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Vietnam sugar program

Where next?

Prepared for the World Bank



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Preface

This study was commissioned by the World Bank and funded by AusAID.

MARD provided substantial support for the study through the provision of background material and data, in arranging and participating in the field visits and in organising the various seminars involved.

Summary

Since 1995, Vietnam has undertaken a massive investment in its sugar sector. Over US\$1 billion has been spent on milling capacity and infrastructure in sugar-growing regions. The investment took place under easy, government-backed credit terms, infrastructure subsidies and high tariff and non-tariff trade barriers.

Over most of the period of investment, domestic prices were between 50 and 70 per cent above the import parity price of sugar. However, the surge in production toward the end of the investment period has made Vietnam close to self-sufficient in sugar production, and a combination of smuggling and market saturation has caused prices to fall to the import parity price in 1999–2000.

Many mills struggled financially in 1999–2000. They were unable to meet their interest repayments, some required additional borrowings to remain financially solvent and most were forced to offer a lower price for cane. Since their completion some mills have struggled to attract enough cane to be viable.

Concerns about the industry's international competitiveness

The Vietnam Government is concerned about the efficiency of its sugar program. In this study we use a specially constructed economic model of the industry to assess its international competitiveness, its contribution to the Vietnamese economy and its prospects under alternative policies. The data used to build the model are based on MARD data, other published data, international benchmarks and a field visit to various mill areas.

The industry appears to be imposing big costs on the economy

A main finding is that the industry is not making a net contribution to the Vietnamese economy. Rather, it is imposing a net cost on the economy of around US\$80 to 120 million a year. The industry is not covering the costs of the capital it has invested in milling. This is particularly true for small mills. The costs to the economy may be imposed in several forms depending on market conditions. In years when domestic prices exceed world prices (due to import barriers), these costs are imposed on

Vietnamese sugar consumers by forcing them to pay more than the import price. This lowers consumer spending power and so lowers their real incomes. In years when Vietnamese prices are close to the import price, costs are imposed on the Government, state banks or financiers who must make direct financial injections or forgo collecting interest owed.

Continuation of current policies is likely to see these costs at least continue and possibly get worse.

Small mills are a big part of the problem

There are 28 small mills, nine medium sized mills and six large mills. Large mills crush over a third of the cane for sugar production, medium mills crush about a third and small mills in aggregate crush a bit less than a third. Because there are strongly defined economies of scale in milling, size of mills is an important determinant of milling costs and economic performance. Although Vietnam has six relatively large mills, the others are very small by world standards. Costs are high, utilisation of capacity is low and extraction rates are low.

As well as achieving strong economies of scale and scope, larger mills found in leading cane producing countries are profitable enough to attract good management and the capital needed for efficient extraction. Larger mills also have the resources to more closely integrate with growing regions and help farmers raise the sugar content of cane and yields of sugarcane per hectare. Small mills cannot do this.

Yields are low partly due to the predominance of small mills

By world standards, Vietnamese cane and sugar yields are low. Yields of cane appear to be only about 60 per cent of leading cane producers, whereas yields of sugar appear to be about half. Vietnam is using nearly twice as much cane to produce one tonne of sugar as Australia. Inferior varieties, poor irrigation strategies, small-scale production, incorrect applications of fertiliser and pesticides and poor harvesting coordination all place Vietnam at an international disadvantage.

Policy has a large bearing on the industry's competitiveness

The nature of Vietnamese sugar policies has the potential to have a large impact on the efficiency of resource use in the industry. There appears to be little reliance on open, free and competitive markets to allocate resources. Instead, resources are allocated centrally by people not directly affected by

the economic outcomes of their decisions. Strong government intervention and influence in markets encourages political and other objectives to be pursued in place of commercial objectives. Commercial disciplines that strive to lower costs and find productivity-raising solutions are undermined.

The more intervention and control, the more bureaucratic and administrative discretion is created, and the less predictable policy implementation becomes. This raises risks and costs and creates a less attractive investment environment. The more constraints and restrictions the less room entrepreneurs and innovators have to pursue world's best practice solutions. Yet to succeed in a highly competitive world market, business dynamism is needed. This means attracting the best capital and best management from around the world, neither of which will be attracted if constrained markets limit opportunities.

Trade protection that raises domestic prices, and effective Government underwriting of the debts of state-owned mills, reduce the pressure to choose optimal sized mills. State ownership of mills and Government's implied underwriting of their financial failures has also greatly reduced competitive pressures between different sized mills. Without support, small mills would feel the full competitive forces of large efficient mills and would be unable to continue operating. This would create two benefits. Costs of milling would fall as large low cost mills displaced small high cost mills, and large mills would get larger, achieving even better economies of scale.

