{E-S} &= \sum_{i=1}^{n} \beta^i (1 - \tau_o)(R_i^E - R_i^S) + \beta^i \left[ P_{t+n}^E - P_{t+n}^S - \tau_{cg}(P_t^E - P_t^S + P_{t}^S - P_{t-m}^1) \right] \\
(7)
\end{align*}

The first quantity in Equation (7) captures the difference in the rental payment received when using an exchange vs a sale-purchase that follows from Equation (5). The second term reflects the benefit from being able to defer the cost of paying capital gains tax into the future.

To estimate the exchange premium derived from the rent portion of (7) we assume that the value of the second property acquired through an exchange or a sale-purchase in period t is equal to the present value of the discounted infinite stream of annual rental payments. This implicitly assumes that the second property acquired has little or no expectation of being used for anything other than agriculture. Incorporating the option value of development to a non-agricultural use would greatly complicate the analysis. The present value of the infinite stream of rental payments increasing at a rate of $\omega$ and discounted by $\delta$ for an exchange and a sale-purchase is shown in (8) and (9), respectively:

\begin{align*}
P_t^E &= \frac{R_t^E}{\delta - \omega} \quad (8) \\
P_t^S &= \frac{R_t^S}{\delta - \omega} \quad (9)
\end{align*}

Isolating the rent term in (7) and substituting using (4), (5), (8), and (9) gives

\begin{align*}
\sum_{i=1}^{n} \beta^i (1 - \tau_o)(R_i^E - R_i^S) &= \sum_{i=1}^{n} \beta^i (1 - \tau_o)((\delta - \omega)\tau_{CG}(P_t^1 - P_{t-m}^1)) \\
(10)
\end{align*}
To get a sense of the range of values the exchange premium can take on for scenario, consider a scenario where a property increases from $1,000 to $4,000 per acre from \( t - m \) to \( t \) that is then relinquished. The replacement property then increases in value by 20 percent after being held for five years. If the capital gains tax rate is 15 percent and the marginal income tax rate of 33 percent, the exchange premium is just over $100[7].

While $100 is not particularly large there are additional factors to consider. First, farmland that has come under development pressure can sell for many times more than land that is likely to stay in agriculture[8]. As was explained previously, the design of Section 1031 and the nature of farmland real estate can coalesce to allow a small number of landowners with large exchange premiums to affect land values significantly. Second, previous research on commercial real estate has found that investors often do not act rationally. They overestimate the value of deferring payment of taxes on capital gains. Further substitutions are required to explicitly capture the effect of the choice parameters on the exchange premium. Choice parameters include the capital gains tax rate, the income tax rate, the discount rate, and the change in value of the original and second properties. Equations (11) and (12) define parameters to represent the changes in the value of the first and second properties, and (13) represents the conversion of cash rent to land values in terms of the original basis:

\[
\gamma \geq 0: \quad \text{percent change in value from } t - m \text{ to } t \tag{11}
\]

\[
\alpha \geq 0: \quad \text{percent change in value from } t \text{ to } t + n \tag{12}
\]

\[
R^E_i - R^S_i = (\delta - \omega) \gamma P^1_{l-m} - \delta \gamma P^1_{l-m} \left( \frac{\gamma P^1_{l-m} - \gamma \tau_{CG} P^1_{l-m} + \tau_{CG} P^1_{l-m}}{\gamma P^1_{l-m}} \right) \tag{13}
\]

After substitutions, the general exchange premium is shown in:

\[
V^E_{t} = \sum_{i=1}^{n} \beta^i (1 - \tau_o) \delta \tau_{CG} (\gamma - 1) P^1_{l-m} + \beta^m \left[ (\tau_{CG} - \tau_{CG}^2) (1 - \alpha - \gamma + \alpha \gamma) \right.
\]

\[
+ \tau_{CG}^2 P^1_{l-m} (\alpha + \gamma - \alpha \gamma - 1) \right], 
\]

Equation (14). Simplifies to:

\[
V^E_{t} = \sum_{i=1}^{n} \beta^i (1 - \tau_o) (\delta - \omega) \tau_{CG} (\gamma - 1) P^1_{l-m} + \beta^m \left[ (\tau_{CG} - \tau_{CG}^2) (1 - \alpha - \gamma + \alpha \gamma) P^1_{l-m} \right]. 
\]

