CHINA'S WOOL TEXTILE INDUSTRY

Strategies for growth
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Paul Morris
Heather Roper
Christopher Short
Wendy Proctor
Greg Connolly

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Australian Bureau of Agricultural and Resource Economics
GPO Box 1563 Canberra 2601

Telephone (06) 272 2000 Facsimile (06) 272 2001

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Foreword

During the first six months of 1992-93 China became the largest export market for Australian wool. While this reflects, in part, the depressed state of demand in some of the Australia's other major markets, it nonetheless reflects the growing importance of this market for Australian woolgrowers.

China is, however, a very uncertain market. Exports of wool from Australia to China fell significantly in the late 1980s, largely due to Chinese government constraints on wool imports. The certainty of the market would be increased if the Chinese government relaxed restrictions placed on China's textile industry. Such restrictions are likely to be relaxed only if it can be shown to be in the best interests of China.

This paper was prepared for use by the Australian Trade Commission (Austrade) in a series of seminars held in China in April 1993. The objective in the paper is to present analysis of the benefits to China from reducing a selection of restrictions on its wool textile industry.

BRIAN FISHER
Executive Director, ABARE

May 1993
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China’s potential as a leading producer and exporter of quality woollen textiles has yet to be fully realised. Much has been done to remove constraints on industrial activity over the past 15 years, and the attitude of the government toward reform is positive. However, China still faces several challenges in the task of creating a textile industry that is competitive by international standards. In particular, most state owned woollen mills in China at present need government subsidies to keep running. Their lack of profitability can be attributed largely to various regulatory constraints under which they operate. In this report, the principal constraints affecting these and other Chinese wool and textile enterprises are described, and policies are indicated whose effects would accord with the aims of China’s current (1991–95) five year plan, of improving efficiency, quality and international competitiveness while also meeting domestic needs.

China is important in the world wool market in all stages of the wool ‘pipeline’, from wool production to consumption of final products. However, since 1989, after a period of growth, wool production and sheep numbers have remained relatively static, largely due to constraints of climate and land quality and competition for land with other uses. In contrast, rapid growth has continued in the textile sector.

Australia and China have complementary interests in the wool industry. Australia’s comparative advantage is in the supply of raw wool and early-stage processed wool (up to the wool top stage). China’s advantage is in the more labour intensive intermediate and final stage processing of textiles and clothing.
Types of textile enterprise

Township enterprises and joint ventures
In addition to the nationally owned state mills, there are two other main types of textile enterprise. The first is the ‘township enterprises’ established by provincial and local governments. The second is joint ventures, in which overseas partners invest in state mills. Both of these are, in different ways, accorded greater economic freedom than the purely state owned mills.

Present limitations of township enterprises
Further growth will require the township enterprises to improve their competitiveness at the international level. To date, their limitations have included a lack of skilled labour, obsolete equipment that restricts product quality, inability to expand plant capacity as a result of regional protection policies, and inadequate transport and communication infrastructure.

Greater freedom given to joint ventures
Joint ventures have already greatly enhanced China’s export performance by giving access to new technology and marketing skills, making it possible for Chinese textile and clothing enterprises to produce new products and to improve product quality. The operating freedom allowed to joint ventures by the Chinese government has enabled these enterprises to grow rapidly. The development of competitive textile industries in China’s Asian neighbour countries (for example, Japan and the Republic of Korea) was made possible by such freedom of activity and trade.

Trading arrangements
Unlike many other major wool importing countries, China imposes relatively high tariffs on imports of wool and wool products. Given the heavy dependence of the domestic textile industry on imports of raw wool (around 66 per cent) these tariffs limit the potential for rapid growth of the...
industry. As China moves to production of higher quality textiles and apparel (a goal of the five year plan), continued subsidisation of domestic wool production at the expense of high quality wool imports would delay improvements in the quality of wool products, to the detriment of local consumers. (Imports used in manufacture for export qualify for a refund of the tariff.)

It is estimated that removing tariffs on greasy wool, scoured wool and wool tops would increase the annual value of production of the wool textile industry by around RMB250 million ($A65 million). Such a policy would be likely to increase both employment and profitability in the industry. Although a reduction in the tariff would be likely to reduce domestic greasy wool production, it would improve employment opportunities in wool producing areas as the textile industry expands. Lower tariffs would also lower prices to domestic consumers and thus increase domestic sales of wool fabric and wool knitting yarn.

Wool imported by government owned enterprises (though not imports by joint venture mills) is also subject to quota licencing. The quota system acts more as a planning mechanism than as a direct import restriction — permission is generally granted for whatever quantities the mills request for the coming year. Nevertheless, it imposes a significant administrative burden on mills and limits their ability to take advantage of short term market opportunities in wool imports.

At present, government owned mills are also constrained in the channels through which they may buy wool. For such ‘centralised’ imports, only five main organisations are authorised to import wool. The agencies tend to sacrifice quality requirements in their attempts to buy at the lowest possible prices. Attempts are being made to shorten the
Duplicated testing of imported wool

Before September 1990, all wool imported into China was tested, regardless of any testing that may have been performed by the exporting country. Agreements with wool testing agencies in Australia and New Zealand have since reduced this double testing of imported wool. Nevertheless a significant proportion of the wool imported by China is subject to duplicate testing. Duplication of testing should be minimised to avoid unnecessary costs to the textile industry. This would be facilitated by the adoption by China of International Wool Textile Organisation testing standards.

Multifibre Arrangement limits wool trade

The Multifibre Arrangement (a system of ‘voluntary’ export restraints on textiles and clothing applied between major developed importing nations and the developing exporting nations) has significant implications for China. If current negotiations on the Multifibre Arrangement result in an easing of restrictions on international trade in textiles and clothing, China could make significant gains.

China’s prospects of entering GATT

However, China could fail to realise some of these potential gains if it does not become a member of the GATT. It has applied to do so, and its trade regulations are currently being evaluated by the GATT. Policy changes consistent with competitive, free market principles would facilitate entry, in addition to the benefits that the people of China would obtain from a more efficient domestic textile industry which makes a product better suited to their needs in terms of quality and price.
Exchange rates

The removal of what has become a dual exchange rate system could have significant benefits for the domestic textile industry. At present, there is an ‘official’ exchange rate, at which the Chinese currency is overvalued and at which foreign exchange can be obtained only for certain priority purposes. There is also a ‘swap’ exchange market, with a floating rate and fewer constraints as to the use of the foreign currency.

Up until the second half of 1990, the yuan was considerably overvalued at the official exchange rate and there was a large difference between the official rate and the swap rate. This overvaluation had the effect of lowering the value of earnings obtained from exports (converted to domestic currency mainly using the official market). There is also evidence that the yuan was undervalued at the swap rate, increasing the price of imported products bought with currency obtained on the secondary markets. The textile and clothing sectors in China were therefore severely disadvantaged. The gap between the official and swap rates narrowed during 1990-91, but during 1991-92 it widened again as a result of strong demand for imports and increasing inflationary pressures, both of which depressed the swap value of the yuan relative to the official value.

A model of the Chinese textile industry was used to calculate that currency deregulation (and hence removal of the dual exchange rate system) would increase exports of wool fabric by around 2.8 per cent and exports of wool yarn by around 4.3 per cent, if it is assumed that the yuan is at present overvalued by about 10 per cent at the official rate. The RMB value of exports would increase by more than this because of the increase in export prices in RMB terms.
... as well as having wider benefits

Benefits would also accrue to the economy more generally, including an increase in foreign exchange reserves, allowing a reduction in foreign debt, as well as lower administrative costs associated with the use of a single foreign exchange market.

Labour

Other opportunities for increasing efficiency are available in the removal of constraints on labour mobility. For example, when labour saving technology is installed in the state owned mills, labour reductions cannot be instigated quickly, because these mills have a responsibility for their workers until retirement and, indeed, beyond. One reason for the higher profitability of township enterprises relative to other mills has been the greater flexibility in their labour arrangements. Township enterprises still have significant growth potential. Some still use obsolete machinery, and more generally, as has been mentioned, they are hampered by a lack of skilled workers. Increased labour mobility between state and township enterprises could benefit both, by relieving the former of excess workers whom the latter require.

Effluent disposal

As China’s textile industry moves toward higher standards for effluent disposal from wool mills, better ways must be found to reduce pollution. Since the main polluting activities in wool processing occur at the early processing stages, China may benefit most in this respect from increased emphasis on importing wool tops, rather than greasy wool, thus minimising expenditure on increasingly stringent pollution controls and waste disposal methods.
Conclusions

The international market for textiles and clothing is demanding greater flexibility in delivery time and in adapting quality to meet a price. China has developed an important position in this market, but to maintain and improve this position it will need to focus on means of improving its response to changing market conditions. Many foreign investors in Europe, Japan and Australia are now looking at other low cost countries in which to establish textile mills.