Better policies could deliver higher productivity

The considerable variation in technical performance of sugar enterprises in Vietnam and the industry's comparative international performance suggests there is substantial scope for productivity increases. Over the next five years Vietnam is likely to achieve productivity gains on farm and in mills. Moreover, the greater the concentration of milling in medium and large mills, the greater the likelihood of such gains being achieved.

Farm level productivity gains could come from:

- implementing proven agronomic practices:
 - better application of fertiliser;
 - basic controls of various cane diseases and pests;

- better control of soil moisture through drainage, irrigation, growth of cane in larger more concentrated continuous areas and scheduling of harvesting;
- better cultivation;
- the selection of better cane varieties;
- growing more ratoon crops without yield declines; and
- growing cane in more concentrated areas and closer to mills to reduce transport costs and achieve various agronomic economies of scale.

At mills the potential for achieving productivity increases is probably less. Unlike in farming where sugar yields per hectare could, at the extreme, be nearly doubled, in milling there are more defined limits: extraction rates can be raised perhaps 12 per cent, and capacity utilisation perhaps 30 to 40 per cent. However, increases in sugar content on-farm also provide a boost to productivity in the mill.

Larger mills will be better able financially than small mills to undertake changes necessary to achieve productivity increases. Indeed, small mills are unlikely to be able to afford the sorts of changes needed, which are likely to be expensive because of the sort of technology they have installed. Productivity gains will show a distinct bias toward large mills.

Productivity gains are likely to arise from:

- installing better equipment as inter-season repairs and maintenance is conducted, such as better shredders that macerate the cane more fully so less sugar is trapped in fibre;
- operating machinery more efficiently using more automation so correct milling pressures are applied to ensure higher extraction rates;
- better monitoring of equipment performance to anticipate breakdowns so stoppages can be minimised;
- better scheduling of cane through the mill to avoid stoppages and to ensure the freshness of cane and preservation of sugar content;
- better scheduling of growing and harvesting of various varieties of cane to help extend season length while preserving sugar content of cane; and
- removing bottlenecks in the processing chain as equipment is upgraded during annual maintenance work, to expand capacity at minimal cost.

Scope for productivity gains over the next five years

The rate at which productivity gains will be achieved is difficult to determine. Much will depend on the policy environment in which they take place and on the various cultural, political and economic impediments that stand in the way. Historical data on what has been achieved in other countries suggests what might be achieved will be slow. Australia (a leading cane sugar producer), achieved a slow but fairly steady rate of increase of less than 1.0 per cent a year over the past 100 years.

With current policies

Vietnam has the potential to achieve productivity gains more quickly than Australia by adopting existing practices and varieties. Nonetheless, despite other countries' efforts to catch up to Australia, few have. Achieving technological catch-up is possible but not easily achieved. Often it is not until efforts are made to achieve gains that various cultural, climatic, agronomic or other social, political, technical and economic impediments are discovered. Invariably technological catch-up looks easier than it is.

It is probably reasonable to assume that, even under current policy settings, Vietnam could maintain historical growth rates for some time and achieve twice the rate that Australia was able to achieve on-farm. That is, it might sustain productivity growth of around 2.0 per cent on-farm over the next five years. At mills the potential for achieving productivity increases may be realised more quickly because the mills are under more direct control than farms are. However, as mentioned, the scope for achieving productivity gains is probably less. A 1.0 per cent annual productivity gain may be achieved. But these productivity gains are likely to be concentrated in the larger mills and in the farm areas supplying larger mills. Model results suggest such productivity growth could lower the annual costs of the sugar program by nearly 25 per cent.

With better policies

In a more competitive policy and market environment a strong argument can be made for achieving higher productivity growth. With completely free trade, without subsidies and therefore strong competition among mills, and with the concentration of milling toward the most efficient enterprises, mill managers and cane farmers would face strong incentives to pursue productivity gains.

The judgement of the study team is that with strong competitive forces at work, it would be feasible to achieve annual productivity gains of over 4

per cent on-farm and around 4 per cent in mills over a five year period. This would imply that by around 2005 the industry would be achieving average cane yields of around 65 tonnes per hectare compared with 50 tonnes per hectare now. It would also imply milling costs were around 20 per cent lower than now. This is not beyond the realms of possibility but it is optimistic.

Model results suggest that under such a scenario sugar production would increase an estimated 28 per cent from a 6 per cent increase in cane production. Rising sugar content of cane, higher extraction rates and some switching of cane from alternative uses would be sufficient to underpin these sugar increases under this scenario. With much higher yields, cane farmers could sustain price decreases yet still increase their incomes. The lower cane price would help raise the profitability of milling and underpin major expansions of mills. Large mills in the central area would become 150 per cent larger than now and medium sized mills in the South would become 60 per cent larger. All small mills would close. They would be unable to compete with medium and large mills. Even if we assume that small mills achieve the same productivity gains as large mills (which seems highly unlikely) they cannot compete for cane against medium and large mills.