Comparative statics
The first-order conditions of (15) with respect to the ordinary income tax rate and the capital gains tax rate are shown in:

\[
\frac{\partial V^E_{t}}{\partial \tau_0} = - \sum_{i=1}^{n} \beta^i \tau_{CG} (\delta - \omega) (\gamma - 1) P^1_{l-m} \tag{16}
\]

and
Considering the effect of the ordinary income tax rate on the value of the exchange premium requires evaluating the condition for several states of the value \( \gamma \), the rate of growth in the value of the relinquished property from time \( t - m \) to \( t \) [9]. When value of the relinquished property grows by less than 100 percent from the original basis \( (\gamma < 1) \), the derivative of the exchange premium with respect to the income tax rate is positive. The value of an exchange premium is negatively related to the income tax rate when \( \gamma \) is greater than one, or stated another way, when the value of the relinquished property has increased by more than 100 percent. Providing some intuition, this occurs because the more the relinquished property increases in value the greater is the difference in the stream of rents that are derived from the replacement property for an exchange relative to a sale-purchase; hence, because of capital gains tax due in a sale-purchase arrangement, the value of the replacement property will be lower. The result comes from Equation (13): when the growth rate is below one, \( \frac{p_i^S}{p_i^E} < 1 \), and because \( R_i = \frac{p_i^S}{p_i^E} * R_i^E \), it follows that the difference between the rents will be negative. In the last case where \( \gamma = 1 \), the sign is zero.

To evaluate the effect of a change in the capital gains tax rate on the exchange premium, the cases must be evaluated based on several parameters. The direction of the effect can be either positive or negative depending on what piece of the equation dominates, which is largely determined by the change in value of the property, the rental income ratio, and the discount rate. Limiting the cases considered to the most relevant makes it possible to define this relationship. First, it is easy to see that when \( \gamma \) and \( \alpha \) equal one, the derivative with respect to the capital gains tax rate is zero. If both properties increase in value by more than 100 percent, then an increase in the capital gains tax rate increases the exchange premium, as is shown in (18). Table I summarizes the results:

\[
\frac{\partial V_{E-S}^E}{\partial \tau_{CG}} > 0 \quad \text{when } \gamma > 1, \alpha > 1
\]

This section explored the potential effect of 1,031 exchanges on land values by quantifying the exchange premium under a set of scenarios. It is important to note though that more information is needed to determine whether the exchange premium is capitalized into land values. For instance, hedonic analysis is a common method of obtaining non-market values embodied in market prices, so it would be necessary to obtain data on farmland characteristics. That said, this theoretical analysis of the exchange premium defines a range for the magnitude of the potential effect assuming rationally acting agents.

<table>
<thead>
<tr>
<th>States of growth</th>
<th>( \frac{\partial V}{\partial \tau_o} )</th>
<th>( \frac{\partial V}{\partial \tau_{CG}} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \gamma &gt; 1 )</td>
<td>&lt;0</td>
<td></td>
</tr>
<tr>
<td>( \gamma &lt; 1 )</td>
<td>&gt;0</td>
<td></td>
</tr>
<tr>
<td>( \gamma = 1 )</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>( \gamma &gt; 1, \alpha &gt; 1 )</td>
<td></td>
<td>&gt;0</td>
</tr>
<tr>
<td>( \gamma = 1, \alpha = 1 )</td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

Table I. Summary of comparative statics
Federal tax data evidence
We now turn from our analysis of the theory of an exchange to present a descriptive study of the disposition of real farm property using Federal tax data. We assemble a time series of tax-deferred exchange and farmland sales data from the IRS's SOCA Panel Study for tax years 1999-2003 and 2005. The SOCA Panel Study contains information on like-kind exchanges, recorded on Form 8824 and attached to an individual's tax return. Our analysis focuses on three permutations of like-kind transactions involving real farm property. These are: farmland exchange for farmland, non-farmland property exchanged for farmland, and farmland exchanged for non-farmland property. The SOCA data provide information on the fair market value (FMV) of the assets exchanged, as well as the length of time the assets were held. Information for all farmland sales is also presented.