Greater attention by mill managers on output quality will require them to have greater control over all parts of their operations, from raw material purchasing to marketing of their end products. Thus, there is a need for a reduction of constraints on labour mobility, investment and the purchase of raw materials. Reforms such as those discussed in this paper would help the Chinese government to revitalise the state owned sector of the industry to meet the objectives of the current five year plan.

Australia has strengths in wool production and in early-stage processing up to the wool top stage. It also has research expertise in all stages of wool processing, including textile production. China has strengths in low cost processing of wool beyond the top stage, and a large domestic market for products. Cooperation between Australia and China can build on these strengths to the advantage of both countries.
Introduction

The state owned (national) mills which form the oldest and largest part of China’s textile industry are in general imposing a burden on the country. A large number of these mills are running at a loss and as a result are subsidised by the government. At the same time a large number of foreign companies are finding it profitable to invest in certain of these state owned mills to take advantage of the low production costs possible in China.

The lack of profitability of the fully state owned mills can no longer be blamed on the downturn in the domestic economy, as the economy is now growing strongly. Rather, the lack of profitability can be attributed largely to the continued government imposed constraints under which state owned mills must operate, and from which foreign owners are in some respects exempt. These are constraints on factors such as sourcing of raw materials and investment in modern machinery. On the other hand, joint venture mills cannot sell freely to the domestic market.

Although much has been done over the past 15 years to remove constraints, and the attitude of the government toward reform is positive, much still remains to be done to create a textile industry which is competitive by international standards. In the current five year plan (1991–95) the objectives for the textile industry are improved efficiency, quality and international competitiveness while meeting domestic needs. The aim in this paper is to review possible means of achieving these objectives in the wool based yarn and apparel industries. The measures discussed include the lifting of trade restrictions, reforms to administrative procedures, and relaxation of capital and labour restrictions.
Problems and potential for the Chinese wool textile industry

China is important in the world wool market in all stages of the wool pipeline from wool production to consumption of final products. The structure of the industry is illustrated in figure A. In 1990 the value of Chinese exports of wool and other textiles and clothing was US$14 billion, accounting for around 20 per cent of total merchandise export earnings (Economist Intelligence Unit 1992). In 1991-92 China was the world’s fourth largest greasy wool producer and fourth largest exporter of textiles and clothing.

<table>
<thead>
<tr>
<th>Structure of the Chinese wool industry</th>
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<tbody>
<tr>
<td>Uruguay</td>
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<tr>
<td>Greasy wool imports</td>
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<tr>
<td></td>
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<tr>
<td>Scouring &amp; topmaking</td>
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China’s rise in importance in the world market has been helped by the extensive reforms introduced by the government over the past 15 years. The end of the cultural revolution in China in 1977 marked the beginning of a more open, decentralised and market oriented economy. It also marked the beginning of a period of rapid economic growth for China. China’s real gross domestic product per person grew at an average rate of 6 per cent a year over the next ten years. Much of this growth can be attributed to the economic reforms occurring throughout the economy.

Net domestic end use consumption of wool rose substantially until 1988, falling in 1989 and 1990. In 1988, Chinese net domestic consumption of wool was 262 kt clean equivalent, which made it the world’s second largest wool consuming country after the Soviet Union. However, per person wool consumption remains low by world standards, despite a 70 per cent increase between 1980 and 1989 from 0.11 kg to 0.19 kg per person. This can be compared with consumption levels in Japan, Korea and the European Community of 1.4 kg, 0.5 kg, and 1.5 kg per person respectively (figure B). It is projected that, with continued growth in consumer income, consumption of wool per person in China will double by the year 2010.

Developments since 1978

The pace of reform has varied between sectors. At first, the most significant changes occurred in the agricultural sector. From 1978 wool production decisions were devolved to individual households, and this provided incentives for sheep herders to increase wool production (see

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{wool_consumption_per_person_1989.png}
\caption{Wool consumption per person, by country, 1989}
\end{figure}
Chinese wool production and sheep numbers

Sheep numbers

Production

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>Production (kt greasy)</td>
<td>145</td>
<td>165</td>
<td>185</td>
<td>205</td>
<td>225</td>
</tr>
<tr>
<td>Sheep numbers (million head)</td>
<td>91</td>
<td>114</td>
<td>145</td>
<td>165</td>
<td>145</td>
</tr>
</tbody>
</table>

China has also made a strenuous and successful effort to increase the quality of its wool. Half of the wool produced in China in 1990 was classed as fine (less than 25 microns) and only 32 per cent as coarse (over 29 microns), whereas in 1981 only 40 per cent was classed as fine and 39 per cent as coarse (figure D).

This change in productivity and clip composition can in part be attributed to the assistance received from the Australian government. Since 1985,
Australia has been providing technical assistance in sheep breeding, use of veterinary chemicals, pasture production, sheep management and greasy wool marketing. While there are limitations on further expansion in sheep numbers, there is scope for increasing production through improvements in the cut per head.

Market reform has also resulted in rapid growth in the textile sector. Cotton continues to dominate the Chinese textile industry, accounting for more than 55 per cent of the gross value of output in 1990. However, the wool textile sector in China has grown much faster than the rest of the Chinese textile and clothing industry (Findlay 1992). For example, in the knitted goods and yarn sectors the number of wool spindles installed is estimated to have increased from 500,000 in 1978 to around 3 million in 1991, and the output of wool knitting yarns tripled between 1981 and 1990. Moreover, the relative importance of wool textiles in the textile sector has been steadily increasing over recent years. Its share of the gross value of textile output increased from 6.3 per cent in 1978 to 10 per cent in 1990.

When the wool textile sector is disaggregated into its major components, such as woollen and worsted fabric, woollen blankets, woollen knitted goods and knitting yarns, the growth rates are seen to vary considerably. An important constraint on the growth in worsted textiles has been the quality of domestically produced wool. Although the share of fine wool in total raw wool production has been increasing, domestically produced wool still contains high levels of dirt and vegetable matter. The average clean yield in China is around 38 per cent at present, compared with 65 per cent in Australia. With changes in pricing policies to take greater account of the clean yield of the wool produced, farmers are now being given greater incentive to improve their wool yield. However, of the three product types which use relatively high proportions of fine wool — worsted, woollen fabrics and knitted goods — the woollen subsector has tended to grow more rapidly because it is relatively less sensitive to impurities and a greater percentage of its products are targeted for domestic consumption (Findlay 1992).

A further factor in the growth of the woollen textile sector has been the rapid growth in ‘township enterprises’. These firms, set up since the early 1980s by provincial and local governments, tend to concentrate on production of woollen rather than worsted products, and in particular on making up and knitting. Although township enterprises are relatively...
small in comparison with the state firms, they tend to be more responsive to market changes. In particular, managers in township enterprises have the power to make most of the decisions concerning production levels and profit making strategies. Also, unlike the state mills, they are not required to support retired workers. They employ more labour intensive technology, and use capital more efficiently, than the state enterprises. Township enterprises can enter and leave the industry easily because they tend to operate on a smaller scale and specialise in one activity such as spinning or weaving.

However, there are constraints on the ability of township enterprises to improve their competitiveness at the international level, including a lack of skilled labour, the use of obsolete equipment which restricts the improvement of product quality, and inadequate transport and communication infrastructure.

In addition, there are reportedly 60 joint ventures in wool operations, involving Hong Kong, Japan, Taiwan, Western Europe, Korea and Australia. In around 25 per cent of the joint ventures the partners are Japanese. Joint ventures have greatly improved China’s export performance through the provision of new technology and marketing skills, enabling Chinese textile and clothing enterprises to produce new products and improve product quality.

A number of advantages have been conferred on joint venture mills which are not at present enjoyed by state owned mills, and which have resulted in strong demand by these mills to become involved in joint venture activities. The benefits include access to foreign capital and technology, increased freedom to import, and access to export markets. In particular, greater freedom to import wool, and freedom from requirements to use domestically produced wool, allow mill managers to better satisfy the increasing demands of both the domestic and export markets by using the most appropriate mix of domestic and imported wool. Compared with state owned mills, joint ventures are characterised by stronger management, stricter quality control, freer employment policies, more direct contact with suppliers and end markets, and freer import policies. This has led to large increases in productivity for the mills concerned.

Access to the domestic market varies for joint venture mills, but it appears that the maximum amount which can be sold on the domestic market before certain concessions are lost by a joint venture mill having a state
owned enterprise as a partner is around 30 per cent of production. There are also arrangements for joint ventures with township enterprises, which are more liberal than this.

Imports and exports
Within the Chinese textile industry, the wool sector has the highest degree of import dependence. In the 1980s China emerged as a major importer of wool (greasy, scoured and tops) as a result of rapid growth in the wool textile sector and the limited growth capacity of Chinese wool production. Imports increased from around 62 kt greasy in 1981 to reach a record level of 214 kt greasy in 1988, partly as a result of the ‘wool war’ (see p. 25). They fell to around 55 kt by 1990, but have since recovered to 157 kt in 1991 (figure E). The composition of these imports has also changed, with scoured wool and tops accounting for 71 per cent of wool imports in 1991, as against only 16 per cent in 1981. The change in composition between greasy and early stage processed wool reflects a number of factors, including changes in the relative world prices of greasy and early stage processed wool, the relative advantage that China has in further processing of wool but not in top making, and increasing local concerns over the effects of effluent discharges from scouring.

