



**FAPRI Analysis of**  
**Stricter**  
**Payment**  
**Limitations**

**Testimony to the  
Commission on the Application  
of Payment Limitations**

**June 17, 2003  
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**FAPRI**  
**At the University of Missouri**

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**Food and Agricultural  
Policy Research Institute**

**FAPRI-UMC Report #05-03**



## **Executive summary**

The Commission on the Application of Payment Limitations requested comments from the Food and Agricultural Policy Research Institute (FAPRI) regarding possible implications of imposing stricter limitations on farm program payments. This report provides quantitative estimates of market level impacts of a stylized payment limitation scenario.

The analysis examines the possible implications of limiting any operation as defined by the Census of Agriculture to no more than \$40,000 in direct payments, \$60,000 in counter-cyclical payments, and \$175,000 in marketing loan benefits. Key findings include the following.

1. Given data from the 1992 and 1997 Census of Agriculture, it appears that the assumed limitation would be much more likely to affect operations producing cotton and rice than operations producing corn, soybeans, wheat, or sorghum.
2. Estimates of impacts are very sensitive to market conditions. At low market prices, per-acre marketing loan benefits and counter-cyclical payments are much larger than when prices are high. As a result, a given dollar payment limit affects a larger share of production when prices are low than when they are high.
3. Given the assumptions of the analysis, the stricter payment limitation would reduce national area planted to cotton by about 500,000 acres and to rice by about 250,000 acres in the short run. Longer run impacts would be considerably smaller as producers make adjustments over time. Net effects on other major field crops are estimated to be quite small even in the short run.
4. Over the period from 2004-2012, the stricter payment limitation scenario would reduce both government farm program costs and government payments to producers by an annual average of about \$430 million.
5. The estimated effect on annual net farm income is approximately \$240 million, as some of the decline in payments is offset by lower rental payments and reduced production costs.
6. The payment limitation scenario has a small negative effect on national average land values. Effects on both land values and farm income will be concentrated in regions where a high proportion of production is from farms subject to the payment limitation. Net effects on other producers and regions are likely to be very small.

Because the analysis examined a stylized payment limitation alternative, the results should not be interpreted as the impacts of any particular piece of legislation. In looking at specific legislation, it would be especially important to evaluate the legal alternatives that producers would have to reorganize their operations so as to retain payment benefits.

## **Introduction**

Various proposals have been made to limit farm program payments. Estimating likely impacts of such proposals poses several challenges.

- 1) It is difficult to obtain the data necessary to make reliable estimates of the number of farms and acres that would be affected by various payment limitation options, even if one assumes no changes in existing operations.
- 2) Experience suggests that producers can and will find ways to reorganize their operations to mitigate any negative effects from payment limitation rules. Proper evaluation of a particular proposal requires a careful assessment of the legal alternatives available to producers.
- 3) Even if one knew precisely how many farms and acres might be affected by payment limitations once all legal alternatives are exhausted, it would still be difficult to estimate impacts on national production and prices. Various options are available to producers ineligible for payments at the margin, ranging from continuing current production patterns to shifting to alternative crops, idling land, or letting someone else take over the operation. Getting all the information necessary to properly evaluate the costs and benefits of each option for all affected producers is a tall order.

At the request of the Commission on the Application of Payment Limitations, the Food and Agricultural Policy Research Institute (FAPRI) has attempted to make quantitative estimates of a stylized payment limitation alternative. This analysis is not intended to evaluate a particular piece of legislation. FAPRI does not have expertise in evaluating the legal alternatives that might be available to producers under specific payment limitation legislation. Instead, the analysis will start from a particular set of assumptions about how the stylized alternative would limit payments to farm operations identified in the Census of Agriculture.

The estimates reported here were developed with the models FAPRI utilized in developing its January 2003 baseline projections for the agricultural sector (FAPRI 2003). The baseline reflects a continuation of current policies, including current payment limitation rules. In the baseline, current payment limitations have only minimal impacts on government spending, crop production, and crop prices, as most producers who might otherwise be affected have successfully reorganized their operations to avoid negative effects from current rules. The analysis consists of comparing this baseline scenario to an alternative scenario that imposes limitations on payments that are assumed to be binding on a much larger number of producers.

## **Assumptions of the analysis**

As stated in the introduction, this analysis is not intended to reflect a particular piece of proposed legislation. Instead, the following stylized rules are assumed.