Data
In order to answer questions about Section 1031’s effect on farmland values, it is necessary to identify the types of assets exchanged. We source our data from the Internal Revenue Service’s Statistics of Income (SOI) (2009) program. The program provides data on tax laws as mandated by the Revenue Act of 1916. As part of their charge, the SOI developed a stratified random sample from all the US individual returns to study the form 1040 SOCA. The most recent panel was initiated in tax year 1999 with a sample 83,342 returns from SOCA cross-sectional sample, which is drawn from the cross-sectional sample of the population of all individual returns for that year[10]. The data are weighted accordingly.

Form 8824, the form on which like-kind exchanges are reported, contains a wealth of information about asset class of relinquished property, received property, dates of transactions, as well as information on the FMV of the property received, the adjusted basis of the property relinquished, any additional property, cash, or assumed liability (often called the “boot”) involved in the exchange, as well as any recognized or deferred gain on the exchange. Based on the taxpayers description of the like-kind properties involved in the exchange, we classify the property as farm-ranchland or other type of like-kind property.

Analysis of farmland exchanges
Overall, the number of like-kind exchanges has grown substantially in recent years (Table II). Between 1999 and 2003, total reported like-kind exchanges involving any type of asset increased by 60 percent from just over 116,000 to more than 186,000. However, the number of exchanges involving farmland decreased 98 percent over the

<table>
<thead>
<tr>
<th>Type of exchange</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total like-kind exchanges</td>
<td>116,014</td>
<td>135,221</td>
<td>121,495</td>
<td>179,971</td>
<td>186,774</td>
<td>n.a.</td>
</tr>
<tr>
<td>Farmland exchanged for other property</td>
<td>2,539</td>
<td>177</td>
<td>568</td>
<td>5</td>
<td>95</td>
<td>n.a.</td>
</tr>
<tr>
<td>Farmland exchanged for farmland</td>
<td>5,022</td>
<td>2,198</td>
<td>2,144</td>
<td>2,785</td>
<td>32</td>
<td>2,562</td>
</tr>
<tr>
<td>Other property exchanged for farmland</td>
<td>5</td>
<td>138</td>
<td>19</td>
<td>74</td>
<td>15</td>
<td>n.a.</td>
</tr>
<tr>
<td>Total involving farmland</td>
<td>7,566</td>
<td>2,513</td>
<td>2,731</td>
<td>2,864</td>
<td>141</td>
<td>2,562</td>
</tr>
</tbody>
</table>

Note: n.a. = not available; data are weighted
Source: SOI, SOCA Panel Study
same period. As expected, exchanges involving farmland represent a relatively small share of the total, averaging only about 2.1 percent of all exchanges over the period. While farmers engage in a number of like-kind exchanges, the majority of exchanges involving farmland are by non-farmers. However, exchanges by non-farmers tend to involve smaller amounts with less gain to defer.

The data reveal several distinctive characteristics of exchanges involving farmland. The first feature that stands out is the high year-to-year variability in the number of exchanges. In 1999, for example, like-kind exchanges involving farmland were the largest, both in absolute and relative terms. While overall like-kind exchanges have continually grown in every year but one since 1999, the number of farmland exchanges in 1999 was more than twice as great as the next highest year, 2002, and accounted for 7 percent of all like-kind exchanges.

Clearly, there was a flurry of activity in 1999. To address why there were a relatively high number of farmland exchanges, more research is needed. For example, what happened to the volume of like-kind exchange involving farmland prior to 1999? Our current data do not allow us to directly address this; however, a number of provisions in the Taxpayer Relief Act of 1997 (TRA97) may provide some clues about what prompted the exchange behavior we can observe in 1999.

Two pieces of TRA97, one which increased the value of an exchange in some cases and another associated with estate planning incorporating conservation easements, are two potential reasons for the markedly large volume. A provision of the Act reduced the 20 percent capital gains rate to 18 percent (8 percent for taxpayers in the 15 percent ordinary income tax bracket) for assets held more than five years, beginning in 2001[11]. Thus, one plausible strategy for landowners would be to exchange the land in 1999 and hold the replacement property until 2006, when it could then be sold and the gains taxed at the 18 percent (or 8 percent) amount, rather than selling in 1999 and paying the 20 percent rate.