Under this scenario, the cost the industry is currently imposing on the economy could be largely eliminated and on a current cost basis, the industry would contribute \$69.4 million a year to the Vietnamese economy.

Other findings emerging from model results

- Small mills are highly inefficient by world standards, but are also uncompetitive with medium and large mills in Vietnam. Keeping them in operation will be costly to the economy.
- Only with continued subsidies are small mills likely to be able to continue in operation. But subsidies are extremely costly; they are on-budget, visible and likely to be politically and economically unsustainable.
- The closure of small mills could eliminate over half of the on-going cost of the sugar program.
 - However, it seems that an annualised cost of capital of an estimated US\$38.1 million associated with small mills would need to be written off.
 - The cost of this would fall on the State budget and therefore on taxpayers and the wider economy.

- This cost seems to be inevitable. Either it is paid as a price of closing small mills, or a much larger cost will need to be paid to keep them open.
- Trade protection could be used to fund some of the on-going costs of the sugar program. However, this would:
 - increase the costs of the program to the economy by transferring much of the cost to consumers;
 - not keep small mills open;
 - not avoid the minimum annualised cost of US\$38.1 million that would need to be written off.
- Achieving productivity growth, without subsidies and without trade protection, minimises the on-going costs of the program to the economy. Such an environment would:
 - enhance competition among mills and cane growing areas;
 - concentrate and expand milling and cane growing among the most efficient enterprises;
 - provide strong incentives to quickly pursue productivity growth;
 - achieve economies of scale and scope in research, development and extension undertaken by the mills to help hasten productivity growth;
 - encourage efficient resource use;
 - provide the greatest benefit from mill closures by encouraging the transfer of cane currently supplied to small mills to more efficient mills in the South and Centre;
 - increase the efficiency of remaining mills by increasing their throughput;
 - minimise the costs of mill closures; and
 - create the possibility that the industry could become internationally competitive enough to meet all domestic needs for sugar without subsidies or protection.

Vietnamese policy makers must choose

Our findings reveal stark policy choices that need to be made. Vietnam is currently trying to pursue two policy objectives:

- to realise the industry's productivity potential and international competitiveness; and

- to industrially develop and modernise backward regions by establishing and financially supporting small mills suited to the scale of particular areas.

Our findings suggest Vietnam must choose between these objectives. It can not achieve both.

Pursuing the second objective will be extremely costly to the economy, but could keep small inefficient mills operating, at least while subsidies last. This choice would largely involve a continuation of existing policies. The main policy challenges would be finding the money to subsidise mills and politically and economically justifying continuing to do so. Moreover, pursuing this objective would require trade protection by trade restrictions or subsidies, which would be inconsistent with the Vietnamese Government's objective to open its markets to international trade and to become more integrated with the global economy. This does not appear to be a viable option.

Pursuing the first objective is good for the economy as a whole, but will probably involve the closure of 28 small and non-viable mills. Politically this is likely to be unpopular in those regions with recently constructed small mills. However, it would be consistent with the Government's objective of further integration with the world economy, it would allow the country to meet its international obligations under AFTA and WTO, and it would maximise the efficiency of resource use, so promoting economic growth and a rise in living standards. However, it would represent a new policy challenge and would require considerable policy change.

Policy changes to realise the productivity potential and international competitiveness of the industry

The overwhelming requirement to put the Vietnamese sugar industry on a strong growth path, is to make it highly competitive domestically and internationally. In practical terms, competitiveness requires achieving economies of scale in milling, competition for cane and competition for land. Competition encourages those who are able to use resources most efficiently to excel, which also provides a model for others to follow. It also discourages those who use resources wastefully from continuing their inefficient practices. More efficient resource use means resources can be used to produce more and so provide more income. To increase competition would require changes to subsidies, regulatory controls, ownership structures, mill governance, trade restrictions and research, development and extension.

Promoting domestic competitiveness

To ensure strong competitive pressures in an industry, three major requirements must be met:

- no enterprise within the industry should be given an unfair advantage or disadvantage by Government policy;
- those making investment decisions need to stand responsible for any losses made, and profits earned; and
- there should be few if any restrictions to entry of an enterprise to the industry.

Removing unfair advantages and disadvantages

The Vietnamese Government favours state-owned mills over private or joint venture mills by underwriting their debt and losses, and providing concessional credit. The Government also tends to favour small loss-making state-owned mills over larger more efficient state-owned mills. This prevents small inefficient mills closing and larger more efficient mills expanding. To promote competition between mills and to encourage efficiency, direct and indirect Government subsidies to small state-owned mills should cease.