- 1) Each farming operation (as identified by the Census of Agriculture) can receive no more than \$40,000 in direct payments, \$60,000 in counter-cyclical payments, and \$175,000 in marketing loan benefits annually.
- 2) Producers are unable to avoid these limitations simply by “paper” reorganizations, certificates cannot be used to redeem marketing loans, and producers are prohibited from using loan forfeitures to avoid limitations.

Although the dollar limits assumed here correspond to those in legislation proposed by Senator Grassley (S. 667), FAPRI makes no judgment about whether that legislation would have the impacts estimated in this study. The principal uncertainty is whether that legislation would have the same effect in restricting payments to particular producers as is assumed here. Census operations are unlikely to precisely match the entities eligible for payments under any prospective set of rules. Under current rules, it is possible for many entities to receive payments on any given Census operation. While S. 667 appears intended to reduce the number of entities eligible for payment, FAPRI does not have the legal expertise required to evaluate how easy or difficult it might be for producers to find ways around the proposed rules.

To translate this policy assumption into something that can be analyzed with the FAPRI modeling system, a series of other assumptions is required.

- 1) The size distribution of farms has continued to evolve since the 1997 Census of Agriculture was conducted. The analysis is based on an assumption that the distribution has changed since 1997 in much the same way as it changed between 1992 and 1997.
- 2) More than one program crop is typically produced on farms subject to payment limitations. The analysis is based on assumptions about the typical combination of crops on large farms. For example, farms growing corn are also assumed to grow soybeans. Details of these assumed crop mixes are available on request.
- 3) Expected levels of government payments correspond to the averages of FAPRI’s stochastic baseline. Given an assumed crop mix and expected payment levels for each crop, it is possible to compute an “effective” payment limit for each crop. For example, given an overall limit of \$40,000 in direct payments, corn producers would face restrictions once they reach about \$25,000 in corn direct payments (under our assumptions on crop mixes and payment rates, such operations would also earn \$15,000 in direct payments for soybeans and other crops). At national average program yields, this would correspond to approximately 1000 acres of corn base.
- 4) The projected acreage distributions by farm and the estimated effective payment limitations for each crop provide sufficient information to estimate

the proportion of each crop that would be ineligible for payments if producers made no changes in their operations. In the case of direct payments, this proportion would be fixed, but for counter-cyclical payments and loan program benefits, it would depend on the price of the commodity. Larger payments result at lower market prices, meaning that a given dollar payment limitation can cover fewer units of production.

- 5) These estimates of production ineligible for payment can be used in estimation of both crop supply response and of payments to producers. In terms of supply response, it is assumed that producers do not expect to receive the restricted payments on marginal production.
- 6) Even with the “hard” payment limitations assumed here, producers can and will react in ways that will mean that a smaller proportion of production will actually forego payments than the estimates described above would imply. For example, suppose a farmer with land otherwise ineligible for payments under the assumed limits chooses instead to sell or cash rent the land to a smaller-scale producer not subject to the limits. The result could be that all production by both producers is then eligible for payments. The estimates reported here assume that producers adjust so that 50 percent of the acreage that would otherwise be ineligible for payments in 2004 retains payment eligibility, and that this proportion increases to 75 percent by 2009.

## **The FAPRI model**

The analysis is conducted using the FAPRI stochastic model of U.S. agricultural markets. The model covers the grain, oilseed, cotton, livestock and dairy sectors, and also provides estimates of government farm program outlays, net farm income, and consumer food prices. In contrast to FAPRI’s traditional modeling system, the stochastic model estimates distributions of possible outcomes rather than simple point values. This is done by projecting 500 possible 10-year paths for the U.S. agricultural economy, based on correlated random draws of crop yields, demand disturbances, and other factors that cause variability in production, consumption, trade, and prices.

The advantage of the stochastic approach is very clear in the present analysis. If prices are high, payment limitations may have little impact on crop production or prices, as limits on loan deficiency payments and counter-cyclical payments are irrelevant if payment rates are zero. As prices decline, payment rates increase and more farms become subject to payment limitations. If prices are sufficiently low, an inability to obtain marketing loan benefits on marginal production would discourage producers subject to payment limits from raising the crops in question when marginal production costs exceed market prices. These producers would have strong incentives to switch crops, idle land, or transfer land to producers not subject to payment limitations. The stochastic approach allows consideration of both low and high price scenarios, and everything in between.

