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Cotton Taxation in Uzbekistan

Opportunities for Reform

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Abstract

The Cotton Taxation in Uzbekistan study estimates in detail the major taxes and subsidies in the cotton sector over the period 2000-2004. The study estimates major explicit (or visible) and implicit (or hidden) taxes and subsidies. Data are presented in an Excel database which allows the user to simulate the impact of different policy reform scenarios and makes explicit the assumptions used to calculate taxes and subsidies.

This study estimates net transfers (taxes minus subsidies) at around 20-22 percent of farmers' gross cotton revenue in 2003-2004. Net of debt forgiveness, net transfers were at around 30 percent of farmers' gross cotton revenues in 2003 and 2004. This is higher than the corporate income tax rate of only 18 percent, or the maximum personal income tax band of 30 percent. The study concludes that cotton is over-taxed relative to other crops, therefore creating disincentives for farmers to produce cotton relative to other crops.

However the problem is more than just the level of taxation. The study argues that the current tax structure has perverse incentives which cause inefficiencies and cotton production could be increased at no cost to the budget if input subsidies and output taxes were reduced by equivalent amounts. The study presents a reform proposal which is fiscally neutral and would create a net welfare gain to Uzbekistan.

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This paper and attached database can be found at www.worldbank.org.uz

Acronyms and Abbreviations

ADB	Asian Development Bank
BT	Bacillus Thuringensis
CBU	Central Bank of Uzbekistan
EPP	Export Parity Price
FOB	Free on Board
GDP	Gross Domestic Product
GMO	Genetically Modified Organisms
Mln	million
N	Nitrogen
O&M	Operations and Maintenance
OTC	Over-The-Counter
PPI	Producer Price Index
RESP	Rural Enterprises Support Project
STO	State Trade Organization
VAT	Value-Added Tax

Measurement Units

Ha	Hectare (=10,000 square meters)
Ton	Metric Ton (=1,000 kilograms)

The Policy Context

Agriculture, which accounts for around 30 percent of GDP, receives high policy priority in Uzbekistan. The main objectives of Uzbekistan's agricultural policy in recent years are to:

- Maximize and stabilize export revenues from agricultural outputs;
- Achieve food security / self-sufficiency in wheat production;
- Redistribute revenue from agriculture to other sectors; and
- Improve rural standards of living.

Some of these objectives have been achieved. For instance, since independence Uzbekistan became self-sufficient in wheat production. This is thanks to significant increases of area cultivated under wheat and substantial yield improvements. However this multi-objective strategy is challenging. Two main examples show conflicts among some of the above objectives:

- Although high taxes are necessary to redistribute revenue from agriculture to other sectors, they reduce the standard of living of rural population and reduce production incentives, thereby affecting export revenues; and
- Wheat is not the most profitable irrigated crop in the climatic conditions of large parts of Uzbekistan. Self-sufficiency in food, therefore, also conflicts with the goal of maximizing export revenues and agricultural incomes.

To address the above conflicting policy objectives, the state fixes the area that farmers have to cultivate to produce two strategic crops: cotton and wheat. Cotton is the main export crop, contributing to around 25 percent of foreign exchange revenues, and a significant source of tax revenue. Wheat is considered to be essential to achieve food security and it also offers an easy rotation with cotton (although cotton-wheat is not necessarily the best rotation to maintain soil fertility).

The government procures the bulk of the cotton harvest from producers at the state procurement price, calculated every year by subtracting official costs from export revenues. However, due to overstated costs, the price received by farmers typically lies considerably below export parity under market conditions.¹ This, in addition to direct taxes such as VAT on cotton ginning, and excise taxes on cotton seed oil, represents the main source of tax revenue from agriculture. High taxes in turn imply reduced profitability of cotton production and the need for state orders to ensure that cotton production levels are maintained. Reflecting adverse production incentives, as well as deteriorating land quality, cotton yields declined gradually since the start of transition from 2.5 tons/ha to around 2.2 tons/ha, although they rebounded to 2.6 tons/ha in 2004. The comparison with China is of interest (see also The Chinese Experience at page 12). With climatic conditions similar to those of Uzbekistan during 2000-2004 China achieved average yields of 3.3 tons/ha, against 2.2 tons/ha in Uzbekistan. Taking this as

¹ In 2004 state procurement prices were increased compared to 2003, while world market prices for cotton subsequently fell. As a consequence the difference between world and domestic cotton prices narrowed substantially.

a benchmark, improved production incentives could generate up to 50 percent growth in output, equivalent to around US\$ 0.5 billion in additional export revenues.

The state not only obtains significant revenues from the agricultural sector, it also provides significant subsidies for irrigation, financing and other inputs to rural producers. In examining the extent to which a reduction in the tax burden on cotton production in particular would improve incentives for production and lead to yield increases, it is, therefore, important to take into account both taxes and subsidies. The objective of the present study is to estimate the resulting net transfers out of the cotton sector and its main components for the 2000-2004 period. We used official data for the calculations, which can deviate significantly from actual data. We used target costs of production because we were unable to obtain actual figures. This bias in using official or target data is to underestimate net transfers, since target costs tend to be inflated relative to international benchmark levels. The database constructed for the study does, however, allow the analyst to substitute target with actual revenues and costs, thereby ensuring that the calculations could be easily repeated by Government officials with access to real data.

On the basis of the data presented, the study develops a number of policy options to increase agricultural productivity through the greater use of cost and price incentives. These options are designed in such a way that they would be fiscally neutral if production levels remain constant, but would generate additional fiscal revenues if production levels were to rise.

It should be noted at the outset that the Government is presently carrying out a reform of land holdings by turning collectives into private farms with usufruct land rights. Private farms are expected to have greater incentives to maximize profits, thus complementing in a critical way any reforms of input and output pricing upon which the Government may embark.