Strengthening responsibility for profits and losses

Private ownership structures place powerful incentives on a company's management to be as efficient as possible in its use of resources. Managers and boards of directors of state-owned mills do not face the same powerful commercial incentives and disciplines. At a minimum, governance of state-owned mills need to be restructured to resemble that of private mills. Equitisation of mills is an important route to this end and a precedent has been set in this area. Three mills have been equitised.

If equitisation cannot be achieved easily, as an interim measure, the following changes would help.

- Establish a target rate of return on capital (a dividend rate) and other commercial performance benchmarks to ensure that state-owned mills aim to perform in accordance with normal business expectations.
- Specify clear and non-conflicting commercial objectives for state-owned mills built around this target rate.
- Appoint boards of directors with the commercial skills to ensure these objectives are met.

- Reward mill managers and boards of directors according to commercial performance.
- Ensure mills pay taxes on the same basis as private mills and eliminate any other investment privileges relating to reductions in corporate and land taxes.
- Separate non-commercial objectives and seek to achieve these independently through separate funding, or fund these in an open and transparent fashion out of after-tax profits.
- Eliminate non-commercial lending by banks.

Removing restrictions on entry

Encouraging the flow of technology and management expertise from abroad may be very important. Already foreign investment has played a big role in ensuring the establishment of several relatively efficient mills. Ensuring that the commercial environment remains attractive to foreign investment is likely to be important. For the best type of foreign investment, an attractive commercial environment is one that is benign. This is an environment that:

- does not discriminate against or favour one mill over another;
- does not place restrictions on:
 - mill managers' options to choose what combination of inputs and technology to use;
 - what scale to produce at;
 - where to operate or how to market the output; and
- is predictable and transparent in terms of implementation and administration of any regulations.

To achieve optimal industry structures, mill sizes and international best practices, mill managers and owners need more freedom and less threat of intervention from Government than now.

Implications of more domestic competition

Allowing more domestic competition is likely to see extensive changes in the structure and behaviour of the industry. Various policy implications will follow.

Closure of small mills

Eliminating subsidies to non-viable small mills is likely to leave them bankrupt. Government and Provincial Peoples' Parties as owners, or banks as lenders, would need to resume responsibility for the debt and to close the mills. Assets could be sold off to the highest bidder. Medium and large mills may find value in some of the assets. Any funds recovered through the sale of these assets could be used to offset debt. However, in all likelihood these assets will not be valued highly, reflecting their loss-making status and old technology.

Need for social safety-nets for mill workers

Closure of small mills will displace mill workers. Social safety-nets may need to be established to assist affected mill workers. For cane farmers, mill closures will have mixed effects. In the North where all mills are small and are likely to close, closures will require conversion to crops previously grown or new crops. Some assistance may be required to facilitate their re-establishment.

Most cane farmers will benefit from supplying larger mills

Distances between mills range from 30 to 100 kilometres and it is not uncommon for cane to be transported these sorts of distances. By world standards, cane transport costs are not high. With mill closures many growers in the Centre and South would still have access to an alternative larger mill. To better utilise their equipment and to gain other economies of scale, medium and large mills are likely to be keen to take such cane. The economies of scale they achieve will also enable them to pay for higher transport costs. In addition, larger mills are likely to be able to better help farmers to achieve higher yields through more targeted extension programs. Higher yields will also help defray higher transport costs.

Mills' bargaining power

Some people worry that the closure of small mills will place remaining mills in a strong regional bargaining position, allowing them to drive down cane prices. However, model results suggest mills will face incentives to keep cane prices as high as possible subject to keeping themselves viable. Mills will need to compete with cane farmers' ability to grow alternative crops. If they fail to pay a sufficient profit margin over and above what can be earned from alternative crops, they will lose throughput. And the

economies of scale are such that losses of throughput will raise their unit costs of milling, placing mills in a precarious financial position.

Promoting international competitiveness

Promoting domestic competitiveness will do much to promote international competitiveness indirectly. But open trade will provide the ultimate incentive to adopt best practices as quickly as possible. Only by matching best practice will mills be viable in the long-term and internationally competitive. To achieve more open trade, Vietnam needs to:

- replace quantitative import restrictions, and procedures to manage trade, with specified tariffs; and then
- progressively reduce the tariff to low levels to reflect the long-run import parity price; and
- remove blanket industry-wide subsidies such as tax concessions, concessional financing for sugar and stocks and grants to encourage exports.