Australia is the principal exporter of wool to China, reflecting the large quantity of wool available from Australia which is suited to the quality needs of China’s textile industry. In 1991-92 Australian exports to China reached the record level of 114 kt greasy, with a trade value of $429 million. Although in the past the majority of wool imported by China

![Chinese wool imports](image)
from Australia has been in the form of greasy wool, growth in Australian
top making capacity through joint ventures with Chinese partners will
help Australia to meet China’s future needs for scoured wool and tops.
New Zealand continues to be the main exporter of carpet wool to China,
and is the largest exporter of scoured wool to China. China is also
sourcing an increasing proportion of tops from the European Community,
although the wool used to produce these tops is likely to have been
obtained from one of the main greasy wool exporting countries.

The Chinese government has expressed some concern over the risks
inherent in building a wool textile industry which is dependent on imports
for its major raw material. However, many of China’s Asian neighbours
have established viable and extremely competitive textile industries on
this very basis. For example, both Japan and the Republic of Korea
developed large and competitive wool textile industries using imported
wool. In these countries, as industrialisation has proceeded, the importance
of labour intensive industries such as textiles and clothing has subsequently
fallen, and there has been a shift toward high value products which require
a greater proportion of capital.

Because of its position as the world’s fourth largest exporter of textiles
and clothing, trade restrictions under the Multifibre Arrangement (MFA)
have significant implications for China. The MFA is a system of ‘voluntary’
export quotas on textiles and clothing agreed between most major developed
importing nations and the developing exporting nations. It has the effect
of limiting the quantities which the low cost textile and clothing producers
in developing countries can export to certain major consuming markets.
Although inconsistent with many of the GATT principles, the MFA is
ratified under the GATT.

The MFA affects not only the quantity of goods traded but also the
quality. Because it places quantity restrictions on trade rather than value
restrictions, it encourages upgrading of unit value through changes in
product mix. It is apparent that China has attempted to raise product
quality, in part at least to offset the slow growth of quota volumes. It
would also appear that, while the MFA has restricted the growth of
China’s exports to some large markets, such as the United States and the
European Community, it has accelerated China’s penetration of the
Japanese market, where exporters are not required to impose ‘voluntary’
export restraints.
If current negotiations on the Multifibre Arrangement were to result in a freeing up of restrictions on international trade in textiles and clothing, China could obtain significant gains. Leu (1991) estimated that these gains could include a 45 per cent increase in exports of wool textiles and clothing. However, some of these gains could be forgone if China does not become a member of the GATT, since in that case it might not be regarded as a ‘most favoured nation’ by other countries and so access might continue to be limited.

China has applied for readmission into the GATT, and its trade and economic policies are being reviewed to ensure consistency with GATT rules. Although China’s development status is taken into account in this review, there is no guarantee that the reforms introduced to date are sufficient to qualify for membership. A more rapid progression of reform — particularly in the area of trade policy — to a position which is consistent with competitive, free market principles would facilitate China’s accession to the GATT.
Possible textile industry reforms, and their benefits to China

There is a complex array of government policies which affect the efficiency of operation of the Chinese textile industry. Although significant progress has been made over the past 15 years toward a more market oriented and responsive domestic textile industry, the industry is still subject to a number of constraints, the removal of which would allow it to become more profitable, more competitive in world markets, and more responsive to the needs of the domestic and international market places in terms of quality and prices.

The people of China would benefit from such a domestic textile industry in many ways, including obtaining products which better meet their requirements — which will be particularly important as incomes continue to rise due to the rapid economic growth in China. The people would also gain from a more profitable domestic textile industry through the industry contributing to the government’s budget via taxes on profits, instead of being a burden to it through the losses of the state owned mills.

The discussion here concentrates on the following main policy areas: tariffs on imports; import quotas and the import planning system; import inspection and testing arrangements; the exchange rate system; labour constraints; capacity constraints; and environmental policies.

Tariffs on imports

China imposes relatively high tariffs on imports of wool and wool products. The current rates of duty paid by importers in China, Japan, South Korea and Malaysia are shown in table 1. As can be seen, Japan, South Korea and Malaysia impose no or very low tariffs on greasy wool, scoured wool and wool tops. The constraint placed on the domestic industry by China’s substantial tariffs on these products seems suboptimal, given both the heavy dependence of the domestic textile industry on imports of raw wool (around 66 per cent of inputs) and the emphasis being placed on improved quality of output in the current five year plan.

A reduction in tariffs on textile mill inputs would lead to a reduction in production costs and hence in the price of the final product. This would
Import duties on textile fibres, yarns and fabrics

<table>
<thead>
<tr>
<th></th>
<th>China a</th>
<th>Japan</th>
<th>South Korea</th>
<th>Malaysia</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Greasy wool</td>
<td>15</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Scoured wool</td>
<td>15</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Wool tops</td>
<td>20</td>
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<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Wool yarns</td>
<td>50</td>
<td>0-10</td>
<td>9</td>
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<tr>
<td>Wool fabrics</td>
<td>100</td>
<td>0-12</td>
<td>9</td>
<td>2-7</td>
</tr>
<tr>
<td>Cotton</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>0-2</td>
</tr>
<tr>
<td>Cotton yarns</td>
<td>30</td>
<td>0-15</td>
<td>9</td>
<td>5-20</td>
</tr>
<tr>
<td>Cotton fabrics</td>
<td>50</td>
<td>0-15</td>
<td>9</td>
<td>30-55</td>
</tr>
<tr>
<td>Acrylic fibres</td>
<td>25</td>
<td>0-25</td>
<td>9</td>
<td>0-2</td>
</tr>
<tr>
<td>Other synthetic fibres</td>
<td>50</td>
<td>0-25</td>
<td>9</td>
<td>0-5</td>
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<tr>
<td>Cellulosic fibres</td>
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<td>0-25</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>Synthetic yarn</td>
<td>70</td>
<td>0-25</td>
<td>9</td>
<td>20</td>
</tr>
<tr>
<td>Manufactured fibre fabric</td>
<td>100</td>
<td>0-25</td>
<td>9</td>
<td>30-55</td>
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a 'Minimum' rate (applies to virtually all wool imported by China).


increase the competitiveness of Chinese textile products, at least in the domestic market. Moreover, at a time when many of the state owned mills are making large losses, the tariffs reduce the incentive for those mills to become more competitive in the long run by adopting cost efficient technologies.

Where imported wool is subsequently re-exported in the form of semiprocessed and processed wool products, up to 100 per cent of the tariff duty paid can be reclaimed. Although some concerns have been expressed regarding administrative difficulties in ‘drawing back’ duty (Yang 1991), a number of mills have reported little or no difficulty in this regard. (Because the import of wool is mainly organised by large mills or local authorities, who often also organise the export of processed product, the use of imported wool for domestic or exported products is usually apparent.) Thus, the duties on wool mainly constrain the production of wool yarns, fabrics and clothes for domestic consumers. They also have the effect that the highest quality imported wool is used mainly to produce goods for export rather than for domestic sale.
There are two other features of the Chinese tariff schedule worth noting. First, the tariffs on wool and wool products increase with the stage of processing (escalate), ranging from 15 per cent for greasy wool up to 100 per cent for wool fabrics. Imports of wool products beyond the top stage are small. This is likely to be due partly to the competitiveness of domestic wool products, but also partly to the high import duties constraining the import of these products. Moreover, it is not just the products which compete directly with domestic products which incur high tariffs. So also do imports of products at the high quality, branded end of the market, in which China does not effectively compete at present. The constraint on this high quality end of the market serves only to restrict domestic consumption of these products (and to raise revenue), and not to protect a particular segment of the industry. (This is not to say that China could not develop a high quality apparel industry, though this would require improvements in the technology utilised in many mills in China and an increase in imports of high quality wool.)

The second noteworthy feature is that the tariffs on wool and its products are higher than the corresponding tariffs on cotton but, up to the yarn stage, are lower than those on chemical fibres. It is believed that the high tariffs on chemical fibres reflect a desire by the Chinese government to increase domestic production and processing of chemical fibres. There may be scope for such an expansion in the production of chemical fibres in China, whereas the scope for expanding wool production is limited by the physical constraints of the environment as well as by competition for agricultural land with what are seen as more critical uses, such as food production. In this respect, wool can be regarded as more akin to cotton, imports of which are regarded as supplementing or complementing domestic supplies.

It is sometimes argued that higher tariffs on wool as compared with cotton are justified because wool is a luxury item whereas cotton is a necessity. The conventional definition of a luxury is a good of which the amount purchased increases by more than 1 per cent in response to a 1 per cent increase in the income of consumers. (A ‘normal’ good is one of which the purchases increase by less than one per cent.) This definition reflects the fact that as a consumer’s income grows the proportion which needs to be spent on necessities (such as food) falls, and a greater share can be spent on other goods. Recent economic analysis of consumer demand in China using the model described by Connolly (1992) confirms that in the past wool products were treated as a luxury by Chinese consumers, but
that they have become less so over time. A large proportion of the wool consumed in China is blended with other fibres to produce lower priced clothing for the domestic market.