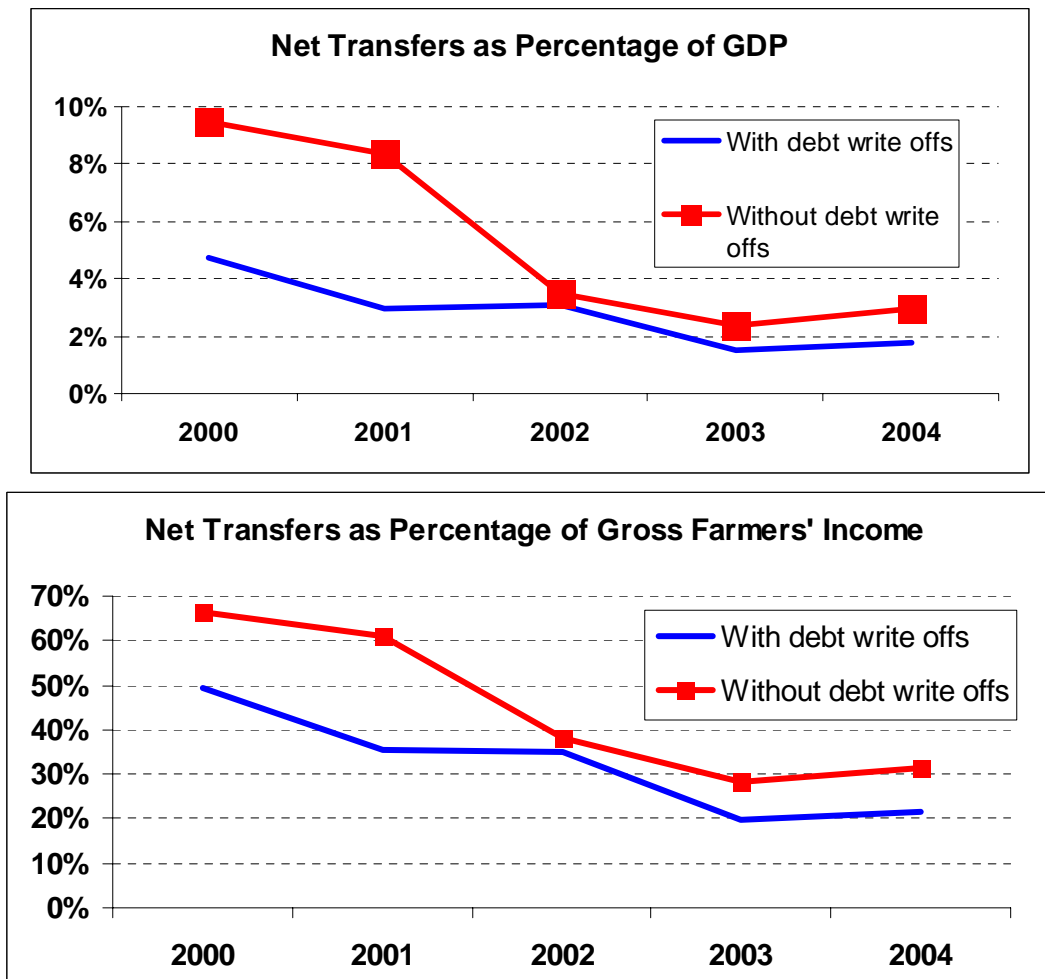
Net Transfers from the Cotton Sector

The present study estimates major taxes and subsidies with a high level of detail. It estimates all major explicit (or visible) and implicit (or hidden) taxes and subsidies for which data was available with a relatively high degree of precision. The detailed treatment of subsidies is a difference of the present study compared to the recent Agricultural Sector Review done by the Asian Development Bank (ADB), which focused primarily on estimating gross taxes in the cotton and wheat sectors. The assumptions and methodology underlying the estimations are described in Annex 1, which also describes taxes and subsidies included and not included. The study does not attempt to estimate taxes and subsidies which numeric quantification is considered too arduous, such as loss

of soil fertility or low ginning efficiency.² Detailed results of the estimation are available in a separate Excel database. The database allows changing the assumptions and thus simulates different scenarios (Annex 2 presents a description of the database).

The main conclusion is that both taxes and subsidies of the cotton sub-sector are high. The resulting net transfers from the cotton sector are smaller than often thought, amounting to some 1.4 percent of GDP in 2004. Moreover, as shown by Figure 1 below, net transfers have considerably declined since 2000, as a result of the significantly lower taxes, and despite some decline in subsidies.

Figure 1 - Uzbekistan. Cotton Taxation Trend



² Loss of soil fertility as a result of mandatory cropping patterns is an implicit tax. Were farmers allowed to intercrop cotton with forage crops, soil fertility would increase and with it cotton yields and farm incomes. Low ginning efficiency is also an implicit tax to producers. For instance were Uzbek gins to achieve an average ginning efficiency of 38 percent as in many other countries, instead of the official 32.7 percent, the final cotton fiber output for any given cotton harvest would increase by 16 percent $[(38-32.7)/32.7]$. The implicit tax based on a cotton fiber outturn of 1 mln. tons per annum and current cotton prices is almost US\$200 mln.. Moreover, as mentioned above, since target production costs tend to be inflated, this is another implicit tax not accounted for in this study.

Table 1 - Uzbekistan. Summary of Cotton Taxation Analysis

Current 2004 US\$ (when not otherwise indicated)	2000	2001	2002	2003	2004
With debt write offs					
<i>Net transfers (percentage of GDP)</i>	4.7%	2.9%	3.1%	1.5%	1.8%
<i>Net transfers as percentage of gross farmers' income[^]</i>	50%	35%	35%	20%	22%
<i>Taxation (million)*</i>	770	605	508	569	644
<i>Subsidies (million)*</i>	486	450	290	420	441
<i>Net transfers (million)*</i>	285	155	218	150	203
<i>Net transfers (US\$ per ha of cotton)*</i>	197	107	156	107	150
<i>Net transfers (US\$ per ton of raw cotton)*</i>	95	47	65	48	59
Without debt write offs					
Net transfers (percentage of GDP)	9.5%	8.4%	3.5%	2.4%	2.9%
Net transfers as percentage of gross farmers' income [^]	66%	61%	38%	28%	31%
Net transfers (million)*	572	443	246	240	338
Net transfers (US\$ per ha of cotton)*	396	305	176	172	249
Net transfers (US\$ per ton of raw cotton)*	191	135	74	78	98

* The US\$/soums exchange rate is based on the market clearing exchange rate. This is estimated by calculating the weighted average of the three exchange rates: the Central Bank of Uzbekistan (CBU, 60 percent), the Over-The-Counter (OTC, 10 percent), and the black market (30 percent).

[^] Gross farmers' income is estimated as follows: state procurement price by total quantity of cotton produced plus net transfers

In 2004 the major taxes were (i) producer price controls due to farm gate prices considerably below export parity, (ii) Value Added Tax (VAT) on cotton fiber (which is not reimbursed when cotton is exported and thus represents effectively an export tax), and (iii) total taxes from the crushing industry, including excise taxes on cotton seed crushing for oil production. Major subsidies in 2004 were: (i) subsidies for the maintenance and operation of the irrigation system, (ii) debt write-offs, and (iii) interest rate subsidies on state-funded credits to agriculture. Figure 2 ranks tax and subsidies in 2004.