Enhancing international competitiveness through RD&E

It appears that the Vietnamese sugar industry has considerable potential to achieve productivity improvements. A strong argument exists to transfer some money currently used for various subsidies to fund RD&E instead. An industry-oriented funding entity should be established to administer and allocate funding. The entity should have strong grower and miller representation and mills should be encouraged to take the lead role, at least initially. Strong consideration should be given to attracting international expertise in sugarcane RD&E to get the entity established and running smoothly.

1

Why this study?

To continue its rapid economic development Vietnam will require rapid rates of investment. But perhaps even more importantly, it will require that such investments be of a high quality so they deliver high rates of productivity growth and international competitiveness.

Investment in the sugar industry has been rapid and large

Since 1995, Vietnam has undertaken a massive investment in its sugar sector. Thirty-two new sugar mills have been built, bringing the total number of mills to 44. Sugarcane crushing capacity has expanded from around 10 000 tonnes a day to 78 000. The area sown to sugarcane has expanded from around 150 000 hectares to 350 000. At the same time the production of handicraft sugar (a rudimentary, labour intensive, small scale activity) has continued to absorb cane from around 100 000 hectares. Total sugarcane production has increased from around 10 million tonnes for the 1994-95 season to 17.8 million in 1999-2000. Sugar production has increased from around 100 000 tonnes to its high in 1999-2000 of around 750 000, while handicraft sugar has maintained its output of about 250 000 tonnes.

Over US\$750 million has been spent on milling capacity and more (perhaps as much as US\$350 million) has been spent on infrastructure and capital in sugar growing regions. The investment took place under easy, government backed credit terms, infrastructure subsidies and behind high tariff and non-tariff trade barriers. It also took place under the expressed government target of achieving one million tonnes of sugar output by the year 2000 - the 'One-Million-Tonne Sugar Program'.

Over most of the period of investment, domestic prices were between 50 and 70 per cent above the import parity price of sugar. However, the surge in production toward the end of the investment period has made Vietnam close to self-sufficient in sugar production, and the combination of smuggling and market saturation caused prices to fall close toward world prices in 1999-2000.

Questions are emerging about sugar's competitiveness

The sudden fall in price has revealed much about the productivity and international competitiveness of Vietnam's sugar investments. Many mills struggled financially in 1999–2000. They were unable to meet their interest repayments, some required additional borrowings to remain financially solvent and most were forced to lower prices for cane. Low prices for cane raise doubts about whether adequate supplies will be achieved in the future to maintain mill throughput. As it is, since their completion some mills have struggled to attract enough cane to be viable.

Import barriers might become more effective again if strong domestic sugar demand growth quickly absorbs the surge in production. This might help restore financial viability for many mills, and indeed, since their low of 1999–2000, prices have increased again to be 50 to 60 per cent above the world price on the expectation of a smaller crop in 2000–2001.

Still, the Government of Vietnam remains concerned about the international competitiveness of its sugar investment program. Understandably, it wants the highest possible economic and social return from this investment and that requires being internationally competitive. Otherwise, in its simplest terms, Vietnam would be better off importing and using its resources in activities that it is internationally competitive at. Moreover, the Government is aware of emerging pressures to conform to AFTA and upcoming WTO commitments to lowering of trade barriers.

Objective

The overall objective of this study is to assist the Government of Vietnam to form an objective view about the competitiveness and outlook for the industry and the policies needed to realise its potential and optimise resource use. Part of the motivation for this is to help develop trade policies towards sugar that are consistent with the aim of achieving deeper economic integration with the region and the rest of the world. In particular, the study advises on a strategy for phasing out non-tariff barriers protecting the industry and on complementary policies required to boost productivity growth and facilitates adjustment. To this end, the study:

- identifies the policy, institutional, regulatory and technical issues in the Vietnamese sugar industry (sugarcane, sugar and by products) which impact on the efficient and sustainable development of the industry;

- assesses prospects for the development of the industry, taking into account productivity potential and trends in the domestic and world sugar markets; and
- identifies options for future policy towards the industry, including treatment under AFTA and potential WTO agreements, given the government's objective of further integration with the world economy and maximising the efficiency of resource utilisation to promote economic growth and rising living standards.

The study assesses the following:

- production and market structures and organisation of the local sugar industry;
- determinants of competitiveness of sugarcane production;
- determinants of performance in processing of sugarcane;
- the situation of household consumers and industrial users and how they are affected by sugar policies; and
- the impact of current sugar policies on farmer, miller and consumer incomes.

The assessment provides an evaluation of the implications of liberalising trade in sugar, and identifies complementary measures required to facilitate adjustment and improve efficiency in all components of the industry.

An important element of the study is to generate information that will assist policy makers and producers to assess the implications of policy alternatives, and to recognise the imperatives for change given the country's plans for trade liberalisation and obligations under AFTA and WTO.