In the supply equations of the model, producers are assumed to respond primarily to market prices and payments tied directly to current production (e.g., loan deficiency payments). Counter-cyclical payments mitigate price risk, but because these payments are not tied to current production levels, they have a smaller effect on producer planting decisions than do market returns or loan deficiency payments. Direct payments in the model have only a small, non-crop specific effect on supply, as the additional revenue keeps some resources in the sector that would otherwise exit. The implication of all this is that limitations on direct payments have little effect on crop supplies, limitations on counter-cyclical payments have only a modest effect, and limitations on marketing loan benefits have much larger consequences.

## Results

Census of Agriculture figures imply that payment limitations are much more likely to be a major issue for producers of cotton and rice than for producers of corn, soybeans, wheat, and sorghum. At 2004/2005 FAPRI baseline prices, approximately 44 percent of rice farms and 23 percent of cotton farms would have some payment limited if they fail to make any adjustment to the imposition of the assumed payment limitations (Table 1). These producers account for about 77 percent of rice production and 62 percent of cotton production. If producers fail to make any adjustments in their operations, approximately 39 percent of national rice production would be ineligible for direct payments, and 30 percent of national cotton production would be ineligible for counter-cyclical payments.

**Table 1. Estimated effects of payment limitations\* at 2004/2005 FAPRI baseline prices, assuming no producer response to limitations**

	Farms with Some Payment Limited		% of Total Production on Limited Farms	% of Total Production Ineligible for Payment	Type of Payment
	Number	Percent			
Rice	3,424	44%	77%	39%	Direct
Cotton	5,710	23%	62%	30%	CCP
Sorghum	1,141	3%	23%	8%	Direct
Wheat	2,183	1%	14%	6%	Direct
Corn	6,256	2%	14%	6%	Direct
Soybeans	5,695	2%	14%	4%	Direct

\*Limitation of \$40,000 in direct payments, \$60,000 in counter-cyclical payments, and \$175,000 in marketing loan benefits per Census of Agriculture operation.

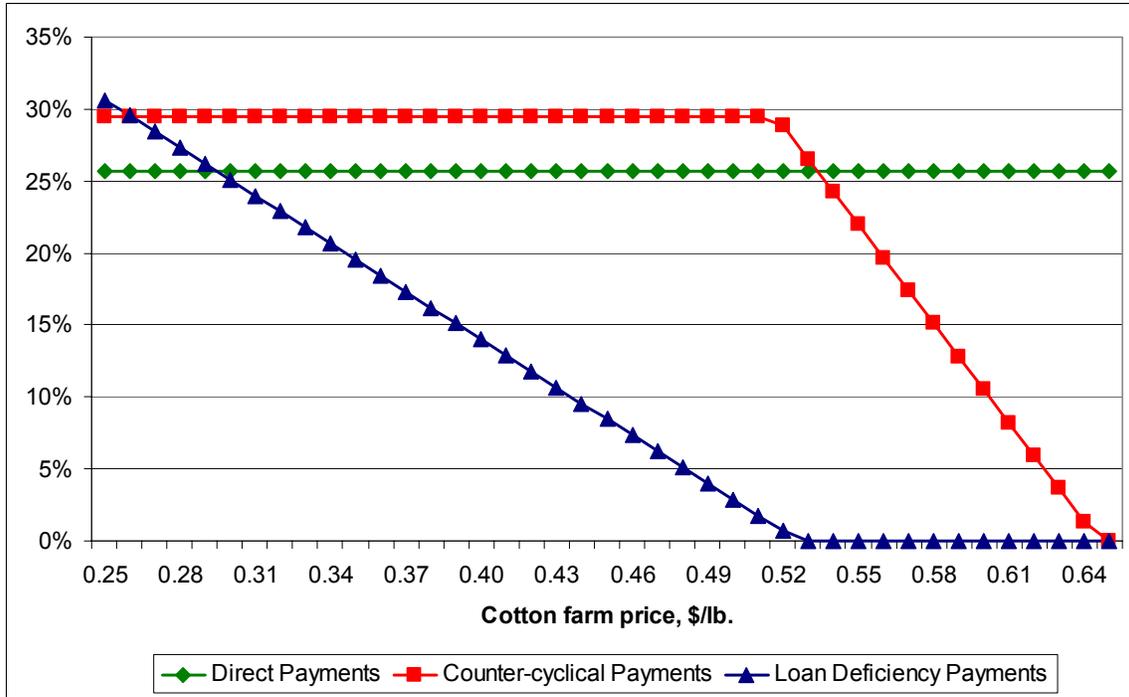
In contrast, only 1 to 3 percent of sorghum, wheat, corn, and soybean farms would face an issue with the assumed payment limitations. For wheat, corn, and soybeans, these

farms account for approximately 14 percent of national production. Similar absolute numbers of corn, cotton, and soybean farms would be subject to limitation, but there are many more farms that produce corn and soybeans than produce cotton. Note that one cannot add the farms by commodity to come up with an estimate of total farms potentially affected, as many farms would produce more than one of the indicated crops.