A specific comment on debt write offs is in order. These represent subsidies as they imply costs to the budget. However, debt write-offs are not a regular subsidy and vary significantly from year to year. In addition, in recent years, debt write offs have been provided exclusively to avoid bankruptcy of a limited number of cooperative farms (*shirkats*), thus they benefit only a small share of farms, which are often the least efficient. Hence, it is useful to look at net transfers both with and without the debt-write offs taken into account.

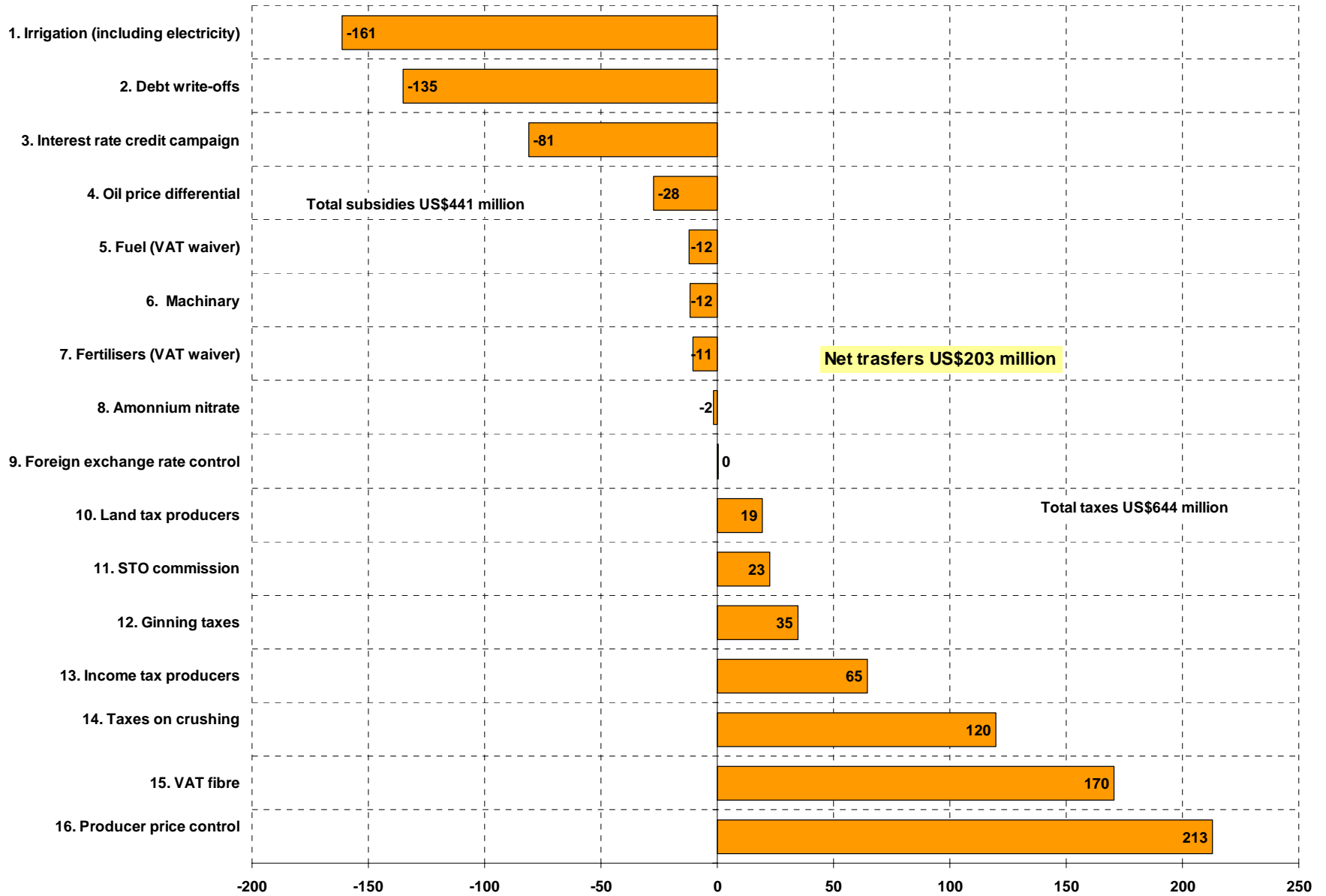
Based on the detailed data contained in the attached Excel database, the following additional observations can be made:

- Convertibility of the domestic currency for all current account transactions (and the unification of the parallel and official exchange rate), which was achieved in 2003, has reduced the level of implicit cotton taxation. Taxes due to price controls have also declined in real terms. Total implicit taxes have declined, from around 8 percent of GDP in 2000-2001 to 1.8 percent in 2004. There is thus a clear trend towards improving production incentives through increased output prices; and
- Subsidies also declined albeit by less. Debt write-offs were huge in 2000 and 2001, but have been smaller since then – around 1 percent of GDP in both 2003 and 2004. Debt write offs are supposed to be phased out with the conversion of *shirkats* into private farms. There is thus some movement towards increased cost efficiency through cost-reflective input prices.

However, the following severe incentive problems remain:

- Major taxes are directly related to either actual or targeted quantity produced: VAT on fiber, seed crushing excises and implicit taxes through price controls all depend on the size of production. However major subsidies, such as debt write-offs and irrigation subsidies, are not directly related to the quantity produced. Financing subsidies are also related to input norms and to *target* rather than *actual* production. This imbalance creates a perverse incentive for farmers to produce as little cotton as possible (ideally no more than the quota established by the Government) – to minimize payment of taxes – while shifting as much as possible the benefits of subsidies to other crops.
- Financing and input supplies originally envisaged to support the cotton plan are often diverted to the production of other crops. This diversion is easier for some inputs than others: it is relatively simple to use fertilizer allocated to cotton to other more profitable crops (e.g., wheat, see chapter below). It is more difficult to divert subsidized water allocations from one field to the next, even though there are anecdotes of fields with cotton on the edges – easy to see – and other crops in the middle of the field, in locations difficult to spot.
- Subsidized inputs may also leak outside agricultural production altogether, such as through smuggling of fertilizer across the border to neighboring countries. The opportunity for illicit gains from such leakage leads to excessive input requests while output prices are set at levels that hardly cover normative costs. As a result farm debts build up, which later are written off, thus undermining incentives for cost savings. Support for this claim comes from the fact that new individual farmers tend to increase their profitability compared with the previous collective farms (*shirkats*), even though this is not necessarily due to an increase in yields. Rather, individual farmers tend to reduce input application and cautiously manage their level of debt because they are aware that – differently from *shirkats* – they will not be granted future debt relief.