Our approach

To provide an objective framework to conduct this study we have built an economic model of the Vietnamese sugar industry and market. This provides us a basis by which to:

- identify and describe the essential structural and organisational elements of the industry;
 - regional distribution;
 - industry, farm and mill size;

- products produced;
- domestic demand for sugar and factors affecting likely developments in the local market;
- policy influences;
- describe and assess the industry's international competitiveness and resource use;
- describe and discuss key factors affecting international trends in world sugar production and competitiveness;
- describe and discuss Vietnam's competitiveness along the production, processing and marketing chain, relative to international benchmarks;
- analyse the economic sustainability and development prospects of the industry by identifying;
 - the key factors affecting productivity in Vietnam;
 - potential increases in productivity and the potential value of the sugar industry to the Vietnam economy;
- analyse policy options to help Vietnam meet its international trade obligations and maximise the efficiency of resource use to promote economic growth and the value of the industry to Vietnam;
- assess the impacts of various policy options on the welfare of groups affected by the industry.

The data used to build the model is based on MARD data, other published data, international benchmarks and a field visit to various mill areas - appendix A.

2

The main structural elements of the industry

The economic value chain model of the industry helps us represent the main economic dimensions of the Vietnam sugar sector. The main structural elements of our model are set out in chart 2.1. More technical details are described in appendix B.

The industry is distributed widely throughout the country

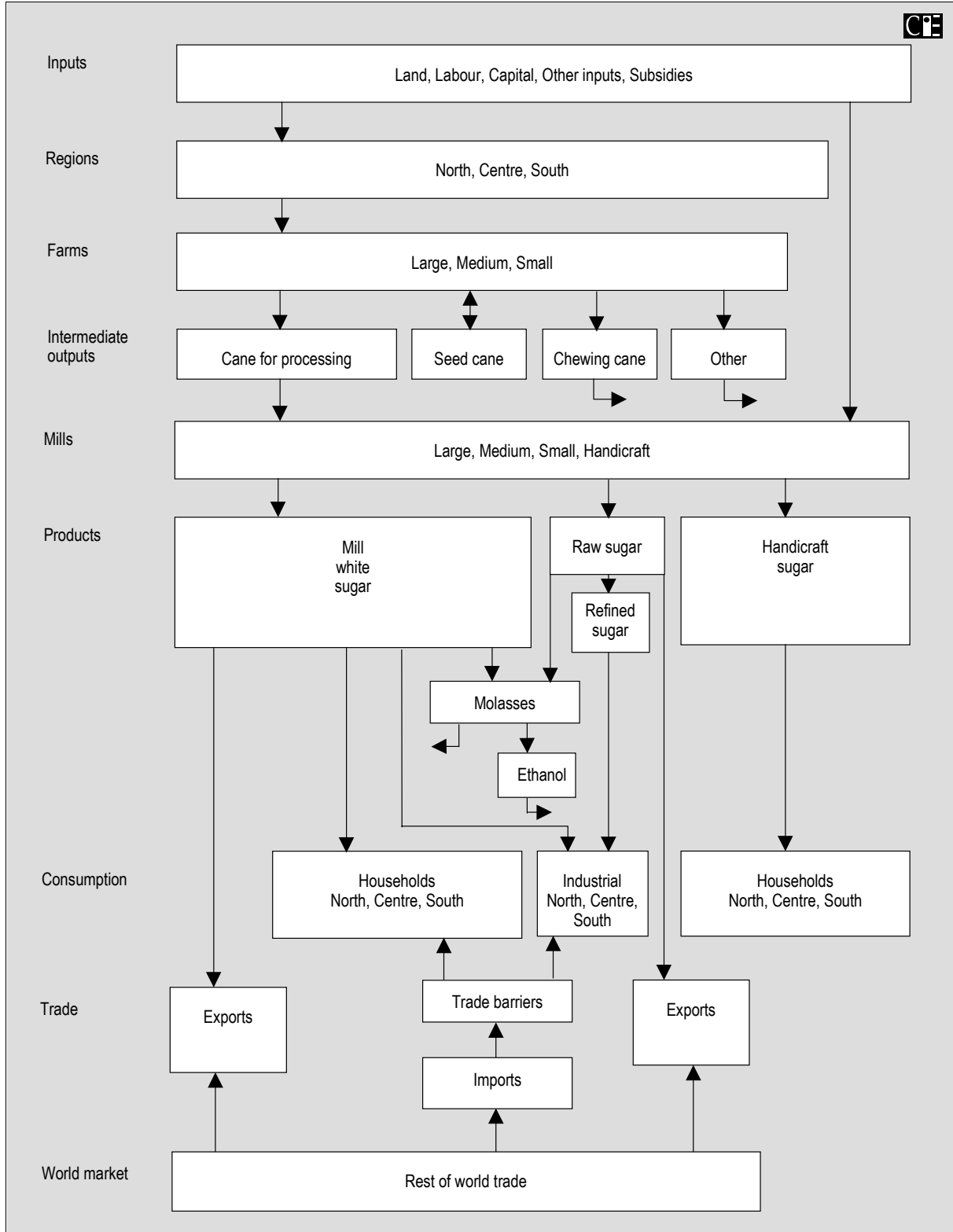
Three main regions are identified in chart 2.1 – North, Centre, South. Mainly these are identified according to climatic and agronomic differences that affect cane and sugar yields and season length. The three regions cover almost the entire country meaning that the industry is dispersed across several climatic zones – chart 2.2.