These estimates are very sensitive to the assumptions discussed earlier, and all of the results which follow depend on this set of assumptions. For example, if multiple entities are allowed per Census farm, the impacts of the assumed limitations would be much lower. Results would also differ if the distribution of farms by size has not changed in the assumed manner, or if the crop mix on farms subject to the limitation is different than assumed. However, while the specific estimates may well be subject to considerable error, it seems certain that cotton and rice farms are proportionally more likely to be affected by the assumed limitations than are corn, wheat, soybean, or sorghum farms.

The sensitivity of payment limitation effects to market prices is demonstrated by Figure 1. Given assumptions of the analysis, about 26 percent of the U.S. cotton crop would be ineligible for direct payments if there were no response to the assumed payment

**Figure 1. Estimated proportion of the U.S. cotton crop ineligible for various payments at different levels of market prices, assuming no producer response to the imposition of payment limitations\***



\*Limitation of \$40,000 in direct payments, \$60,000 in counter-cyclical payments, and \$175,000 in marketing loan benefits per Census of Agriculture operation.

limitation. In the case of counter-cyclical payments and loan deficiency payments, the estimated proportion ineligible depends on market prices. Almost 30 percent of the cotton crop would be ineligible for counter-cyclical payments if the cotton market price is less than \$0.52 per pound, but that proportion drops to 0 if the price rises to 65 cents. Similar relationships would hold for other crops, as a fixed percentage of the crop would be ineligible for direct payments, but increasing portions of the crop would be ineligible for counter-cyclical payments as prices rise above loan rate levels.

Likewise, restrictions on marketing loan benefits are irrelevant if prices are sufficiently above loan rates, but can be very important at low market prices. Because marketing loan benefits matter greatly in determining crop supplies, these results are critical to the subsequent analysis of supply and price impacts. If the cotton price falls to 40 cents per pound, for example, 14 percent of the cotton crop would be ineligible for loan program benefits if producers fail to make any adjustments. With prices of just 40 cents per pound and no government payments at the margin, cotton production would not be profitable for most affected producers.

Averaging across 500 alternative futures, Table 2 reports the proportion of production that would be ineligible for each type of payment for each crop in the absence of producer adjustments. The results confirm the notion that the assumed payment limitations are much more important to cotton and rice producers than they are to producers of other crops. In particular, note that less than 1 percent of corn, soybean, and wheat production would, on average, be subject to limitations on loan program benefits. While larger portions of corn, soybean, and wheat production would be subject to limitations on direct and counter-cyclical payments, those restrictions are less likely to have major impacts on crop supplies than are limits on loan program benefits.

**Table 2. Average proportion of production ineligible for payments in 2004 if producers do not adjust to assumed payment limitations\***

	Direct Payments	Counter- cyclical payments	Loan Deficiency Payments
Cotton	25.7%	26.7%	4.8%
Rice	39.0%	19.8%	8.5%
Corn	5.7%	3.4%	0.6%
Soybeans	4.4%	2.4%	0.5%
Wheat	6.5%	4.7%	0.2%
Sorghum	7.8%	5.7%	1.4%

\*Limitation of \$40,000 in direct payments, \$60,000 in counter-cyclical payments, and \$175,000 in marketing loan benefits per Census of Agriculture operation. Figures represent average of stochastic results for 500 alternative futures.

The principal results of the stochastic analysis for area planted, prices, government costs, farm income, and land values are presented in Table 3. In general, the results follow logically from the estimates of the proportion of production potentially affected for each crop. Effects are much larger for cotton and rice than for other crops.

In 2004, the average projected cotton acreage is approximately half a million acres less with the assumed payment limitations in effect than in the current-policy baseline. The estimated 250,000 acre reduction in rice area is even greater in proportional terms. Many cotton and rice producers would not find it profitable to continue growing those crops if no payments were available on marginal production. If the issue is the limitation on marketing loan benefits, some producers would find it profitable to switch to crops with greater market returns relative to variable production costs and with lower per-acre marketing loan benefits. This accounts for the modest increase in sorghum and soybean acreage in 2004 in the payment limitation scenario. However, limitations on direct payments and counter-cyclical payments are less likely to encourage producers to shift from one crop to another, as those payments are not available on the last acre a producer plants to a particular crop even in the baseline. Those payments—and their limits—apply regardless of the producer's planting decision.