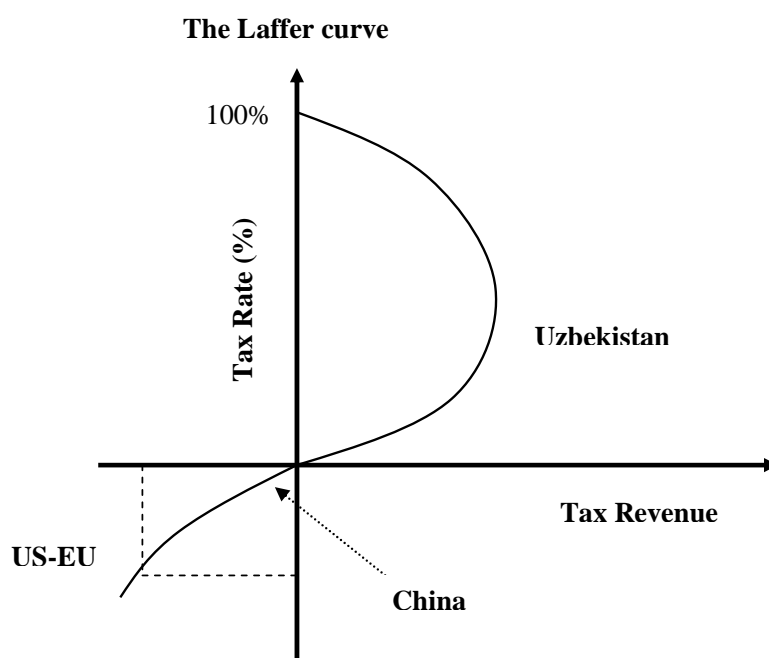
Figure 2 – Cotton Taxes and Subsidies (US\$ million)



Is Cotton Excessively Taxed?

Many analysts consider that cotton is excessively taxed in Uzbekistan. They argue that a tax rate reduction would cause a production increase which would allow maintaining or even increasing tax revenue while increasing total production. This argument is based on the theory on excessive taxation which was developed by Arthur Laffer in the late 1970s, and it is based on the concept of diminishing returns depending on tax rates³. The theory states that increasing the tax rate will increase the tax revenue up to a maximum level after which further increases will lead to revenue decreases because of decreasing tax base (see the Laffer curve). When the tax rate is zero percent (0%), the tax revenue is zero. At the other extreme, when the tax rate is 100%, the tax revenue is zero because the tax base (output) disappears.

This study estimates net transfers at around 20-22 percent of farmers' gross cotton revenue in 2003-2004 (much lower than the excessive 50 percent in 2000). Net of debt forgiveness, net transfers were at around 30 percent of farmers' gross cotton revenues in 2003 and 2004. This is considerable, compared for instance to the corporate income tax rate of only 18 percent, or the maximum personal income tax band of 30 percent. To what extent the tax yield could be increased through lowering the tax burden and thus increasing production incentives remains unclear. However, cotton is over-taxed relative to other crops. This leads to a diversion of inputs. Below we present reform proposals that are fiscally neutral and reduce input subsidies and output taxes by equivalent amounts. As a result, we argue cotton production could be increased, while the waste of inputs in the sector as a whole would be reduced. The diverging trends in cotton and wheat yields over the past years lend support to this argument.



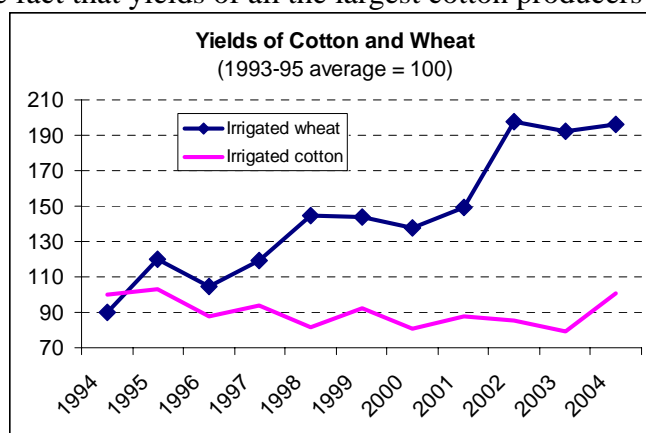
³ This section draws on a recent ADB review of the agricultural sector in Uzbekistan carried out by a team led by Martin Herman

Cotton - Wheat Comparison

Cotton and wheat production faced diverging trends during the past decade. Cotton production declined while wheat production increased. This was in part the consequence of reallocating land to wheat at the expenses of cotton and other crops. However the diverging trends are evident even in terms of yields (or production per hectare, see graph on the side): while cotton yields stagnated, wheat yields increased significantly.

Part of this difference may be explained by land quality and technological improvements (most farmers did not know how to produce wheat at the beginning of the previous decade). However, the excessive taxation of the cotton sub-sector – which is significantly higher than wheat taxation - and the consequent shifting of inputs from cotton to wheat, has also played a role. This hypothesis is confirmed by the fact that yields of all the largest cotton producers in the world except Uzbekistan have been increasing significantly during the past decade. In some cases the growth has been impressive, such as in the case of Brazil (+181 percent) or China (+45 percent). Only in Uzbekistan yields have stagnated during the past decade.

In addition to the higher production related taxes on cotton, payment modalities also differ between cotton and wheat delivery and create further production disincentives. According to interviews with farmers, cotton is more profitable than wheat in most conditions even at current procurement prices. However wheat has the following advantages over cotton: (i) easier access to cash. The state procures 50 percent of wheat for a price which is often below the market price. However, differently from cotton, wheat is paid at delivery; (ii) while cotton occupies the land for the whole year (12 months from December to November), wheat leaves irrigated land available for 5 months (July-November). During these five months good farmers can produce non strategic crops (vegetables in particular) which are more liberalized and more profitable than wheat and cotton. Lack of access to cash payments for cotton producers is probably the key obstacle to improved production incentives in the short run, but we do not further discuss it in this note.



Opportunities for Reform

The transition from a state dominated agricultural system to a market based one will require a carefully designed sequencing of actions to minimize the risk of stress during the transition period. The main steps of the transition aim at shifting from a tax structure that creates a disincentive to production to one that collects revenues without distorting producer incentives. Should the farm privatization program, combined with the below proposed steps to reform the pricing, procurement and input supply system, lead further to improvements in cotton yields, an overall increase in tax revenues may well result.

The ultimate policy goal is to increase efficiency of the cotton sector by:

- Abolishing the current compulsory cropping patterns;
- Eliminating the existing ginning monopoly; and
- Liberalizing cotton marketing and exports.