Vietnam appears to have the natural resources required to grow cane reasonably efficiently. It has adequate relatively flat land, rainfall is generally good (1400 mm to 2000 mm a year), temperatures are reasonable, sunshine levels are adequate in the South but limit potential cane yields in the North, and supplementary irrigation is available in some areas.

Within each region, there is considerable variability in technical performance of farms. But generally, farms supplying larger mills appear to perform better than farms supplying small mills due to better extension efforts conducted by the larger mills. This may also reflect agronomic conditions in each area. Areas well suited to growing cane in competition with other crops may have attracted larger mills to their areas. And, less suitable areas have attracted only small mills. We have therefore identified three classes of farms within each region according to what sized mills they are most likely to supply and called these small, medium and large farms.

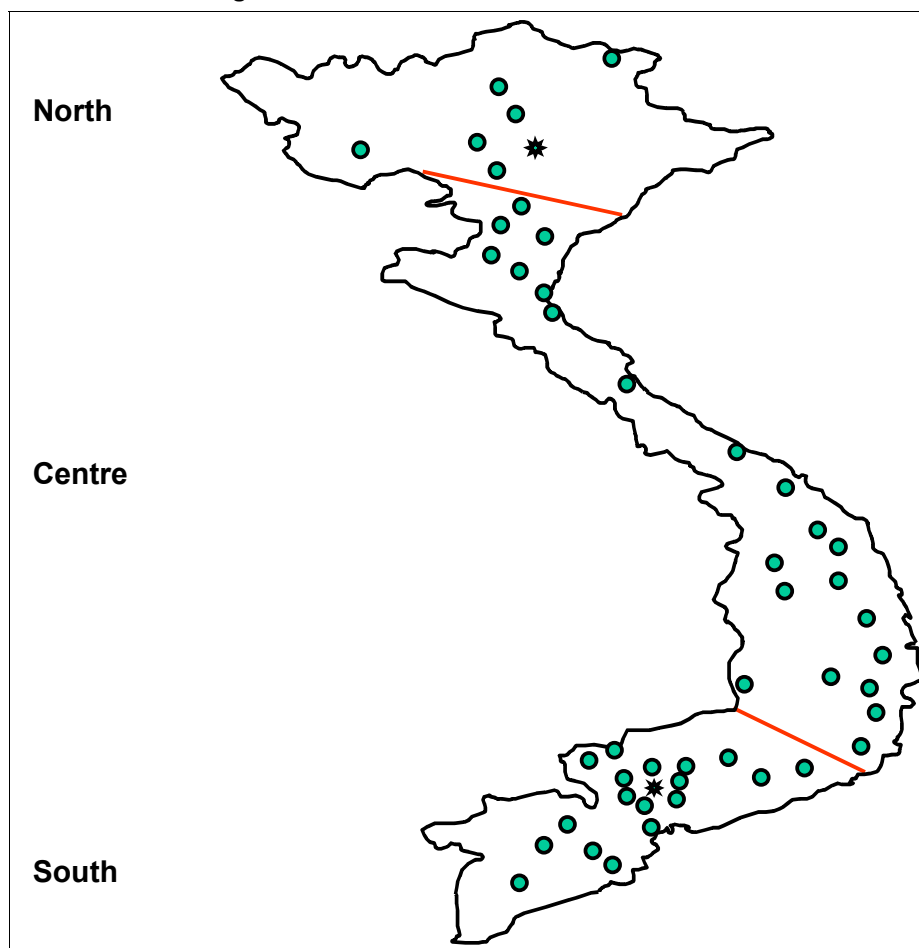
As shown in chart 2.1, farms produce cane for processing, cane for chewing and drinks, seed cane for replanting and other farm products such as rice,

2.1 Sectors and regions represented in the model



Data source: CIE.

2.2 Vietnam — sugar mills



Data source: MARD.

cassava, sweet potatoes or peanuts. Farms use land, labour, capital and other inputs and may receive subsidies to produce these products.