For crops other than cotton and rice, the net effect on planted acreage is small. On the one hand, some cotton and rice producers are likely to shift into these other crops, and one would expect to see increased production of these other crops in southern states. On the other hand, payment limitations do directly affect at least some current producers of corn, soybeans, and wheat as well. While proportionally fewer acres of these other crops are directly affected, in absolute terms, the numbers are significant. Some of the affected producers will find production ineligible for payments unprofitable, and will reduce acreage devoted to the affected crops. Not estimated here are effects on production of fruits, vegetables, and other crops. Separate analysis prepared by colleagues at Arizona State University indicates that impacts on selected crops are generally likely to be modest (NFAPP 2003).

Summing up across six major crops, the assumed payment limitation scenario reduces the total area planted in 2004 by approximately 0.25 percent. This modest amount is well within the bounds of the annual shifts in total planted area that have been experienced in recent years. However, it is likely to differ from those recent changes in that it will tend to be very concentrated in regions that have both a preponderance of large scale producers subject to payment limitations and above-average production costs.

Crop price changes follow from the estimated changes in area planted. In the 2004/2005 marketing year, reduced acreage increases cotton prices by a little over 1 cent per pound and rice prices by about 40 cents per hundredweight. With little change in production, prices for other major field crops are only marginally affected.

**Table 3. Estimated average impacts of stricter payment limitations\***

	2004				2004-2012 Average			
	Current Policy	Stricter Limits	Abs. Diff.	Percent Diff.	Current Policy	Stricter Limits	Abs. Diff.	Percent Diff.
Crop area planted	million acres				million acres			
Cotton	13.98	13.47	-0.51	-3.66%	13.65	13.45	-0.20	-1.48%
Rice	3.14	2.89	-0.25	-7.92%	3.14	3.07	-0.07	-2.23%
Corn	79.64	79.65	0.01	0.01%	80.72	80.70	-0.02	-0.03%
Soybeans	73.41	73.52	0.11	0.15%	73.67	73.71	0.03	0.04%
Wheat	62.01	61.99	-0.02	-0.04%	61.40	61.35	-0.05	-0.08%
Sorghum	9.68	9.74	0.06	0.61%	9.51	9.51	-0.01	-0.07%
6 major crops	241.85	241.25	-0.61	-0.25%	242.10	241.79	-0.32	-0.13%
Crop prices, marketing yr.	dollars				dollars			
Cotton/lb.	0.482	0.493	0.011	2.30%	0.514	0.520	0.006	1.13%
Rice/cwt.	4.845	5.243	0.399	8.23%	5.475	5.620	0.146	2.66%
Corn/bu.	2.097	2.096	-0.001	-0.04%	2.181	2.182	0.001	0.06%
Soybeans/bu.	5.008	4.999	-0.008	-0.17%	5.201	5.199	-0.002	-0.04%
Wheat/bu.	3.091	3.092	0.002	0.05%	3.230	3.232	0.002	0.07%
Sorghum/bu.	1.959	1.955	-0.004	-0.19%	2.060	2.062	0.002	0.07%
Gov't outlays, fiscal yr.	million dollars				million dollars			
Cotton	2,899	2,841	-57	-1.98%	2,513	2,321	-192	-7.63%
Rice	1,305	1,223	-82	-6.29%	1,142	1,044	-98	-8.60%
Corn	4,954	4,926	-28	-0.57%	5,304	5,225	-79	-1.49%
Soybeans	2,163	2,156	-8	-0.36%	2,044	2,032	-12	-0.59%
Wheat	2,290	2,269	-21	-0.91%	2,124	2,084	-40	-1.89%
Sorghum	393	389	-4	-0.94%	413	404	-9	-2.11%
Net CCC+conservation	19,933	19,733	-200	-1.00%	19,952	19,520	-431	-2.16%
Farm income, calendar yr.	million dollars				million dollars			
Government payments	18,832	18,368	-464	-2.46%	17,648	17,213	-435	-2.47%
Crop market receipts	103,408	103,302	-106	-0.10%	112,767	112,761	-6	-0.01%
Other income, inv. change	134,222	134,092	-130	-0.10%	138,446	138,423	-22	-0.02%
Rent to non-operators	13,135	13,047	-89	-0.68%	14,108	13,998	-110	-0.78%
Other production costs	194,165	193,906	-259	-0.13%	205,316	205,202	-114	-0.06%
Net farm income	49,162	48,810	-352	-0.72%	49,437	49,198	-238	-0.48%
Land value, end of year	dollars per acre				dollars per acre			
	1335.21	1332.71	-2.50	-0.19%	1485.32	1479.55	-5.78	-0.39%

\*Limitation of \$40,000 in direct payments, \$60,000 in counter-cyclical payments, and \$175,000 in marketing loan benefits per Census of Agriculture operation. Figures represent average of stochastic results for 500 alternative futures.