It is recognised that the tariffs on wool imports are likely to reflect a desire by the government to protect domestic wool producers. Wool production in China is dominated by ethnic minorities whose lifestyle the Chinese government may wish to maintain. Tariffs are an indirect means of protecting domestic producers, which impose a cost on other industries (in this case, mainly the textile industry). Assistance to domestic producers could be maintained without constraining the domestic textile industry. For example, direct payments, not linked to the production of wool or any other commodity, could be made to the producers. Depending on how the revenue is raised to do this, it might avoid the distortions to the economy created by assistance which is linked to production, and in particular avoid unnecessary costs to the domestic textile industry. If employment in wool producing regions is of concern, it is relevant that the reduction in import costs would encourage growth in textile production, including in such regions, and may therefore increase regional employment. Moreover, reducing restrictions on sale to the domestic market by joint venture mills may also encourage foreigners to establish mills in these regions.

Using the economic model of the Chinese textile industry described by Connolly (1992), the benefits to China from reducing tariffs on imports of wool up to the top stage (only) were quantified (see appendix). The benefits were calculated for the simplest case, where these tariffs are reduced to zero. The results are shown in table 2. The percentage changes shown represent the changes from the levels of production, consumption and prices which would prevail if the tariffs were left unchanged.

It was estimated that the production of textiles in China would rise by around 2.3 per cent after five years as a result of the removal of the tariffs. This increase would be worth around RMB 250 million ($A65 million) a year, and would provide significant benefits in terms of employment and profitability. As it was assumed in the modelling that the duty drawback provisions are effective, and as quality aspects could not be accounted for in the model, there were no increases in exports of textiles and apparel. To the extent that these provisions are not effective or impose an administrative burden on producers, the gains from removing tariffs would be higher than estimated above.
### Changes from removal of tariffs on wool imports

<table>
<thead>
<tr>
<th></th>
<th>Change after 1 year</th>
<th>Change after 5 years</th>
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<tbody>
<tr>
<td></td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td><strong>Production and consumption</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domestic wool production</td>
<td>-1.0</td>
<td>-8.2</td>
</tr>
<tr>
<td>Mill consumption of domestically produced scoured wool</td>
<td>-8.3</td>
<td>-8.8</td>
</tr>
<tr>
<td>Input of wool tops into processing</td>
<td>0.3</td>
<td>1.5</td>
</tr>
<tr>
<td>Production of wool fabrics and knitting yarns</td>
<td>0.2</td>
<td>2.3</td>
</tr>
<tr>
<td>Retail sales of wool fabrics (including blends)</td>
<td>0.7</td>
<td>0.3</td>
</tr>
<tr>
<td>Retail sales of wool knitting yarns (including blends)</td>
<td>0.9</td>
<td>1.2</td>
</tr>
<tr>
<td>Exports of wool fabrics</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Export of wool yarn</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Prices</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chinese greasy wool</td>
<td>-2.8</td>
<td>-3.5</td>
</tr>
<tr>
<td>Wool knitting yarns (including blends)</td>
<td>-0.8</td>
<td>-0.5</td>
</tr>
<tr>
<td>Wool fabrics (including blends)</td>
<td>-1.1</td>
<td>-1.1</td>
</tr>
</tbody>
</table>

*Retail sales of wool fabrics and wool knitting yarns were estimated to increase by slightly less than 1 per cent during the first year after the tariff removal. After five years, purchases of wool fabrics increased by 0.3 per cent, and of wool yarn by 1.2 per cent. These increases are smaller than the increases for other stages of wool processing for two reasons. First, raw wool is only one input into the production of yarn and fabric (labour and machinery being others). Second, the definition of wool fabrics and wool knitting yarns used here includes blended products — principally blends with synthetic fibres, but also blends with natural fibres such as silk.*

1 Retail sales of wool fabrics increase by more after the first year than after five years because in the first year consumers increase their wardrobe stocks of apparel made from wool fabric, which reduces their need for purchasing in the medium term (taking into account the durability of wool garments).
Thus, lower tariffs on raw wool would result in lower prices to consumers of end products and, potentially, higher quality products, and so provide benefits to consumers as well as producers. Lower tariffs would clearly contribute to the government’s aims in the current five year plan of improved efficiency, quality and international competitiveness while meeting domestic needs. In contrast, with the moves toward production of higher quality textiles and apparel in China, continued subsidisation of domestic wool production at the expense of imports of high quality wool would retard the required improvement in wool quality, to the detriment of local consumers. (The quality difference in domestic and imported wool is clearly evidenced by the lack of blending between imported and domestic wool by textile mills.)

Import arrangements

Import arrangements in China can be discussed in two main parts — the import quota and planning system, and wool buying arrangements. The 1985–88 ‘wool war’ will also be described, since Chinese policy makers are particularly concerned to avoid further such occurrences.

The quota system

Since 1988 China has imposed a quota system on the import of raw wool by state owned enterprises, though not on imports by joint venture mills. (The same system applies to the township enterprises, but these mainly use domestic wool.) The system applies only to wool up to the top stage. In 1990 the quota was 45 kt clean equivalent, and it was increased to 100 kt clean equivalent in 1991. Quota is exchangeable between mills and between provinces. Unlike quota arrangements in other countries, where the quota of a product is usually centrally determined, in China mills assess how much they require to import in the coming year and seek approval for this amount. While the amount approved is binding on mills, there is some scope for increases in quota during the year (although this has not usually been required). Consequently, the quota system acts more as an aid to planning than as a direct import restriction.

The process of approval is shown in figure F (although arrangements can vary from this in particular regions\(^2\)). Prior to the commencement of the

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2 For example, in Shanghai, the Shanghai Textiles Import and Export Corporation is responsible for aggregating wool import orders from the mills, in the case of wool to be
year (usually in September or October) wool mills estimate their requirements of wool for the coming calendar year. The mills’ requirements within a town are aggregated by the local textile bureau or cooperative. In some cases local approval is also required by the local office of the provincial Economic Planning Commission. These requirements are then passed to the provincial level textile industry bureau for further aggregation. The Ministry of Textile Industry combines all the provincial level requirements and seeks approval for this from the State Planning Council. Once approval is given (as it ordinarily is), quota licences are passed back through the system, to be held by provincial authorities, township authorities and some of the larger mills.

used to produce products for export. This Corporation reports to the Shanghai Foreign Trade Commission, which reports directly to the Ministry of Foreign Economic Relations and Trade.

China’s wool textile industry
The quota system imposes a significant administrative burden on state owned mills and limits their ability to take advantage of short term import market opportunities. Joint venture and foreign owned mills have considerably fewer administrative processes to go through to import wool. They are free to import wool subject only to approval from the provincial Foreign Trade Economic Commission, provided that most of the end product will be exported.

The centralised importing arrangements

State owned mills — but not joint or foreign owned mills — are also constrained in the channels through which they can buy imported wool (although state mills processing predominantly for export are less restricted). For centralised imports there are five main organisations authorised to import wool. One of these, Chinatex (China National Textiles Import/Export Corporation), is probably responsible for over half of all wool imports into China. Three others are subsidiaries of Chinatex but operate independently of it — China Resources Textile Raw Materials Company Ltd (based in Hong Kong and part owned by Chinatex and the Hong Kong based China Resources Ltd), Nam Kwong Textiles Company Ltd (based in Macau) and Chinatex (Australia) Wool Company Ltd (based in Sydney). The fifth large authorised importer is Animal Byproducts Corporation (responsible mainly for carpet wool imports, as well as carpet yarn and carpet exports). Small amounts of wool are also purchased by the Ministry of Textile Industry and Ministry of Foreign Economic Relations and Trade through foreign trading companies. Over the past year or so, with the growth in joint venture mills, the wool import share of the agencies has diminished.

In contrast to the relative flexibility of the buying arrangements available to the joint venture enterprises, centralised wool buying limits the opportunity for state owned mills to organise their own wool purchases to meet the needs of their customers. While some moves have been made to bring these mills closer to the importing agencies in price and quality negotiations, many mills are still receiving wool of different quality from that requested, often inappropriate to their needs.

This problem results mainly from the aggregation of mill orders by the central buying agencies. The agencies often order wool on the basis of a broad range of characteristics, for which they attempt to pay the lowest price possible. This tends to result in the wool delivered being in the lower
quality end of the range requested and being highly variable in its characteristics. Further, orders are usually placed through intermediaries (wool exporting firms) rather than purchasing wool directly from, say, the auction market in Australia, and the buying agencies thus lose some control over the types of wool delivered. Moreover, the agencies are not held directly responsible for the quality of the wool received, and therefore have limited incentive to ensure that the intermediaries meet the quality requirements. Compromising on the quality of wool purchased to some extent disrupts China’s attempts to build a reputation as a supplier of good quality textiles and apparel. The result is less satisfied overseas customers, and perhaps the loss of some major markets for China’s textile exports.