In line with Government strategic objectives and preferences, the transition to such a system is likely to be gradual. Below, we present a sequence of reform steps that would eliminate the present distortions over time. For each step taken that reduces the level of taxes from cotton, we propose a counter-step that reduces subsidies by a roughly equivalent amount, thus minimizing the net costs to the budget.

Table 2 presents cost estimates of various measures the Government could take. It starts on the tax side with eliminating the withholding of VAT on cotton fiber exports. If the resulting gain is fully passed on to cotton producers through an increase in price, this would increase the state procurement price by 20 percent, or \$45 per ton. On the financing side, the elimination of all input subsidies for fertilizer, pesticides, machine services, and the elimination of the price differential for cotton oil would raise around half of the lost revenues. If additionally the Government started collecting limited water charges or increased land taxes, the VAT rebate would be fully funded.

The second suggested step is to revise cost estimates of ginning and marketing costs used to calculate the state procurement price of seed cotton. These cost estimates need to be in line with international standards: state procurement prices need to increase closer to export parity under market conditions, which would reduce state revenue by an estimated \$200 million. At the same time the state should abolish interest subsidies on financing, which would reduce state expenditures by \$80 million only for cotton financing. In parallel, the Government should work out a final settlement on all outstanding debts with existing shirkats to ensure that there is no moral hazard with respect to future financing at commercial rates. If interest rate subsidies and debt write-offs are fully abolished, this would raise enough revenues to fully eliminate the current price gap to export parity prices (assuming average annual debt write-offs over the past few years of around US\$ 140 million).

The Government may, however, wish to decide to link the reform of procurement pricing and Government financing of the cotton and wheat harvests with the gradual liberalization of input and output markets, as pioneered under the Rural Enterprises Support Project (RESP, see brief description in Annex 3). Thus, the Government could set a quota for each farm at the level of 50 percent of last year's actual output (as is in fact already foreseen by a Presidential decree issued in January 2003). This quota would be mandatory and would have to be sold to the state at the state price. Government financing would be provided at subsidized rates in an amount sufficient to guarantee delivery of the quota, with the price gap offsetting the interest subsidy. Farmers would have access to basic levels of financing, and have one secure outlet for their production, while the state would be sure to procure enough cotton to supply the growing domestic textile industry. Above quota cotton would automatically be included in the decentralized cotton balance and free to be sold through auctions, through foreign trade companies, or to the state. Above quota cotton would be tolled through the ginning system rather than changing ownership title at gin delivery as under the current state procurement

system. This gradual introduction of market based marketing and financing mechanisms would be most effective if complemented by the liberalization of the current state ginning monopoly, by providing additional private investors with the license to gin, and export ginned cotton.

A third reform step would be the abolition of all excises on cotton seed crushing, combined with a further increase in land taxes and water charges. Note that the overall net costs of all the three sequenced steps sketched are exactly zero. The benefits in terms of improved incentives for cotton producers and reduced waste are likely to be large, so that both farmers and the Government would end up with significant gains.

Table 2 - Uzbekistan. Sequencing of Policy Options

Step	Measures which will decrease state revenue	\$ mln	Measures which will increase state revenue	\$ mln
1	Reimburse VAT on all cotton fiber exports and pass the resulting increase in revenues through to the farm level	-170	Eliminate subsidies for inputs such as fertilizers, pesticides, machine services*	+40
			Eliminate oil price differential	+30
			Increase land tax* to \$42/ha and fees for water delivery* to \$28/ha	+100
	<i>Sub-total Step 1</i>	<i>-170</i>		<i>+170</i>
2	Increase state procurement price to international comparator	-200	Finalize <i>Shirkat</i> reform and discontinue debt write-offs*	+140
	Decrease STO commission and pass benefits to farmers	-20	Eliminate subsidies on interest rate for state financing*	+80
	<i>Sub-total Step 2</i>	<i>-220</i>		<i>+220</i>
3	Abolish excise tax on cotton seed crushing	-120	Increase land tax* to \$88/ha and fees for water delivery* to \$70/ha	+120
	<i>Sub-total Step 3</i>	<i>-120</i>		<i>+120</i>
	TOTAL	-510		+510

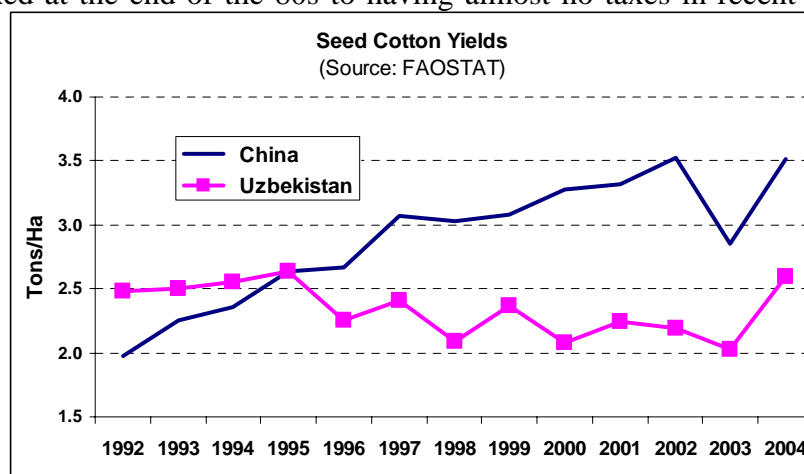
* These actions will also have effects on other crops in addition to those estimated here for cotton

The above reform sequence is derived directly from the estimates in this paper. It could in principle be altered with procurement price adjustment preceding the VAT rebate, or the abolition of excise taxes on oil crushing coming first. On the subsidy side, it would be prudent to start with subsidies for inputs other than water, and address financing in a second step, while leaving adjustments in water charges for last. The land tax could be used flexibly to fill any revenue gaps, although its application given widely different land quality would need to be further reviewed. Additional measures, not directly related to the estimation of net transfers, would also stimulate cotton production and complement the abolition of price distortions.