Given the assumption that producers will find ways to adjust to the payment limitations, the effects on acreage and prices diminish over time. For example, Figure 2 shows that the estimated impacts on cotton and rice acreage decline to a fraction of the 2004 impact by 2012. The reduction in rice acreage in 2005 is much smaller than in 2004 both because producers are assumed to find ways to adjust to the new payment limitation rules, and because 2004 rice market prices improve relative to baseline levels.

Because many payments associated with the 2004 crop are not made until fiscal year 2005 or even 2006, the net effect on fiscal 2004 government outlays on farm programs is relatively modest. The largest impact occurs in fiscal 2005 (Figure 3).

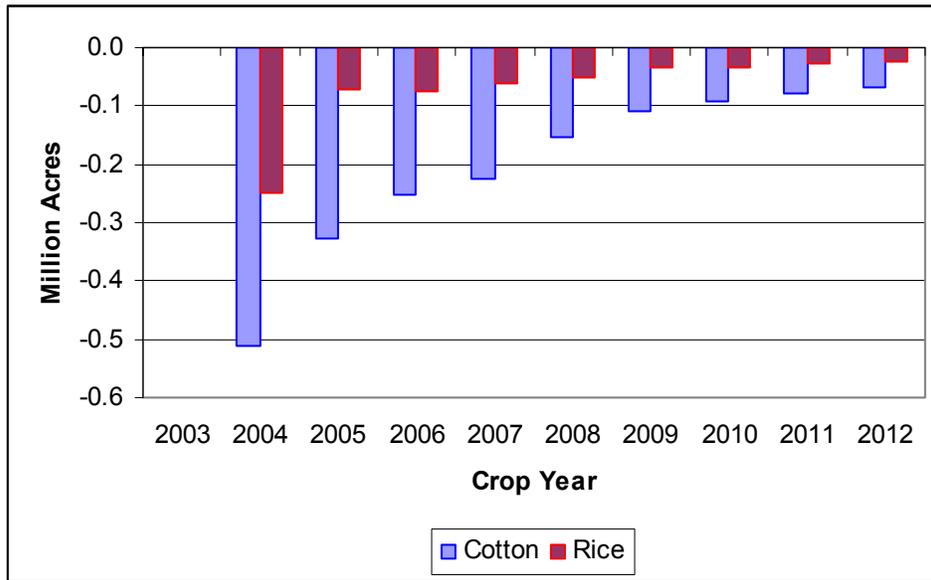
For the fiscal 2004-2012 period as a whole, the average annual reduction in government farm program outlays caused by the payment limitation scenario is approximately \$431 million. Cotton outlays alone drop by an average of \$192 million, and rice outlays fall by \$98 million, meaning that those two crops account for approximately two-thirds of the total government cost savings.

These estimates of government cost savings far exceed the estimates that are often made of the impacts of payment limitations. It should be noted that the estimates reported here depend critically on the assumption that the limitations imposed are “hard” limits that will actually reduce payments to significant numbers of producers. Experience with existing payment limitation rules has been that many producers have found ways to make changes in their operations so that, at the end of the day, almost all production retains payment eligibility. Generic certificates make limitations on marketing loan benefits largely ineffective.

This analysis is based on a stylized payment limitation scenario that simply assumes a way is found to make payment rules effective without specifying just how that might be done. Thus, these estimates of government cost savings are unlikely to match savings estimates for any particular piece of proposed legislation. In general, these estimates would represent an upper bound of likely cost savings for the specified levels of limitations on particular payments.