In light of the above arguments, state owned mills should be permitted greater freedom to organise their own imports of wool. They should be given the choice as to whether to deal with intermediaries or directly with wool sellers. Besides enabling them to obtain wool of suitable quality to meet the needs of their customers, thus improving China’s reputation in international markets, this would improve the efficiency of mill operations, as machinery settings could be better set to match the wool being processed and the products being manufactured.

Avoidance of another ‘wool war’

A concern which has been expressed regarding increasing the pace of reform, particularly the freeing of importing arrangements, has been the prospect of creating another ‘wool war’ such as occurred between 1985 and 1988 when import arrangements were relaxed. The ‘wool war’ was an explosion of competition in the purchase of wool between various types of enterprises, various levels of government and various kinds of merchants. The origin of the ‘wool war’ was a relaxation of central control of wool marketing at a time when local governments in major wool producing provinces (Gansu, Qinghai, Xinjiang and Inner Mongolia) were anxious to expand their own wool processing industries under the policy of ‘own production, own use and own sales’ (Watson and Findlay 1992).

A primary factor was the uneven pace of reform between agricultural sectors. Reforms in meat marketing were moving more rapidly than those

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3 A move by some buying agencies (such as Nam Kwong and Chinatex) to purchase directly from the Australian wool auction market, and attempts to form more direct contacts between wool exporters and domestic mills in China, have gone some way toward resolving some of these problems, but further efforts in these directions are required.
in wool marketing, with the result that prices received by farmers for sheep meat rose more rapidly than the prices received for wool (despite a rapid growth in textile processing demand). This price imbalance, combined with growth in small local processing plants, led to a shortage of supply of domestic wool. This resulted in a rapid increase in wool prices and wool imports. It also resulted in a decline in the quality of domestically produced wool, as a consequence of farmers and others contaminating wool in order to increase its weight (since prices received were on a greasy rather than a clean basis). There was also incorrect grading of wool into finer micron categories. The ‘wool war’ ended principally because of a collapse in consumer demand and hence in demand for raw wool.

The key to avoiding another ‘wool war’ as reforms progress in the future will be the establishment of a price system for wool and wool products which is able to respond to market demands and supplies, both in quantity and quality terms. Some moves have already been made in this direction. Since the second half of 1991, prices are no longer directly fixed by the price control authorities, at any stage of wool processing (although in some cases approval for prices from the Price Control Bureau is still required). Prices of raw wool are now more responsive to changes in the market, and much greater account is being taken of the clean yield of the wool. The introduction of auctions for the sale of selected domestic wool to invited mills allows much greater interaction between wool sellers and the textile mills. There is considerable scope for developing this or other systems whereby mills can have greater contact with wool producers. Further progress is also needed in improving the specifications of domestic wool so that producers will receive better information on the qualities of wool desired by the market through the prices which they receive.

Import inspection and testing arrangements
The China Commodity Inspection Corporation (CCIC) is responsible for testing imported products, including wool. Tests are generally conducted for wool diameter, clean yield and vegetable matter content. Additional tests for such qualities as length, style and colour are now being increasingly performed. Mills are charged for the testing, although not on a full cost recovery basis. According to the Shanghai branch of the CCIC the charge covers the cost of replacing equipment as it wears out, but little more than this. The charge is at present 0.44 per cent of the value of the imported good.
Often this testing duplicates testing which has already occurred in other countries. However, since September 1990 agreements have been entered into with wool testing agencies in Australia and New Zealand which reduce duplication in testing of imported wool. In Australia, the Australian Wool Testing Authority (AWTA) has an agreement with the CCIC whereby officers of the CCIC based in Australia can endorse the AWTA test certificate, at a cost to the exporter. Wool so endorsed need not be tested on entering China, although random inspections are still conducted. Where wool which is randomly tested is found to differ from what appears on the AWTA test certificate, negotiations to resolve the difference or settle on a penalty are conducted between the AWTA and CCIC, and the exporter is protected from liability. Thus, while the charge for CCIC endorsement imposes a cost on wool exporters, it is a form of insurance for exporters against penalty claims on the wool delivered, or its rejection. The New Zealand Wool Testing Authority Limited has a similar arrangement with the CCIC.

At present the cost of this endorsement is $A3.60 per bale of clean or greasy wool (in addition to AWTA testing fees). Not all exporters take advantage of this service, and so the wool exported by them is subject to normal testing arrangements. Between September 1990 and September 1992 around 300 000 bales were endorsed by the CCIC in Australia, of which some 187 000 bales were endorsed in the 1991-92 financial year — about 29 per cent of wool exported to China during that year.

As regards the significant quantity of wool imported by China which is subject to the normal testing arrangements, two points can be made. First, since the testing is for the direct benefit of textile mills in China, the mills should pay the full costs of the tests. This will require some change to the basis of charging. It seems unlikely that the costs of testing a bale of high valued wool would be substantially more than those of testing a bale of low valued wool, and yet this is what is implied at present. A charge which is based on the actual costs of testing, probably on a per-bale basis, is likely to be more appropriate. Second, duplication of testing should be further reduced to avoid imposing unnecessary costs on the textile industry. Where tests are already carried out in the exporting country, it would be more cost-effective if testing in China were limited to random sampling to ensure that the testing standards of exporting countries meet China's requirements.
It is not clear whether the adoption of these two principles would lead to higher or lower costs to the domestic industry, since the first principle would lead to an increase in charges for some wool and the second would lead to a reduction in costs.

A further limitation of testing arrangements in China is that tests are not undertaken to world standards as set down by the International Wool Textile Organisation (IWTO). For example, IWTO standards require each bale in any lot to be sampled, whereas at present the CCIC tests only one in every five bales in a lot. Such a testing procedure can indicate that a delivery of wool does not meet the standards specified in the contract when in fact on average it does. This can result in costly and unnecessary negotiation between buyers and sellers. Consequently, there is an urgent need for the CCIC to hasten the adoption of IWTO testing standards.

The exchange rate system

The foreign exchange market in China has traditionally been highly regulated. Since 1979, major deregulation of the market has occurred; however, further reforms, and in particular the removal of what has become a dual exchange rate system, would be likely to result in significant benefits flowing on to the Chinese wool textile industry. Progress has recently been made toward full convertibility of the yuan, and there are some reports that this will be attained within the next year or so.

The most significant feature of the current Chinese foreign exchange market is the existence of both an official and a non-official rate of exchange, the yuan being valued higher at the official rate. Foreign exchange obtained at the official exchange rate is rationed, and is allocated according to the priorities of the government. Almost all foreign exchange earnings have to be sold at the official rate to the State Administration of Exchange Control. Some foreign exchange earnings may be retained by firms, and can be used to buy ‘non-plan’ imports or sold on the (legal) secondary foreign exchange market (Martin 1991).

The legal secondary foreign exchange market was established in 1985 to reduce the inefficiencies arising out of the official exchange market. Exchange rates on this secondary or ‘swap’ market are essentially market driven, although transactions may be made only by certain companies (not by individuals), and these exclude domestic exporters and importers and
foreign financial institutions. Most foreign trading companies and many mills have easy access to ‘swap centres’. The swap centres, overseen by the State Administration of Exchange Control, exist for foreign invested enterprises to exchange retained profits for foreign currency.

What is traded is foreign exchange retention quotas, rather than foreign currency itself. Exchange is available only provided that it will be used to import goods considered necessary for China’s development. There are strict provisions as to how foreign exchange obtained from swap centres can be used. It cannot be used to buy luxury goods such as cigarettes, wine and household appliances, or some types of machinery. Permitted purposes for swapped foreign exchange include the importation of fertilisers, pesticides and other agricultural chemicals and materials, the importation of cereals, oils and sugar, foreign debt servicing, priority construction projects assigned by the central or local governments, projects generating foreign exchange, and the importation of technologically advanced equipment and expertise (Hong Kong Bank 1992).

Use of the swap centres has grown considerably, with over 100 such centres now in existence throughout China. Turnover increased from US$13 billion in 1990 to US$17 billion in 1992 (Goldstein 1992).

Up until the second half of 1990, the yuan was considerably overvalued at the official exchange rate and there was a large difference between the official rate and the swap rate (Martin 1992). This overvaluation had the effect of lowering the value of earnings obtained from exports (converted to domestic currency mainly using the official market). There is also evidence that the yuan was undervalued at the swap rate (Martin 1992), increasing the price of imported products bought with currency obtained on the secondary markets. The textile and clothing sectors in China were therefore doubly disadvantaged, because they are raw material importers as well as finished product exporters. In a broad sense, such a two tiered arrangement inhibits the transmission of price signals and reduces the responsiveness of the economy to price changes, thereby reducing the efficiency of allocation of resources in the Chinese economy.