A second notable feature of the Act allowed for a larger exclusion for estate tax purposes for certain land subject to a permanent conservation easement. This feature would have added an incentive for landowners to exchange high value land, perhaps because of the development potential, and place the replacement property into a conservation easement[12]. Under this strategy, an owner of farmland would defer capital gains taxes, and their estate would benefit from the larger exclusion, which was $100,000 in 1998 but increased to $500,000 in 2002. These are two plausible reasons for the volume of exchanges in 1999, but more research is needed.

Another artifact of the variability is evident in the year 2003, when, despite the fact that there were an estimated 186,774 like-kind exchanges conducted by taxpayers, only 141 exchanges involving farmland were reported. Year 2003 was also the only year in which more landowners conducted an exchange of farmland for other property than either of the other two exchange categories. Farmland-for-farmland exchanges were nearly non-existent in 2003 after 2,785 such exchanges were reported in year 2002[13].

The theory of an exchange premium that supposes that farmland is more often than not exchanged for farmland is supported by the tax evidence. In 1999, the year in our data with the greatest number of total exchanges involving farmland, there were 5,022 farm-to-farm exchanges out of 7,566 exchanges involving farmland. In 2002, exchanges of farmland-for-farmland accounted for 97 percent of exchanges involving any farmland. Over entire sample period, 77 percent of exchanges involving farmland were of the category farmland-to-farmland. Clearly, the number of exchanges shows that Section 1031 is an important provision for landowners of farmland who wish to
“roll over” or maintain their investment in farmland. As explained in the beginning, this is an important factor in leading to the capitalization of the exchange premium into farmland values given the relatively small amount of farmland sold over time.

The data in Table II also reveal that so-called “outside investors” exchanging other assets for farmland is relatively insignificant, either in terms of the number of exchanges or value, and therefore of economic significance. This type of exchange is thought to be conducted mostly by non-farmers who hold the asset for strictly investment reasons, and use the farmland for reasons such as residential development, rather than using it in an agricultural capacity; however, exchanges whereby other property is exchanged for farmland are rare. In 2000, the year with the greatest number of such exchanges, 138, they only accounted for 5 percent of exchanges involving farmland. Over the entire period for which we have data, they accounted for less than 2 percent of exchanges involving farmland. The data should reassure concerned parties that Section 1031 is not being used by those more likely to own non-farm property and exchange it for farmland for speculative purposes, thus adding to the price pressure on farmland. Further, as we will see later in this section, the value of these types of exchanges is relatively to other types of exchanges involving farmland.

Like the farmland-for-farmland exchanges, exchanges where farmland was exchanged for other property was noticeably higher in 1999 relative to the other years in the data. Despite this, these exchanges account for a minority of exchanges. In 1999, such exchanges accounted about 34 percent of all exchanges involving farmland and only about 21 percent for 1999-2003. And like the other exchanges, the number of exchanges fell precipitously from 1999-2003.

To provide perspective on the relative importance of an exchange as a mode of disposition, Table III presents long-term and short-term gains involving farmland. From the data, we can see the numbers of farmland sales are much greater than the numbers of farmland exchanges reported in Table II. In 1999, for every exchange involving farmland, nearly seven sales took place. And, while neither the long-term nor short-term data show a clear year-to-year pattern, the number of sales is less volatile over time than exchanges, and over the five-year period the number of sales rose 33 percent.

The FMV of property received in an exchange involving farmland is presented in Table IV. The value data generally follow the trend of the data for the number of sales. As we saw earlier, 1999 was a big year for exchanges, and the reported FMV value of property received concur with the data for the number of exchanges. The total FMV involving farmland was nearly $5 billion. Exchanges where farmland was exchanged for farmland accounted for the majority of the value and the number of exchanges in every year except 2003. The standout figure is the $4 billion in 1999. Data for 2005 were

<table>
<thead>
<tr>
<th>Year</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short-term net gains</td>
<td>9,077</td>
<td>4,958</td>
<td>5,635</td>
<td>2,227</td>
<td>2,812</td>
<td>n.a.</td>
</tr>
<tr>
<td>Total</td>
<td>49,226</td>
<td>48,356</td>
<td>45,343</td>
<td>56,149</td>
<td>56,379</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

Note: n.a. = not available
Source: SOI, SOCA Panel Study
only available for farm-to-farm exchanges, but despite this, the total for 2005 was the second largest, or just over $1 billion.