- *Access to cash.* Farmers consider lack of access to cash as a major drawback of producing cotton. Farmers receive around 20 percent of cotton revenue in cash, to pay for labor during cotton harvest. All other payments are made through bank transfers. Increasing access to cash, even in a small portion, would represent a significant incentive for farmers, at no cost for the budget. One of the reasons for the exceptional yields of the 2004 campaign was the increased *cash* payment for harvesting. A 10 percent cash payment shortly after delivering cotton to gins (before the end of the calendar year) would be an important incentive for farmers and would probably cause yield increase;
- *Target vs. actual income and costs.* All calculations in this paper are based on targeted output levels and target costs. When these targets are higher than actual output and actual input use, taxation is higher and subsidies are lower than the estimates of this paper. Moving to a system of taxes based on actual revenues would reduce the burden for farmers, although it would also lead to fiscal losses;
- *Processing costs and ginning efficiency.* Processing, marketing and transport costs are higher than in comparator countries. In particular, if ginning efficiency were to be increased and ginning costs to be correspondingly reduced, there would be additional gains at no cost to the budget. This would require a profound restructuring of the state-owned ginning monopoly, KhlopkaProm. Private entry into the ginning market should be allowed as an immediate step (the World Bank is aware of several companies that would be interested to invest in the ginning sector);
- *Input delivery.* Input (fertilizers, pesticides and machinery) provision is often delivered too late to be used efficiently. Therefore, a decentralized input delivery system could be tested under the Rural Enterprises Support Project (RESP); and
- *Excess wheat production.* At current wheat yields, Uzbekistan is producing more wheat than required for domestic consumption. The Government should consider allocating some area currently under wheat either back to cotton or better to other crops, such as forages, which could help maintain soil fertility. However, as long as water is essentially costless, such decisions would need to be taken bearing in mind the need to avoid a further increase in agricultural water off-take.

The Chinese Experience

There is no international experience with an approach to reform similar to the one proposed above. However the Chinese experience can be useful to Uzbekistan. In the case of China, cotton went from being taxed at the end of the 80s to having almost no taxes in recent days. There are varying estimates of the level of taxes and/or subsidies in China. The difficulty of estimation is a consequence of the complexity of the sector, the efficiency generated by the co-existence of large production and processing, and limited access to information. Most analysts, however, concur that the level of taxation was reduced



significantly during the past 10-15 years, while the sector was liberalized significantly. The reduction of the tax burden, liberalization, and technological improvements produced impressive results for the sector. Using yields as a proxy for efficiency, Chinese yields have an ascending trend, while the Uzbek trend is stagnating (see graph above).

During the past decade China had impressive policy reforms and technological improvements:

- ❖ *Policy reforms:*
 - Farmers are free to independently decide which crops to grow (without any state set acreage targets);
 - Marketing channels were liberalized. The state still owns many gins and suggests a minimum raw cotton price (which is a required minimum price for state owned gins), still farmers are free to sell their products where and when they want;
 - Low and efficient taxation. Both land tax and water fees are significant (water fees reach 20 percent of production costs) and provide the right incentive to increase productivity;
 - Gins pay farmers in cash on the day they deliver their raw cotton. Prices paid are higher than international comparators. This is consequence of competition among gins and a particularly efficient ginning outturn of 39 percent in comparison with 32-33 percent in Uzbekistan (ginning outturn is the percentage of fiber that gins extract from seed cotton); and
 - Efficient financing. Credit cooperatives provide finance with an extremely low interest rate of 4-5 percent per year while gins are not involved in financing production.

- ❖ *Technological improvements:*
 - Improved varieties selected for increased yields, high plant density (above 20,000 plants per hectare), pest resistance, and high fiber content, allowing for high ginning. The majority of varieties used in China are Genetically Modified Organisms (GMOs), which uses *Bacillus Thuringensis* (BT) genes to provide resistance to some pests;
 - Great attention to production technologies such as plastic mulching, growth regulators, applications of adequate fertilizers, limited use of insecticides and herbicides thanks to accurate Integrated Pest Management (IPM) and manual weeding;
 - Intensive farmers' training and extension system has ensured a rapid uptake of the new technologies;
 - Continued investments in irrigation infrastructure; and
 - Continued investments in a high number of small ginning plants which increased ginning efficiency, allowing an average ginning outturn of 39 percent.

Uzbekistan has the potential to follow the Chinese experience on cotton by improving both its policies and its production and ginning technology.

Annex 1 – Methodology Used to Estimate Cotton Taxes and Subsidies

The estimation of cotton taxation, subsidies, and net transfers in Uzbekistan is a complex task. The current study identified and estimated each major taxes and subsidies relevant to the cotton sub-sector. Then all estimated explicit and implicit taxes are added and all explicit and implicit subsidies are deducted for each year from 2000 to 2004 (see Table 3). Taxes minus subsidies result in the net transfers from the cotton sub-sector.

Table 3 – Cotton Sub-sector Taxes and Subsidies Estimated

+ Explicit taxes	<ul style="list-style-type: none"> - Producers: land tax, income tax - Ginning: profit, land, property, water, road, etc. - Marketing: Value Added Tax, State Trading Organization (STO) commission - Seed crushing: profit, land, property, water, road, etc.
+ Implicit taxes	<ul style="list-style-type: none"> - Exchange rate control - Cotton price control
- Explicit subsidies	<ul style="list-style-type: none"> - Irrigation operational and maintenance costs, electricity and water - Credit and debt write-offs - VAT waiver: machinery services, fertilizers, fuel
- Implicit subsidies	<ul style="list-style-type: none"> - Credit lending at preferential rate - Oil price differential for cotton producers - Preferential price for agricultural machinery - Preferential price for fertilizers (Nitrogen)
= Net transfers	

Reliable and consistent data represented the main constraint for the above estimations. Available official data has been used when possible. Some taxes and subsidies were not included in the calculation, mainly for lack of data on which to base the estimation. The main ones are:

- Taxes:
 - textile industry (which is beyond the agricultural sphere, as already part of industrial sector),
 - land and water degradation due to lack of maintenance (an estimation is given in the database)
 - centralized allocation of output and inputs, which causes late delivery
 - constrained withdrawal of cash from bank accounts,
 - state fixed rotation pattern, which may negatively affect soil fertility and limit profit maximization
 - delay between cotton delivery (September - October) and last payment to producers (July-August of the following year)
 - low ginning efficiency, with differentials between targeted and actual ginning outturn and high processing costs
 - low commercialization efficiency

- Subsidies:
 - tax exemption for new processing enterprises,
 - prices differentials for minor fertilizers (Phosphorous and Potassium) and pesticides
 - cost of administrating the centralized system

Also the remittances to the Pension Fund and insurance have been not considered as taxes and thus they have not been taken into account, except in taxes paid by the crushing industry (available aggregate data did not allow to deduct these two taxes from the crushing industry).

Estimation of Explicit Taxes

Agricultural Land Tax. The land tax varies greatly throughout the country according to land quality and irrigation. An average tax per ha has been estimated at national level and multiplied by the total cotton area.