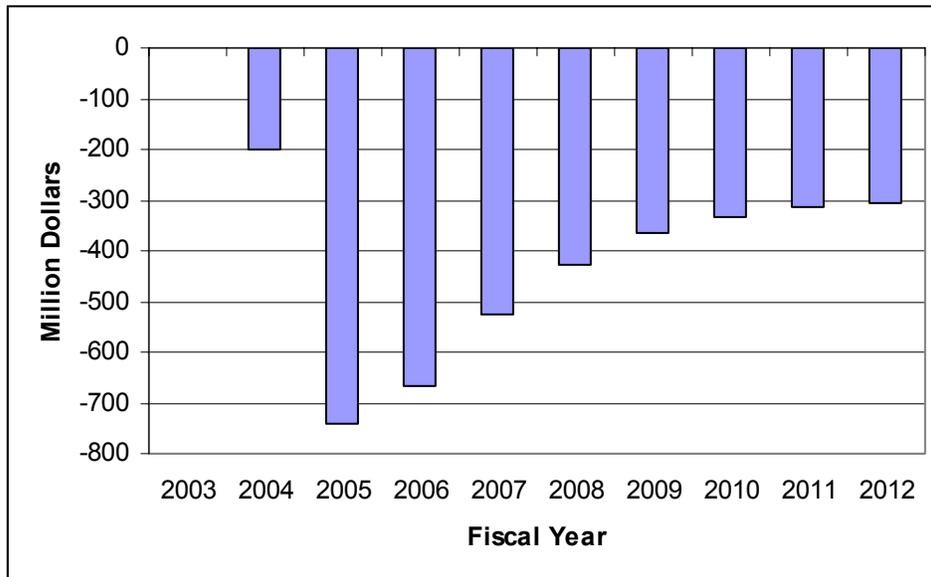
Turning to estimates of farm income impacts from the payment limitation scenario, the average long-run change in government payments (\$435 million per year) closely corresponds to the estimated change in government outlays (\$431 million per year). After a modest initial decline, the average change in crop market receipts over the 2004-2012 period is almost zero. In the short run, the decline in cotton production slightly outweighs the increase in cotton prices, but over the period as a whole, movements in commodity prices and production generally offset each other. Likewise, after an initial adjustment in inventory values due to reduced cotton and rice production, long-run changes in inventories, receipts from livestock, and other farm income are very small. In sum, then, the estimated 2004-2012 change in gross farm income is nearly identical to the estimated change in government payments.

**Figure 2. Estimated impacts of stricter payment limits\* on cotton and rice plantings**



\* Limitation of \$40,000 in direct payments, \$60,000 in counter-cyclical payments, and \$175,000 in marketing loan benefits per Census of Agriculture operation. Figures represent average of stochastic results for 500 alternative futures.

**Figure 3. Estimated impacts of stricter payment limits\* on government farm program outlays**



\*Limitation of \$40,000 in direct payments, \$60,000 in counter-cyclical payments, and \$175,000 in marketing loan benefits per Census of Agriculture operation. Figures represent average of stochastic results for 500 alternative futures.

On the production cost side of the ledger, reduced cotton and rice area translates into reduced costs. The analysis assumes that the changes in variable production costs correspond to the average per-acre costs for each crop multiplied by the change in acreage for that crop. This could either overstate or understate actual changes. On the one hand, farmers facing payment limitations are most likely to reduce production on their highest-cost acres, suggesting that production cost savings could be even greater than estimated here. On the other hand, suppose payment limitations cause a significant shift in production patterns so that more acreage is operated by smaller-scale producers. If these producers have higher average costs than the large-scale producers currently operating the land, then the national average cost of production could increase. Which of these effects would dominate is unclear, so the analysis sticks with the simple calculation of variable cost changes.

Also of interest is the effect of stricter payment limitations on rental rates and land values. Large-scale producers subject to the new limitations would experience lower profits and be less willing to bid as much for land in rental or purchase markets. On the other hand, given our estimates of commodity price changes, the limitations would have little or no impact on the amount smaller-scale producers would be willing to pay. How these effects play out in local land markets probably depends on the proportion of land operated by producers subject to payment limitations. In areas where large-scale producers dominate and there are limited non-agricultural uses of land, the declines in rental rates and land values could be significant. On the other hand, in areas where there are few large scale producers, there would likely be little or no effect on local land markets.

For the country as a whole, the estimated decline in rental payments to non-operator landlords is approximately 0.8 percent over 2004-2012, and the average decline in land values is approximately 0.4 percent. Both of these estimates are broadly consistent with the 0.5 percent reduction in estimated net farm income. Estimated rental payments are slightly more sensitive than land values, as rental values tend to be more closely tied to agricultural use values than are land values, which are strongly affected by non-agricultural demand in many parts of the country.

Given the estimated changes in government payments, other income, and production costs, the calculated reduction in net farm income averages \$238 million per year over FY 2004-2012. This represents approximately 55 percent of the change in government payments.

This decline in farm income would not be spread evenly across all producers, but would instead be experienced primarily by the producers subject to payment limitation. As indicated in related work done at the Agricultural and Food Policy Center (AFPC) at Texas A&M University, the effects on these producers could be very large, and could force them to make major structural changes or go out of business.