From late 1989 to early 1991, the gap between the official and unofficial exchange rates narrowed, the swap rate in May 1991 (Y5.9/US$1) being only slightly higher than the official rate (Y5.46/US$1) (Davis and Yi 1992). This convergence of rates came about largely as a result of policy changes such as tight credit and fiscal polices, changes in trade policy that
reduced imports, and a devaluation of the official rate. Significant reforms since January 1991 have allowed for incremental exchange rate adjustments to be made on a regular basis. As well, an increase in Chinese exports has allowed a greater availability of foreign exchange to the swap centres (Martin 1991).

During 1991-92, the gap began to widen again, with the swap rate depreciating. Consequently, during this period increasing diplomatic pressure was placed on China to reform its foreign exchange and trade policies, in the light of China’s request to be readmitted to the GATT. Internally, there was a considerable need for such reforms in order to reduce inflationary pressures. In addition, many firms appeared to be holding on to foreign exchange retention quotas in anticipation of the exchange rate depreciating further. However, foreign exchange quota cannot be carried over to the next year. Many firms, reportedly, therefore increase their purchases of foreign equipment during the second half of the year. In a period of depreciating exchange rates, companies may import equipment they do not need in the hope of later selling it at a higher price to companies that lack foreign exchange quota (Goldstein 1992).

A model of the Chinese wool textile industry (see appendix) was used to examine the main likely effects of an elimination of the two tiered exchange rate system on the wool and textile industries in China. For this purpose, it was assumed that the unofficial rate is at present the market rate, and that the yuan is overvalued at the present official rate. Abolition of the two tiered system is thus equivalent to deregulation of the exchange rate.

For modelling purposes, it was further assumed that, before the change, all goods are traded at the official rate. The change could therefore be represented as a devaluation. It is difficult to say exactly how great the equivalent devaluation would be; it was assumed to be 10 per cent.

In the model, one effect of a sustained 10 per cent devaluation is that Chinese exports of wool fabric are around 2.8 per cent higher after five years than otherwise, and exports of wool yarn are around 4.3 per cent higher (table 3). The yuan value of these exports is increased by more than this, given the 10 per cent increase in yuan export prices. At the same time, the rise in export prices leads to some rise in domestic prices (although by a smaller amount, due to some difference in quality of products).
### Changes resulting from a 10 per cent fall in exchange rates

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<th>Change after 1 year</th>
<th>Change after 5 years</th>
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<td></td>
<td>%</td>
<td>%</td>
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<tr>
<td><strong>Production and consumption</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wool imports</td>
<td>-1.5</td>
<td>3.2</td>
</tr>
<tr>
<td>Domestic wool production</td>
<td>0.2</td>
<td>1.6</td>
</tr>
<tr>
<td>Input of wool tops into processing</td>
<td>0.3</td>
<td>2.2</td>
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<tr>
<td>Production of wool fabrics and knitting yarns</td>
<td>1.3</td>
<td>2.2</td>
</tr>
<tr>
<td>Retail sales of wool knitting yarns (including blends)</td>
<td>-0.5</td>
<td>-0.6</td>
</tr>
<tr>
<td>Retail sales of wool fabrics (including blends)</td>
<td>-0.5</td>
<td>-1.5</td>
</tr>
<tr>
<td>Exports of wool fabrics</td>
<td>2.4</td>
<td>2.8</td>
</tr>
<tr>
<td>Export of wool yarn</td>
<td>3.9</td>
<td>4.3</td>
</tr>
<tr>
<td><strong>Prices</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chinese greasy wool</td>
<td>4.4</td>
<td>3.1</td>
</tr>
<tr>
<td>Wool knitting yarns (including blends)</td>
<td>2.4</td>
<td>2.7</td>
</tr>
<tr>
<td>Wool fabrics (including blends)</td>
<td>0.9</td>
<td>2.5</td>
</tr>
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</table>

The rise in returns to textile manufacturers as a result of greater export sales outweighs the increase in their input costs. As a consequence of the higher domestic prices for textiles, retail sales of textiles decline slightly, but in absolute terms this reduction is less than the increase in export sales. Therefore, Chinese textile manufacturers are better off as a result of the devaluation. The rise in the yuan import prices of wool leads to some rise in domestic wool prices. This results in a rise in domestic wool production and thus improves the welfare of domestic wool producers.

In this model analysis, as has been mentioned, it was assumed that, before deregulation of the foreign exchange market, all goods are traded using the official exchange rate. The increase in yuan import prices results in an initial fall in the imports of raw wool, although imports increase in later years due to the growth in domestic textile production for export. However, since at present some proportion of imported wool is bought at the unofficial exchange rate (using currency from the swap centres), imports might expand more than is indicated here, particularly if the present swap rate undervalues the yuan.
There would, of course, be much wider benefits to the economy from exchange deregulation which are not explicitly modelled here. These would include an increase in foreign exchange reserves, allowing a reduction in foreign debt, as well as avoidance of the administrative costs of duplicated foreign exchange markets.

Labour mobility

China’s comparative advantage in textile processing arises from a large and relatively low cost labour force which can be applied to the labour intensive later stage processes of the textile industry. As Findlay and Li (1992) argue, in early stages of industrialisation countries tend to specialise in labour intensive products, particularly when the endowment of natural resources is small relative to that of labour; as countries become more industrialised real wages tend to rise, and this results in substitution away from labour and into capital.

In China, this progression over time is likely to be constrained by the current labour arrangements. A large proportion of the workers in the state owned component of the textile industry were allocated to mills at the start of their working life and expect to remain there until retirement. Indeed, the mill is expected to support former workers after retirement.

This means that as real wages rise and as labour saving technology is installed, there is little scope to shed labour. This constraint is reflected in the growing ratio of cost of labour to value added in wool textile mills, which has risen from 9.7 per cent in 1980 to 20.9 per cent in 1987 (Findlay and Li 1992). The installation of up-to-date machinery would ordinarily be expected to reduce this ratio — in other words, to increase the value added per worker. Instead, machinery is purchased mainly in order to increase the quality of output (thus getting a higher price for a given output quantity) rather than to obtain cost efficiency gains (although there would also be some gain in output). At a time when prices and markets are being freed by the Chinese government, many of the mills in the state owned part of the textile sector have become unprofitable, resulting in a substantial decline in capacity utilisation in the textile sector. For example, Findlay and Li (1992) report that spindle capacity utilisation in the wool textile industry has declined from 93.5 per cent in 1978 to 76.7 per cent in 1987. Further declines appear likely to have occurred since then.
In recent times some mills have sought to increase their flexibility by taking staff on contract rather than as permanent employees. However, the extent to which mills can do this is limited by existing staff arrangements. Moreover, where staff shedding has occurred this has been seen as contributing to undesirable social problems.

The rapid growth which has occurred in township enterprises in recent years has partly been because of the greater flexibility of operation that these enterprises have. Among other advantages, they can bring in labour when there are profitable markets for the output and can lay workers off (to go back to farming and other activities) at other times. In addition, the wages of workers in township enterprises are largely related to their output, and this encourages growth in productivity (Yang 1991). An indication of this productivity growth is that the real output of township enterprises has risen by 39 per cent over the period 1980 to 1987, while employment in these enterprises has grown by only 18 per cent. In the state sector real output grew by 9 per cent over this period and employment by 8 per cent (Sun 1989). The profitability of township enterprises is related to a range of factors, but flexibility in the labour force is important among these.

Significant further growth in productivity remains possible in township enterprises. Some of these enterprises still use obsolete machinery, and they are generally hampered by a lack of skilled workers (Yang 1991). Since many state enterprises may have more skilled workers than they can profitably employ, increased labour mobility between state and township enterprises has the potential to benefit both.

There is a strong case for the Chinese government to relieve state owned mills of the labour constraints imposed on them. The ability to hire and retrench staff in the same way as can be done by township mills would enable the efficiency gains which are achievable with more modern machinery to be fully attained. Those workers retrenched from one mill are likely to be able to find work in other mills as the industry continues to grow, or in other industries. Support for retired workers could be achieved through the establishment of a centralised comprehensive pension system, which is currently under consideration (though of course there would be some cost associated with raising the revenue for this).
Capacity constraints

Wool spindle capacity rose sixfold between 1978 and 1991, but, as mentioned above, capacity utilisation declined during the 1980s. Under the current five year plan the Chinese government has ruled that the number of wool spindles in state owned mills and township enterprises (though not in mills having foreign investment) cannot be increased. While this limits output growth in this sector of the industry, it does not stop it, because mills are still able to replace outdated machinery with modern machinery having a higher output per spindle as well as giving better quality of output. Old machinery then has to be scrapped to avoid exceeding the constraint on the number of spindles. (However, as mentioned above, where labour cannot be retrenched a large part of the potential economic efficiency gains from the adoption of more modern machinery is often lost.)

Although the ceiling on spindle numbers has thus helped the domestic industry to become more quality oriented and less output oriented, such a restriction should become unnecessary as mill operators learn to be more responsive to the quality demands of domestic and international consumers. Moreover, if maintained the constraint would limit the profitable expansion of the industry in the future and so impose costs in terms of reduced domestic sales and exports, and higher prices for domestic consumers.