Despite the relatively low number of exchanges in 2003, the provision was important to some taxpayers. In 2003, only $290 million worth of farmland was exchanged; however, the average value of a property received in a transaction was large. Overall, property received in any exchange of farmland had an average FMV of just over $2 million. An exchange of farmland-for-farmland had an average value of more than $4 million.

Just how valuable are exchanges to those who dispose of farmland? Evidence is presented in Table V. Telling of the true value to the taxpayer is the deferred gain – the difference in the FMV of the property received in an exchange and the adjusted basis of the property relinquished, plus any addition “boot.” In 1999, more than $3.3 billion in gains were deferred, and most of the gains were from farmland-to-farmland exchanges. A taxpayer who exchanged farmland for farmland deferred an average of $577,210 in gains. For comparison, as reported in Table VI, in 1999, a taxpayer who sold farmland and recognized a long-term gain realized only $35,290 of gain. In subsequent years, the amount of deferred gains was much lower than in 1999. At their lowest point in the data, 2002, only $174 million – a small fraction of the amount in 1999 – was deferred using an exchange.
As we described earlier when we developed a premium for exchanging land vs a sale-purchase strategy, landowners who wish to dispose of land also have the option of selling the land, and if there is a gain (or loss), recognizing it for tax purposes. While the average deferred amount of an exchange involving farmland was higher than the average gain from a sale, the total amount of gains from farmland sales were higher than the gains from an exchange in every year but 1999. This follows from the fact that sales of farmland are used far more frequently than exchanges of farmland.

The tax benefit of the gain deferred in an exchange at the time of the exchange is, generally, the deferred gain amount multiplied by the long-term capital gains rate of 15 percent[14]. Therefore, in sum, taxpayers saved $125 million in taxes due over the period 1999-2003, or an average of $39,500. Again, landowners of farmland who exchanged their property for other farmland received the greatest tax benefit: $106 million or the $125 million in deferred taxes. In such a case, the average landowner received $43,300 in tax benefits. On the other hand, taxpayers who chose to sell their property paid $239 million in taxes on their gains in 1999-2003. On average, across the five years of reported data, they paid an average of $5,200 in capital gains taxes.

Table VII presents the number and value of like-kind exchanges made by farmers and non-farmers in tax year 2005. Taxpayers are classified as farmers if they reported income from farming, for example, reported a profit or loss from farming on Schedule F (Form 1041), or reported farming as their occupation on Form 1040. The first notable feature of

<table>
<thead>
<tr>
<th>Type of exchange</th>
<th>Number of exchanges</th>
<th>FMV of property received</th>
<th>Adjusted basis of property relinquished</th>
<th>Recognized gain</th>
<th>Deferred gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farmland for farmland</td>
<td>624</td>
<td>572,820</td>
<td>106,339</td>
<td>479,688</td>
<td>466,481</td>
</tr>
<tr>
<td>Non-farmers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farmland for farmland</td>
<td>1,938</td>
<td>587,620</td>
<td>358,922</td>
<td>32,636</td>
<td>261,685</td>
</tr>
<tr>
<td>Total</td>
<td>2,562</td>
<td>$1,160,440</td>
<td>$465,261</td>
<td>$512,324</td>
<td>$728,166</td>
</tr>
</tbody>
</table>

Notes: Values in thousands of dollars; average values per exchange are in brackets
Source: SOI, SOCA Panel Study

Table VI
Amount of recognized gains from farmland sales

<table>
<thead>
<tr>
<th>Year</th>
<th>Long-term net gains (average)</th>
<th>Short-term net gains (average)</th>
<th>Total value of gains (average)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>1,416,890</td>
<td>280,078</td>
<td>1,696,968</td>
</tr>
<tr>
<td></td>
<td>(35.291)</td>
<td>(30.854)</td>
<td>(34.473)</td>
</tr>
<tr>
<td>2000</td>
<td>1,841,149</td>
<td>26,406</td>
<td>1,867,555</td>
</tr>
<tr>
<td></td>
<td>(42.425)</td>
<td>(5.326)</td>
<td>(38.621)</td>
</tr>
<tr>
<td>2001</td>
<td>1,240,430</td>
<td>85,278</td>
<td>1,325,708</td>
</tr>
<tr>
<td></td>
<td>(31.239)</td>
<td>(15.133)</td>
<td>(29.238)</td>
</tr>
<tr>
<td>2002</td>
<td>2,409,368</td>
<td>14,504</td>
<td>2,423,872</td>
</tr>
<tr>
<td></td>
<td>(44.683)</td>
<td>(6.514)</td>
<td>(43.169)</td>
</tr>
<tr>
<td>2003</td>
<td>1,063,414</td>
<td>24,197</td>
<td>1,087,611</td>
</tr>
<tr>
<td></td>
<td>(19.852)</td>
<td>(8.605)</td>
<td>(19.291)</td>
</tr>
<tr>
<td>2005</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