Income tax at producer level. The tax base is the net payroll or labor costs, namely the gross labor costs minus the compulsory remittances to the pension fund. The income tax has been estimated using the official targeted production costs per ha, which were provided by the Government and which distinguish labor costs. Income tax was calculated using the top band 30 percent marginal rate. Applying the lower bands of 10 percent and 20 percent respectively would correspondingly reduce income tax estimates.

Taxes at ginning level. All taxes included in the targeted fiber wholesale price calculation are taken into account, namely: property, land, road, ecological, water and profit taxes. Their total per ton of fiber is then multiplied by the total fiber production.

Value Added Tax (VAT) on fiber. The current tax base is the wholesale state procurement value at ginning level. The tax rate has been constant at 20 percent during the period of analysis. The tax is estimated by multiplying the average⁴ wholesale state procurement price at ginning level by the total fiber production of the year.

State Trading Organization (STO) commission. It is considered a tax which is calculated as 3 percent of the fiber FOB value, using the official exchange rate.

Taxes at seed crushing industry level. The total absolute level of taxes paid by the crushing industry (Oil Association) has been used as data provided did not allow the estimation of each single tax. Remittances to the Pension Fund and insurances are hence included.

Estimation of Implicit Taxes

Exchange Rate Control. The exchange rate regime sets a difference between the administratively set official exchange rate and the true market clearing exchange rate.

⁴ Average of fiber wholesale price for export and for local textile industry. The latter is 15 percent lower than the wholesale price for export.

Exporters have to sell their foreign exchange earnings at the official exchange rate. Since this exchange rate used to be grossly overvalued, this represented the payment of a tax. This implicit tax is estimated by taking the difference between the fiber valued at the “true” market clearing exchange rate and valued at the official exchange rate. This difference is then multiplied by the total exported fiber volume. The market clearing exchange rate is estimated by calculating the weighted average of the three exchange rates: the Central Bank of Uzbekistan (CBU, 60 percent), the Over-The-Counter (OTC, 10 percent), and the black market (30 percent). Note that since cotton is sold during the second half of the current and the first half of the following year, we use end year exchange rate data for these calculations.

Cotton Price Control. The price control sets a difference between the administratively set state procurement price and the price that would be paid if there was no price control. The latter price is taken as the export parity price (EPP) expressed in soums/ton and converted at the official exchange rate. The difference between these two prices is then multiplied by total cotton production. This price gap is a consequence of various policies: preferential fiber price to domestic textile industry, non-rebated VAT for fiber and seeds processors and for fiber exports, inefficient ginning and marketing, etc. The calculated price gap includes all these taxes and quasi-fiscal activities. However, it should be noted that to calculate the EPP, we are subtracting official transport, marketing and ginning costs from export prices. To the extent that these costs are inflated, the price gap is underestimated. Again, end-year exchange rate data is used to convert export prices into domestic currency terms.

Estimation of Explicit Subsidies

Irrigation subsidies. Irrigation subsidies used in the calculation include only the approved amounts for irrigation operation and maintenance costs funded by the Government. Allocation to cotton production has been made according to the area and estimation of water use. In addition, irrigation is subsidized because there is no charge for depreciation and water and electricity used by the irrigation system is highly subsidized. Electricity subsidies are separately calculated. Water subsidies are not included.

Electricity subsidies. These are simply the payments made from the Ministry of Finance to cover electricity costs of irrigation pumping stations. An alternative way to estimate these costs would be to use Long-run Marginal Cost of power as a benchmark, and calculate the full cost recovery amount needed for electricity. The latter procedure would significantly increase the value of subsidies for electricity.

Value Added Tax (VAT) waivers. Agricultural machinery services and inputs such as fuel and mineral fertilizers are VAT exempted. This tax waiver is considered as a subsidy. Currently, the price paid by producers is 25 percent off the state fixed price. This rate includes the VAT waiver and a price reduction for machinery services. To estimate the VAT waiver for machinery service including the price reduction, the annual volume of machinery works made by the State Joint Stock Associations has been multiplied by 25 percent of the state fixed price. The same principle is used for fuel and fertilizers using the VAT rate instead of the 25 percent.

Debts write-off. Debts are written-off based on special resolutions issued by the government. Most of the debts write-offs concern collective farms (*shirkat*) being restructured

into individual farms. Total debt write-offs have been allocated to the cotton sector at a rate of 85 percent. Cotton production is recognized to be the main source of debt for agricultural producers, due to the low procurement price and the payment system.

Estimation of Implicit Subsidies

Preferential rate of credit lending to cotton producers. Interest rate for loans to the agricultural sector is applied at a preferential rate of 5%, while market interest rates are significantly higher. The market interest rate was estimated on the basis of Central Bank refinancing rate, administration costs and return on assets⁵. The total interest rate subsidy was calculated on the basis of the official targeted production costs, for a credit length of 7 months to which the interest rate differential between the calculated market interest rate and the applied interest rate (5%) was calculated.

Oil price differential for cotton producers. Cotton producers are entitled to buy 50% of the cotton oil and other by-products from their seeds at a preferential price. Total oil production is calculated based on the volume of seed supply to the Oil Association, based on a yield of 17.5%. The 50% of the oil production is then multiplied by the price differential.

Preferential price for agricultural machinery services. See VAT waiver.

Input price differentials. Input prices are also controlled by the government. The nitrogen (N) is the most used fertilizer in cotton production and is mainly applied in the ammonium nitrate form. The price differential between the import parity price and the domestic price has been calculated and then multiplied by the quantity of N required per ha and the cotton area.

The inflation factor

All calculations were based on current soums (the Uzbek national currency). In order to allow the comparison across the study period, from 2000 to 2004, the following measures have been taken:

- Construction of inflation free indicators, such as net transfers in percentage of GDP and of producer's gross revenue, net transfers per ha cotton and per ton fiber.
- Conversion of nominal values in constant values: the chosen basis year is 2004. The Producer Price Index (PPI) at the end of the period has been used to convert nominal values into 2004 constant values (see Table 4). The conversion into US\$ of the constant value made use of the 2004 average (US\$/soum official exchange rate (multiple exchange rate does no more exist and the difference between black and official exchange rates is minimal). Alternative estimates converting nominal soum into nominal dollars using an indicative exchange rate are also provided.

Table 4 – Producer Price Index (PPI), 1999=100

2000	2001	2002	2003	2004
170.3	245.1	335.0	426.8	539.9

⁵ Default risk rate is not included here

Annex 2 – Explanations of the Database

The results of all estimations are presented in the form of an Excel file with the following separate sheets:

General description

- **Description:** each tax and subsidy is described as well as its empirical estimation
- **Data:** all data used for the estimation are indicated and their source presented. They can be modified to test different scenarios.