Equally importantly, any restrictions on the ability of the mills to respond to the demands of consumers will impose costs on the domestic textile industry and on the Chinese economy more generally. For example, in recent years the Ministry of Textile Industry adopted a policy of reducing consumption of wool as an input to the wool processing industry from around 50 per cent of all raw fibre used to 40 per cent. The policy contributed to the buildup in stocks of finished goods, because consumers were unwilling to buy products with the look and feel of a synthetic product but at wool blend prices.

Restrictions on the availability of capital for expansion has also been a limiting factor on the growth of the industry. State owned mills obtain capital principally from local textile bureaus and from the Ministry of Textile Industry, both of which limit the availability of capital. More recent types of enterprise have additional sources of capital. Township enterprises raise capital from banks and through the use of retained earnings. Some mills also obtain capital from the establishment of joint

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ventures with foreign corporations, and at least one has begun to investigate raising capital through share issues. Freeing up of capital raising will assist the industry in adjusting to the more market oriented environment being established in China. It is apparent that those mills with the most freedom in this regard are the ones which are maintaining and increasing profitability, while many of the state owned mills continue to be unprofitable.

Environmental policies

Early stage processing of wool requires effective methods of disposal of substantial quantities of waste materials. In Australia, the disposal of scouring effluent (from washing greasy wool) is usually managed by means of settling ponds and pasture irrigation so as to ensure the least possible damage on the environment. In Australia, this method is much more cost-effective than the capital intensive effluent treatment and sludge incineration methods of Western Europe, Japan and the United States, but it is dependent on the availability of land at a low cost (ABARE 1990).

Very little information is available on the possibility of more stringent environmental regulations being introduced into China’s wool processing industry. However, press reports from China have indicated a general increase in environmental concern by the Chinese government over the past decade. In China’s current five year plan, environmental protection issues are given equal importance with economic growth. The Chinese government plans to spend US$15 billion on the environment over the period of this plan.

Higher standards for effluent disposal from wool mills could lead to increased costs. This would be particularly true for early stage processing mills, where runoff from wool cleaning detergents can be of environmental concern. The effect on China’s woollen textile industry is difficult to assess, with no knowledge of the specific regulations that might be introduced. However, it is unlikely that Chinese mills could adopt the same waste disposal methods employed by Australian wool scourers, because of the close proximity of the Chinese mills to major urban centres and the consequent higher opportunity cost of land. Therefore, such a change in Chinese policies would add to the advantages of importing woollen tops from Australia for further processing.
Conclusions

China stands to make significant gains from the reform of policies which constrain the efficiency of the domestic wool textile industry. Reforms to tariffs, the import planning system, wool inspection, the exchange rate system, capacity constraints and labour restrictions could considerably improve the international competitiveness of the industry. This would be likely to return the state owned enterprises in China to a position of profitability (in which respect the industry continues to lag the recovery in economic growth) and to contribute to the growth in employment, both in the regions directly concerned and for the nation as a whole.

The international market for textiles and clothing is demanding greater flexibility in delivery time and ability to adapt quality to meet a price. China has developed an important position in this market, but is not assured of maintaining or improving this position. Many foreign investors in Europe, Japan and Australia are now looking at other low cost countries in which to establish textile mills, such as Indonesia, Thailand, Malaysia and, for the future, Vietnam. These countries are also actively encouraging these investors to establish mills, through various inducements and incentives. Generally, they impose only low barriers to the import of raw materials. The Chinese government thus faces a challenge in maintaining the interest of foreign investors.

The textile industry also faces challenges on the domestic market. The real incomes of Chinese consumers are gradually rising, and this is likely to result in further growth in consumption of textiles and apparel. As incomes rise, consumers in China are demanding higher quality products than in the past, and are becoming much more conscious of fashion, colour and fibre content in the yarn, fabric and clothing which they purchase. The acceptability of uniform products for the mass domestic market is rapidly declining. To meet these changing demands, the textile industry will need greater control over all inputs: raw material, capital and labour. Already the joint venture companies and, to some extent, the township enterprises have recognised this and have some freedom to adapt their production accordingly. State owned mills have largely been left behind in this move, and as a consequence the government is required to
subsidise their operations and stocks of goods of unsuitable quality remain unused in warehouses.

Reforms such as those discussed in this paper would enable the Chinese government to revitalise the state owned sector of the industry to meet the objectives of the current five year plan. Mill managers can give more attention to quality of output if they have greater control over all parts of their operations from raw material purchasing to marketing. International competitiveness can be increased through quality improvements combined with reduced constraints on labour, capital and raw materials. This will in turn lead to increased textile exports and the further encouragement of joint venture enterprises, with associated gains in employment and economic growth.

Continued cooperation between China and Australia in all areas of the wool processing chain is also likely to be of mutual benefit. Australia has strengths in wool production and early stage processing up to the top stage, and research expertise in all stages of the wool processing pipeline. There are significant opportunities to invest in early stage processing in Australia. China has strengths in low cost processing of wool beyond the top stage and a large domestic and export market for products. Cooperation between Australia and China can build on these strengths to the advantage of both countries.
Appendix

Overview of China and Hong Kong wool model

To analyse the likely effects of various policy changes on China's wool production and textile industries and on its consumption and exports of wool products, an economic model of the wool textile industry in China and Hong Kong was developed. China and Hong Kong were combined because there is a high level of interdependence and re-export trade between the two. For example, almost all the greasy and scoured wool, and over half of the tops and yarns, that were imported by Hong Kong in 1989 were re-exported, mostly to China (Commonwealth Secretariat 1991). The model of China and Hong Kong forms part of a much larger model of world trade in wool developed by ABARE (see Connolly 1992).

The model is partial in the sense that it represents only the direct effects of policy changes on the wool textile industry, and so does not take account of wider benefits to the Chinese economy from the reforms examined. A broader (general equilibrium) model of the Chinese economy (described in Martin 1990 and Rodriguez, Gunasekera and Martin 1991) was considered for this study, but was found to lack sufficient detail to examine the policy options considered here.

The model represents the Chinese wool processing industry and imports by China and Hong Kong. It covers wool production in China, imports from major wool exporting countries (Australia, New Zealand, Uruguay, Argentina and the European Community), consumption of semiprocessed wool by the textile industry, production of wool yarns and fabrics, and retail sales and exports of wool yarns and fabrics.

Production, trade and consumption of carpet wool are also included, but are not described below since the main emphasis here is on apparel wool. Apparel wool is here defined as greasy wool, slipe wool, scoured and carbonised wool, wool tops and carded sliver, noils and wool on sheepskins up to and including 34.5 microns average fibre diameter, measured in clean weight terms. Carpet wool comprises those wools of 34.6 micron average fibre diameter or coarser.

The model is hierarchical, with a retail sales sector at the top, a fabric sector below that, a yarn sector below that and the Chinese wool
producing and importing sector at the bottom. Thus, the output of any one sector is purchased predominantly by the sector above it. The model focuses on the quantity adjustments required to bring about market equilibrium. A demand fluctuation at the top or the bottom, due to changes in tariffs for example, has repercussions for production and consumption behaviour at every level.

The model was estimated using annual data, typically over the period 1979 to 1990 although for some equations the estimation periods were shorter or longer. The principal sources of data were the annual publication *China Statistical Yearbook* and the International Wool Secretariat. All price and income variables were denominated in real terms. All equations are linear or log-linear, and were estimated using ordinary least squares. Some linking and estimated equations have not been specified in this appendix for reasons of space: full details are obtainable on request from ABARE. The figures below the equations in parentheses are the estimated $t$ statistics.

The proportions of wool in production and retail sales of wool and wool blend knitting yarns are not known year by year. To obtain prices per unit wool content, therefore, the prices at all levels were scaled up by a constant factor, assuming that the wool content of wool and wool blend knitting yarns was 45 per cent, the average wool content during the sample period. The corresponding figure for yarn was 80 per cent.

**Farm level**

*Wool production*

Chinese wool production was modelled using a partial adjustment framework, as a function of a three year moving average past price of greasy wool, a lagged price of mutton, time, and farmers' stocks of greasy wool.

(1) \[
\text{Log (wool production)} = 1.29 + 0.723 \log(\text{wool production}_{t-1}) \\
(1.24) \quad (3.39) \\
+ 0.268 \log(\text{domestic greasy wool price}) \\
(1.87) \\
- 0.25 \log(\text{mutton price}_{t-1}) \\
(-1.39)
\]
+ 0.15 log(year - 1978) - 0.077 log (farmers’ stocks of greasy wool)

(2.48) (-2.14)

Period = 1979 to 1990; adj. $R^2 = 0.94$; Durbin’s $h = 0.82$. 

**Farmers’ stocks of greasy wool**

Stocks were assumed to dissipate by 5 per cent a year due to deterioration and use outside the industry.