Notes: Values in thousands of dollars; n.a. = not available; average values per sale are in brackets; long-term net gains from sales reported on Schedule D and Form 4797 Part I, II, and III; short-term net gains from sales reported on Schedule D
Source: SOI, SOCA Panel Study
the table is that non-farmers engaged in far more like-kind exchanges involving real farm property. The second feature of the table that strikes the reader is that the potential tax-deferred value of the exchange is much greater for farmers, that is, the FMV of the property received was much higher than the property relinquished, particularly when the exchange involved farmland and other types of real property. Non-farmers, however, have much more deferrable gains because they represent the majority making the exchanges.

Non-farmers conducted a majority of like-kind exchanges, regardless of whether the exchange exclusively involved farmland or not. In 2005, non-farmers made 1,938 farmland-for-farmland exchanges, while farmers reported 624 such exchanges. There are far more non-farmers in the workforce, so in a relative sense, farmers made a relatively large amount of exchanges compared with the rest of the US population. Despite making up less than 2 percent of the workforce, farmers conducted 24 percent of the farmland-for-farmland exchanges (USDA, 2007; USBLS, 2007). Depending on the orientation, the difference in the number of exchanges conducted by farmers and non-farmers might be surprising. From the point of view of an economic or business interest, on the other hand, we might expect farmers to own a majority of the farmland in the USA and therefore exchange most of the farmland, particularly when the exchange is farmland-for-farmland. Based on evidence from the 1999 Agriculture and Economics Land Ownership Survey, non-operators owned 51 percent of the 434 million acres of cropland in the USA (ERS, 2003). Though the data on land ownership and land rental are not available to further describe non-farmers, many are likely retired operators that do not participate in the farm operation or report farm income and would therefore not be considered farmers for tax purposes.

Non-farmers (non-operators) on average are more likely to hold farmland as an investment. Thus, the average value of farmland-for-farmland exchanges was smaller for non-farmers, which would suggests that smaller amounts of farmland were exchanged. In an average exchange, non-farmers received land worth about $303,000, while farmers received land worth $918,000 on average.

The value of Section 1031 is much greater for farmers than non-farmers. Farmers likely exchanged more in terms of acreage, and the spread between the FMV of the received property and the adjusted basis of the property relinquished was also much larger. Despite the fact that non-farmers conducted more than three times the farmland-for-farmland exchanges, farmers deferred nearly twice as much gain. Farmers deferred $466 million in 2005 for farmland-for-farmland exchanges, while non-farmers deferred $261 million. The average deferred gain for farmers was $747,566 compared to an average deferred gain of $135,121 for non-farmers. Or, in terms of taxes due for 2005, farmers saved $112,135 on average, which means they had that much more to invest in a replacement property above what they could have invested in a sale-purchase scenario.

The gains recognized by taxpayers in an exchange generally include any cash received, as well as the FMV of other property received plus any net liabilities assumed by the other party, all reduced by incurred exchange expenses. In farmland-for-farmland exchanges, gains recognized by farmers were slightly larger than the gains they deferred; non-farmers recognized much less in gains than they deferred. On average, farmers and non-farmers recognized gains of $768,731 and $16,840, respectively.

Is it the case that “1031 money” chasing a limited amount of farmland is responsible for placing upward pressure on farmland values? Unfortunately, we do not have the microdata help to answer this question. What we can do is rely on the theoretical premium developed in the first half of the paper together with the relative size of the exchanges to make inferences about their importance. Despite these limitations our
analysis still reveals a number of important findings that shed a great deal of light on this important question relative to what was known previously. This also highlights important questions for further research using less aggregated data if it can be obtained.