Most other producers would experience little positive or negative effect from stricter payment limitations. With little change in commodity market prices and only modest average changes in rental rates and land values, effects would probably be small in most of the country. However, in regions where many producers are subject to the new limitations, more significant effects are possible, ranging from larger changes in local land markets to changes in local marketing possibilities. If payment limitations caused a major reduction in production by large-scale producers in a particular region, it could lead to reductions in production and marketing infrastructure that could affect even small-scale producers. On the other hand, less competition from large-scale operators would make it less expensive for small-scale producers to rent or purchase land.

## **Comparison to past FAPRI analysis**

During debate on the 2002 farm bill, FAPRI was asked to do a comparative analysis of the bills passed by the House and the Senate (FAPRI 2002b). Because the Senate bill included a payment limitation provision, FAPRI made some rough estimates of possible implications using a methodology similar, but slightly simpler, than utilized here. The particular scenario examined differed from that examined here in a number of respects. For example, the underlying farm program was the Senate bill, which differs from current law in a number of ways (e.g., loan rates were higher in the Senate bill than in current law). The most important difference is that this analysis is of a stylized limitation, whereas the earlier analysis was of a specific piece of legislation. In the earlier analysis, FAPRI assumed more “slippage,” as more producers were assumed to find some way to retain payments in spite of the new limitations. As a result, the estimated government cost savings were smaller than estimated here.

Acreage impacts in the earlier analysis were generally consistent with those reported here, once one corrects for differences in program provisions and market conditions. Higher cotton loan rates in the previous analysis would have led to larger acreage impacts (as foregone marketing loan benefits are more likely to affect acreage decisions than are foregone payments not tied to current production), but the higher level of slippage assumed in the earlier analysis would have the opposite effect.

A source of possible confusion is the underlying market situation. The earlier analysis was done compared to a baseline prepared in early 2001, when cotton and rice prices were projected to be higher than in FAPRI’s January 2003 baseline. All else equal, the lower prices in the current baseline would be expected to yield larger estimates of acreage impacts. However, the earlier analysis explicitly recognized that the projections of early 2001 were out of date: “...to avoid what might have been a serious understatement of the effects, we considered a more current set of price projections in estimating the production consequences of payment limitations” (FAPRI 2002b: 13). That more current set of projections incorporated a cotton price projection of about 38 cents per pound for the first year of the analysis (FAPRI 2002a: 201).

To facilitate comparison, Table 4 summarizes cotton acreage impacts in the present analysis at various levels of cotton prices. While the impact on 2004 cotton

plantings is about half a million acres at prices between 40 and 50 cents per pound, the estimated impact is much larger at lower levels of market prices. The 1.17 million acre impact when prices are below 40 cents per pound matches quite closely the 1.25 million acre impact reported in the FAPRI analysis of the Senate farm bill, which is consistent with the 38 cent per pound cotton baseline price used for that analysis.

Note that in the baseline, 2004 cotton area is actually lower at higher levels of cotton prices. This occurs because the marketing loan effectively places a floor on cotton returns when market prices are less than 52 cents per pound, while prices for several competing crops are likely to be above loan rate levels. Because cotton prices and prices for other crops often (but not always) move in the same direction, below-average levels of cotton prices tend to be correlated with below-average returns for competing crops, making cotton more competitive given the loan rate floor. In the payment limitations scenario, large-scale producers respond to market prices at the margin, and so the “normal” positive relationship between cotton prices and acreage prevails.

**Table 4. Effects of stricter payment limitations on 2004 cotton plantings at different levels of 2003 cotton market prices\***

Price level	Probability	Baseline Area	Pay Limits Area	Difference
million acres				
Under 40 cents/lb	10%	14.34	13.17	-1.17
40-50 cents/lb.	70%	13.96	13.45	-0.51
Over 50 cents/lb.	20%	13.87	13.66	-0.22

\*Probabilities based on the FAPRI January 2003 stochastic baseline. Figures represent the average of area results for each price category.

In the case of rice, the 250,000 acre impact estimated here for 2004 is essentially identical to that in the analysis of the Senate bill. In the earlier analysis, no impacts were reported for other crops, and this analysis confirms that any such effects are likely to be small.

### Concluding comment

Estimating the impacts of payment limitations is very difficult and requires a large number of assumptions. The specific estimates reported here should be considered in context and not treated as precise predictions of what would happen were a particular piece of legislation to become law.

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