(2) Greasy wool stocks

\[ = 0.95 \text{ greasy wool stocks}_{t-1} + \text{wool production} - \text{wool demand} \]

The demand for raw Chinese wool for apparel was determined as total apparel wool demand less imports of apparel wool (see the import demand functions, below).

**Domestic greasy wool price**

The Chinese greasy wool price was modelled as a function of the stocks of greasy wool held by farms, the Chinese consumer price index (used as a proxy for the cost of producing wool) and the imported price of wool. The imported wool price was the average of the prices from each country, in yuan, weighted by the countries’ import shares.

(3) Log(greasy price)

\[ = 5.861 + 2.914 \log(\text{CPI}) \]

\[(140.5) \quad (4.04)\]

\[-0.168 \log(\text{farmers’ stocks}_{t-1}) + 0.400 \log (\text{imported wool price}) \]

\[(-4.86) \quad (4.86)\]

Period = 1979 to 1990; adj. $R^2 = 0.94$; $DW = 3.13$.

**The textile sector**

**Quantity of clean wool demanded**

The textile sector’s demand for clean wool was estimated as a function of the wool content of total textile output (wool plus wool blend) and the price of clean wool.
Clean wool purchased
\[ = 149.6 + 1.22 \text{ (yarn and fabric output)} - 68.8 \log(\text{clean price}_{t-1}) \]
\[ (3.09) \quad (4.15) \quad (-2.14) \]
Period = 1979 to 1990; adj. \( R^2 = 0.73 \); DW = 1.91.

**Fabric production**
Fabric production was estimated (in wool content terms) as a function of lagged fabric sales and the price of wool.

Fabric production
\[ = -36.7 + 0.50 \text{ fabric sales}_{t-1} - 432.4 \log(\text{clean price}) \]
\[ (-1.6) \quad (3.78) \quad (3.57) \]
Period = 1979 to 1990; adj. \( R^2 = 0.91 \); DW = 2.18.

**Yarn production**
Yarn production (again, in wool content terms) was estimated as a function of lagged yarn sales and the lagged price of wool.

Yarn production
\[ = -165.1 + 0.70 \text{ yarn sales}_{t-1} - 95.1 \log(\text{clean price}_{t-1}) \]
\[ (-10.7) \quad (6.57) \quad (11.7) \]
Period = 1979 to 1990; adj. \( R^2 = 0.98 \); DW = 2.17

The wool price used in estimating these supply equations for fabric and yarn production was a weighted average of domestic and imported wool prices. The price of the imported wool was on a landed basis, and so included the tariffs.

The closing inventory of clean apparel wool in China was expressed as:

Stock = 0.95 stock_{t-1} + \text{ clean wool purchased} - \text{ yarn and fabric output}.

**Import demand functions**
The demands for imported wool from Australia, New Zealand, Uruguay, Argentina and the European Community were modelled using import value shares of total clean wool purchased (import plus domestic — see equation 4) as a function of total clean wool purchased and the price of the imported wool relative to the average price of wool (as in equations
From these value share equations, in the simulations, the level of imports from each of the five importing regions is determined from total clean purchases. The demand for Chinese produced wool is then the residual of total clean wool demanded less all the imports.

(8) New Zealand share

\[
\text{New Zealand share} = -0.05 + 0.029 \log(\text{wool purchased}) + 0.009 \log(\text{wool purchased}_{t-1}) + 0.11 \log(\text{NZ wool price/clean price})
\]

\[
(-0.31) \quad (0.51) \quad (0.20) \quad (1.34)
\]

Period = 1979 to 1990; adj. \(R^2 = 0.19; \) DW = 2.23.

(9) Uruguay share

\[
\text{Uruguay share} = -0.29 - 0.019 \log(\text{wool purchased}) + 0.088 \log(\text{wool purchased}_{t-1}) + 0.005 \log(\text{Uruguay wool price/clean price})
\]

\[
(-3.29) \quad (-0.60) \quad (3.46) \quad (0.11)
\]

Period = 1979 to 1990; adj. \(R^2 = 0.70; \) DW = 2.66.

(10) EC share

\[
\text{EC share} = -0.17 - 0.13 \log(\text{wool purchased}) + 0.18 \log(\text{wool purchased}_{t-1}) - 0.10 \log(\text{EC wool price/clean price})
\]

\[
(-1.53) \quad (-3.17) \quad (5.10) \quad (-1.58)
\]

Period = 1979 to 1990; adj. \(R^2 = 0.72; \) DW = 2.31.

(11) Australian share

\[
\text{Australian share} = -0.96 + 0.18 \log(\text{wool purchased}) + 0.07 \log(\text{wool purchased}_{t-1}) - 0.08 \log(\text{Australian wool price/clean price})
\]

\[
(-6.11) \quad (2.63) \quad (1.14) \quad (-0.84)
\]

Period = 1979 to 1990; adj. \(R^2 = 0.89; \) DW = 2.12.

(12) Argentine share

\[
\text{Argentine share} = -0.31 + 0.07 \log(\text{wool purchased}) - 0.001 \log(\text{wool purchased}_{t-1})
\]

\[
(-1.89) \quad (1.89) \quad (-0.21)
\]
The price of wool and wool blend knitting yarns was estimated as a function of interest rates and an average of raw wool and acrylic fibre prices (weighted by their market shares). For the period prior to 1983, when prices were administratively set and did not vary with the cost of inputs, the price was set at its average value over that period, 31 yuan/kg.

\[
\text{Log(wool knitting yarn price)} = 1.074 + 0.877 \log(\text{interest rate}) + 0.305 \log(\text{weighted wool and acrylic fibre price})
\]

\[\text{(13) (1.59) (2.04) (2.01)}\]

Period = 1983 to 1989; adj. \(R^2 = 0.84; DW = 1.45\).

The price of wool and wool blend fabrics was estimated as a function of the average wage level and a weighted average of raw wool and polyester fibre prices (weighted by their market shares). Again, for the period prior to 1983 when prices were administratively set and did not vary with the cost of inputs, the price was set at its average value, 18 yuan/ metre.

\[
\text{Log(wool fabric price)} = 2.384 + 0.616 \log(\text{average wage level}) + 0.268 \log(\text{weighted wool and polyester fibre price})
\]

\[\text{(14) (4.79) (2.17) (1.19)}\]

Period = 1983 to 1989; adj. \(R^2 = 0.97; DW = 1.42\).

The retail sector

Retail sales were estimated in per person terms, as a function of income (proxied by real per person consumption expenditure), the real price of the item and the price of a substitute (the weighted average price for acrylic
and polyester yarns). In the simulations, total retail sales are calculated by multiplying the per person consumption levels by the total population.

**Wool and wool blend knitting yarn sales**

(15) \[
\text{Yarn/person} = 0.122 + 0.109 \log(\text{income/person}) - 0.44 \log(\text{wool knitting yarn price})
\]

(0.6) \hspace{1em} (8.97) \hspace{1em} (-1.21)

+ 0.066 \log(\text{acrylic fibre price})

(3.77)

Period = 1978 to 1989; adj. \( R^2 = 0.96; \) \( DW = 2.32. \)

**Wool and wool blend fabric sales**

Clothes made from wool fabrics were assumed to have an average life of seven years (Wu 1990) and so consumer stocks of wool fabrics were calculated on the assumption that a constant proportion of any given year’s fabric purchases wore out in each of the following 7 years. The equation was otherwise specified in the same way as equation 15, but with knitting yarn as an additional substitute.

(16) \[
\text{Fabric/person} = 1.78 - 0.480 (\text{consumer stocks of wool fabrics})
\]

(0.97) \hspace{1em} (-2.23)

+ 0.674 \log(\text{income/person}) - 0.291 \log(\text{wool fabric price})

(4.48) \hspace{1em} (-1.41)

+ 0.246 \log(\text{knitting yarn price}) + 0.189 \log(\text{price for polyester fabrics})

(1.39) \hspace{1em} (1.66)

Period = 1976 to 1989; adj. \( R^2 = 0.92; \) \( DW = 2.08. \)

**The export sector**

China was assumed to be a price taker on the world textile market. Hence, only export supply equations were estimated. However, due to a lack of an appropriate aggregate world price index for trade in fabric and yarn goods, the domestic Chinese prices were used, converted into US dollars at the current exchange rate.
(17) Fabric exports
    \[ \text{exports} = -1.773 + 1.660 \log(\text{wool fabric price} \times \text{US exchange rate}) \]
    \((-0.76) \quad (3.00)\)

Period = 1979 to 1990; adj. \( R^2 = 0.42; \) DW = 1.67.

Yarn exports
    \[ \text{exports} = -4.426 + 1.714 \log(\text{wool knitting yarn price} \times \text{US exchange rate}) \]
    \((-4.28) \quad (6.94)\)

Period = 1979 to 1990; adj. \( R^2 = 0.81; \) DW = 1.46.
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China has developed into a major market for Australian wool, but remains an extremely uncertain one. While China has made much progress in market-based reforms, considerable further progress could still be made in this direction. In this paper, the outcomes that could be obtained by China from further reforms to its wool textile industry are examined.