To assess the impact of Section 1031 on farmland prices, we evaluate the relative importance of exchanges compared to sales with these questions: Were the exchange premiums large enough, and was the number of exchanges high enough to significantly affect land values? The evidence we present in this article is clearly not definitive. We show that the exchange premium can be non-negligible for some taxpayers, depending on the factors surrounding the assets, such as the size of the gain, holding period or the replacement property, and the tax rates the exchanger faces. From Table VIII, for the peak year in the data, exchanges appear to be significantly large as to affect sale prices of farmland. As a percentage of total sales value, the deferral amounts can be as high as 43 percent – as seen in 1999. In the other years, the deferral amount, on average, was closer to 5 percent of the value of farmland sales.

The President’s proposed budget for fiscal year 2010
The President’s budget for 2010 consists of three amendments to the Code that would have practical effects for parties who wish to sell or exchange like-kind property. First, the President’s budget extends tax law changes enacted in 2001[15] and 2003[16], which means retaining the 10, 25, 28 percent, and part of the 33 percent tax brackets for individual income rates. Second, the budget sunsets ordinary income rates from 2001 for taxpayers in the top two brackets, 33 and 35 percent. After the sunset, the marginal rates return to pre-EGTRRA levels of 36 and 39.6 percent. Finally, the budget creates a new 20 percent marginal rate for capital gains for taxpayers who would otherwise be in the 36 and 39.6 percent ordinary income brackets.

In Table IX we consider changes to the ordinary income and capital gain tax changes and the associated incremental value (net present value) of an exchange. We

<table>
<thead>
<tr>
<th>Year</th>
<th>Value of farmland sales</th>
<th>Amount of deferrals</th>
<th>Deferral amount as percentage of sales (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>6,636,000</td>
<td>2,898,626</td>
<td>43.7</td>
</tr>
<tr>
<td>2000</td>
<td>6,898,500</td>
<td>236,868</td>
<td>3.43</td>
</tr>
<tr>
<td>2001</td>
<td>7,121,000</td>
<td>74,752</td>
<td>1.10</td>
</tr>
<tr>
<td>2002</td>
<td>6,900,600</td>
<td>145,999</td>
<td>2.12</td>
</tr>
<tr>
<td>2003</td>
<td>7,785,400</td>
<td>134,273</td>
<td>1.64</td>
</tr>
<tr>
<td>2005</td>
<td>9,558,400</td>
<td>728,166</td>
<td>7.62</td>
</tr>
</tbody>
</table>

Table VIII.

Value of farmland sales and acreage sold

<table>
<thead>
<tr>
<th>Current tax rates</th>
<th>Proposed tax rates</th>
<th>Change in the exchange premium per acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income (%)</td>
<td>Capital gains (%)</td>
<td>Income (%)</td>
</tr>
<tr>
<td>33 15</td>
<td>36 20</td>
<td>$29.34</td>
</tr>
<tr>
<td>35 15</td>
<td>39.6 20</td>
<td>$31.59</td>
</tr>
</tbody>
</table>

Table IX.

Effect of the President’s 2010 Budget on the incremental value of an exchange

Source: Authors’ calculations based on a per acre adjusted basis of $1,000 for the original property
have labeled the incremental value as the “exchange premium,” and the differences between the premiums as a result changes in the tax rates by the President’s Budget are reported below.

We assume the relinquished property growth rates are $\gamma = 4$ and $\alpha = 2$, and the holding period of the replacement property is 15 years. From the table, we can see that the exchange premium increases in each tax bracket[17] – taxpayers would find the premium for exchanging land over conducting a sale-purchase transaction increasing. A taxpayer who initially faces a top marginal income rate of 33 percent and a capital gains rate of 15 percent will see an increased premium of $31.59 per acre by engaging in an exchange if the proposed tax rates are enacted. The premium increases by $29.34 for taxpayers currently in the 33 percent ordinary income tax bracket.

**Conclusion**

Section 1031 of the IRC permits the non-recognition of gains or losses from the sale of real property if the seller engages in an exchange of like-kind property. Important characteristics of the policy have potential consequences for the market for farmland, including requirements that a replacement property be identified within 45 days of the sale of the previous property and that the exchange be completed within 180 days. In this article, we present a theoretical model of like-kind exchange that we adapt from a common formulation, for example, like that of Ling and Petrova (2008).