Results

- **Transfers estimation:** shows all calculations (see below for detailed calculations)
- **Summary results:** presents the main results, namely net transfers in absolute terms, in percentage of GDP and producer' gross revenue as well as per ha cotton and per ton fiber. Net transfers are also expressed in 2004 constant mln soums and US\$ for the period 2000 to 2004.
- **Figure 2004:** shows the 2004 taxes and subsidies in a graphic form (mln US\$)
- **Figures:** presents net taxes, net subsidies and net transfers for the period 2000 to 2004 in various figures (2004 constant mln soums, 2004 constant mln US\$, % of GDP, per ha cotton and per ton fiber)

Detailed calculations

- **Price control:** shows the detailed calculation of the price gap implicit tax
- **VAT:** calculates the value of the explicit VAT tax as well as the implicit tax due to non-refund of the VAT on exported fiber
- **Interest rate:** estimates step-by-step the interest rate implicit subsidy
- **Water and O&M:** show the calculation of water and O&M subsidies

Main Formulas

Explicit taxes at production level

1. Income tax

Gross labor costs (soum/ha)

- Remittances to the Pension Fund (33% of gross labor costs)

= Net labor costs

Income tax (33% of net labor costs in 2004)

* ha of cotton

= Total income tax from cotton production

2. Land tax

Average annual land tax

* ha cotton

= Total land tax

Total ginning taxes/ton fiber
* ton of fiber
= Total ginning taxes from cotton

Taxes at commercialisation level

1. VAT on fiber
Average export and local fiber wholesale price/ton fiber
20% of fiber wholesale price
* total fiber
= Total VAT fiber

2. STO commission
FOB fiber value/ton
3% of FOB value
= STO commission in US\$
* official exchange rate
= STO commission in soums
* Total exported fiber quantity
= Total STO commission

Implicit taxes

1. Exchange rate control
FOB value at market clearing exchange rate
- FOB value at official exchange rate
= Difference due to exchange rate regime
* fiber exported
= Total implicit tax due to exchange rate regime

2. Price administration
Export parity price at official exchange rate
- Domestic state procurement price
= Difference due to price control
* cotton production
= Total implicit tax due to price control

Implicit subsidies

1. Credit lending
Market credit interest
- credit interest cotton production price
= Difference credit interest
* Campaign credit

* ha cotton production
= Total credit subsidy

2. Oil price

Market oil price

- Oil price to producers

= Difference oil price

* Oil theoretically bought by producers

= Total oil price subsidy

3. N fertiliser

Import parity price N

- Local N price

= Difference N price

* N production needs

= Total N subsidy

Annex 3 – The Rural Enterprises Support Project (RESP)

The Rural Enterprise Support Project (RESP) has been under implementation for over two years. The Rural Reform Agency (RRA) is implementing the Project in the following five pilot districts: Ellik-Kala in Karakalpakstan, Makhtalar in Andijan, Nishan in Kashkadarya, Sherabad in Surkhandarya, and Akhangaran in Tashkent. The total area of the five districts exceeds 1.3 million hectares of which about 165,000 hectares are irrigated. The districts were selected for being located in different climatic, environmental, and social conditions.

The objectives of the project are to: (i) increase profitability and productivity of the agricultural sector; (ii) support the emergence of private sector initiatives; and (iii) ensure sustainability of the agricultural sector through rehabilitation of irrigation and drainage systems and improved land management in the pilot districts.

An important project activity is a policy pilot focused on testing new marketing channels for cotton fiber. The pilot is based on Resolution 153 dated March 31, 2004 that allows the Rural Restructuring Agency special flexibility in utilizing alternative marketing channels for cotton fiber in the pilot districts. The objective is to test whether alternatives can be more effective than the current monopoly of KhloptaProm, which maintains a *de facto* monopoly of cotton ginning and marketing. To remove the monopoly of ginning is challenging, since it requires significant investments in ginning. In contrast the monopoly of marketing could be avoided with small investments in the system to coordinate farmers and organize alternative marketing channels. The objective of the policy pilot is to test the feasibility of such alternative scheme, so as to allow replication outside the project pilot districts.

So far almost 5,500 tons of cotton-fiber have been sold by farmers through the commodity exchange for domestic consumption. Although this is a small quantity, it was of high significance for the farmers involved as the prices paid were above the state procurement price and thus generated profits. Moreover, in 2004 the Government paid farmers in the pilot districts a 20% premium for all above quota production sold to the state. In this way, the project is testing how price incentives affect yields. Once the impact of the pilot on productivity at the farm level has been analyzed it is the intention that the pilot reforms would be extended to the entire country, which would constitute a major achievement.

The project has the following five components:

Component 1: Rural Business Advisory Services (\$1.2 million). This component supports providers of business farm advisory services in the rural sector, so that they can better assist the newly privatized individual farms to become familiar with policies, market information, business planning activities, and technology.

Component 2: Rehabilitation of Irrigation and Drainage Systems (\$16.6 million). The component is providing rehabilitation to irrigation and drainage infrastructure of the pilot districts. Investments are selected in collaboration with Water Users Associations (WUAs) which have been formed under the project. WUAs are responsible for providing continuing maintenance to the infrastructure.

Component 3: Rural Finance (\$5.9 million). This component is providing sub-loans for both working capital and investment expenditures by private farms and rural businesses. Lending is managed through participating financial institutions (PFIs) which have been selected based upon agreed eligibility criteria. Each sub-loan has to be supported by a business plan submitted by the borrower. To encourage broad participation, loans would be limited to a maximum of the equivalent of \$10,000 for seasonal loans and \$50,000 for medium term loans.

Component 4: Credits for Agro-Service Enterprises (US \$16.0 million). This component is providing larger sub-loans (up to a maximum of \$2 million) to private enterprises and cooperatives of private farmers. The objective is to establish well-equipped private agro-service centers for machinery services, supply of agricultural inputs, and agro-processing, which will compete with the existing state-owned enterprises in the machinery services and input markets.

Component 5: Project Implementation Support (\$2.3 million) Project implementation will be administered by the Rural Restructuring Agency (RRA), with a staff of about 30 (including district level offices) in charge of all project management activities, including procurement, financial management, and monitoring.

The project is also achieving important results in the following areas:

- (i) A large number of farmers have been trained by rural business advisory services, (91% of participants expressed satisfaction about training);
- (ii) More than 15% of farms in the pilot districts procured new tractors thanks to better business advice and improved access to credit;
- (iii) Water User Associations are now functioning in the entire project area, and the project will soon start to work with them to implement planned on-farm and between-farm irrigation investments;
- (v) Business plans for investments in agribusiness totaling more than \$3 million are under implementation.