We also present the first national analysis of tax data for like-kind exchanges deferring capital gains under Section 1031. Using data from the IRS’s SOCA Panel Study, we examine like-kind exchanges and total farmland sales for the years from 1999 to 2005. Our analysis of the tax data provides several important facts about the use of 1031 provision. Exchanges involving farmland made up a small minority of all exchanges between 1999 and 2005. Despite the continued growth in the number of exchanges, the number of exchanges involving farmland declined over the period and account for only 1 percent of the total number of exchanges. However, when an exchange involved farmland, the most dominant form was the exchange of farmland for farmland. Active farmers were also the minority of exchangers, even when the exchange involved farmland. Non-farmers conducted three times the farmland-for-farmland exchanges as farmers.

Our research provides insight into the value and use of the IRC’s Section 1031 provision. Based on simulations of our theoretical model using plausible assumptions about asset growth, we show how proposed tax changes will affect the tax value of the deferral. Future research needs to address this issue with microdata, perhaps, by further exploiting the panel aspect of the SOCA data. To address policy issues concerning the ability of farmers to continue to own farmland, further research is needed to address ownership and sales of real farm property sales.

**Notes**

1. Authors’ calculation from the 1999 Agricultural Economics and Land Ownership Survey, USDA, Census of the Agriculture.

2. The landowner still has option of selling the original property and purchasing other like-kind property, therefore incurring capital gains tax, but if the landowner wishes to defer the taxes, the disposition must be a like-kind exchange.

3. When disposing of farmland, the landowner can exchange the land for like-kind property, or the landowner can sell the property and purchase another property. The latter is termed a “sale-purchase” strategy.
4. Data for 2004 were unavailable.
5. As amended through December 31, 2008.
7. Using a like-kind exchange, the seller delays paying capital gains tax and acquires a property of the same value per unit, or $4,000. A sale-purchase with no additional financing allows the seller to acquire a second property worth only $3,550 per acre ($4,000 per acre minus capital gains taxes due of $450 per acre). The tax bill when selling this replacement property in \( t+n \) is based on the realized gains from \( t-m \) to \( t+n \). If the second property for both the exchange and the sale increase in value by 20 percent from \( t \) to \( t+n \) the exchange and the sale properties are worth $4,800 per acre and $4,260 per acre, respectively. If the tax rate on capital gains is 15 percent, the tax due in period \( t+n \) when using an exchange is $570 per acre. The same value for a sale-purchase is $106.50 per acre since the basis is the value of the second property in \( t \) rather than \( t-m \). Assuming a typical discount rate of 3 percent and \( n=5 \), the present value of the second term in (7) in period \( t \) is $66 per acre. The value of (10) comes to $41. Combining the results from both parts of Equation (7), the premium placed on an exchange in this scenario is just over $100.
8. The quintessential example is the farmer that sells 30 or 40 acres for the construction of a big box retail store where land was sold for $20,000 per acre, or more, who then defers paying capital gains tax on the sale by purchasing an equivalent value of farmland.
9. We only consider positive and non-zero values of \( \gamma \).
10. In 1999, there were 127,321,626 individual returns. The individual return sample consisted of 179,966 returns.
11. It should be noted the Act also reduced the capital gains rate to 20 percent immediately (10 percent for taxpayers in the 15 percent income tax bracket), however this would not encourage exchanges but rather sales.
12. Because the Act explicitly targeted land near metropolitan areas, farmer-developer exchanges were likely.
13. We have investigated the low value of farmland exchanged for farmland in 2003. Based on personal communications with SOI programmers, the figures are believed to be accurate and reflect the value of weights in that year.
14. We assume the gain is considered long term, because the average holding period of farmland is usually quite long. For example, the holding period for property relinquished in a farmland-to-farmland exchange was 25.9 years in 1999.
17. The taxable income amount for the 33 percent rate for taxpayer filing a joint return in 2008 was $195,850 to $349,700. The taxable income amount for the 35 percent rate for a joint return in 2008 was $349,700 or greater.

References


**Corresponding author**
James M. Williamson can be contacted at: jwilliamson@ers.usda.gov