Cane is typically produced by labour intensive means on small parcels of land without irrigation. Only eight per cent of the crop is irrigated. Only in a few areas is cane the dominant crop. It is typically grown in conjunction with one or more other crops. In some cases rice or a mixture of other crops completely surround small plots of cane.

The lack of concentrated and specialised cane production areas may suggest that the competitiveness of sugarcane is not strong relative to other crops in many areas. Nonetheless, that cane is grown in tight competition for resources with other crops also confirms that its profitability must at least match that of other crops in many areas. That said, substantial infrastructure, extension and direct subsidies have reportedly been paid to cane producers under the 'one million tonne sugar program' to encourage

them to convert to cane. One estimate is that around US\$345 million has been spent to achieve this or around US\$1725 per hectare (MARD's Evaluation Report of the Implementation of the Five Year Sugar Program).

Another implication of the unconcentrated pattern of cane production is that there would appear to be few physical constraints to producing more cane. There is plenty of land and labour capable of growing cane. Further expansion appears to be largely constrained by its price and perhaps the managerial expertise required to achieve higher yields. In economic terms, it appears that the supply of cane is likely to be fairly elastic, that is the level of production is likely to be fairly responsive to changes in the price and yield of cane relative to other crops. The scarcity of specialised sugarcane areas is also likely to add to transport costs.

Many cane plots are as small as 0.2 hectares. In some areas plots may be as large as five hectares such as in Tay Ninh, and there are some examples of relatively large capital intensive farms, over 30 hectares. Because of its small scale and labour intensity, it appears that between 3 and 4 people a hectare are involved in cultivation, harvesting and loading work on farms. With around 350 000 hectares under cultivation, this suggests over a million people are involved in the industry on-farm.

Mill sizes vary considerably

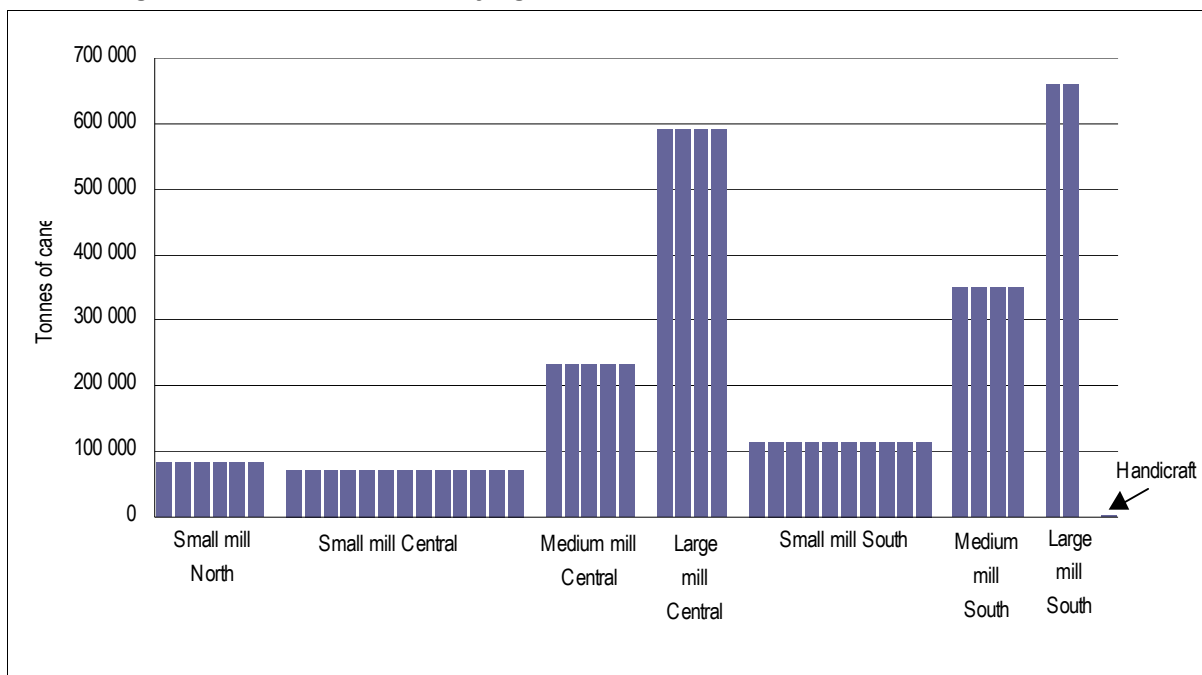
Large, medium, small and handcraft mills in each region use primary inputs and cane for processing to produce three main products, namely mill white sugar, raw sugar or handcraft sugar. Mill white sugar is produced for human consumption. Chemical processes are used to remove most of the molasses and colour from the sugar. Some impurities remain which gives mill white sugar a slightly off-white appearance. Raw sugar is not as fully treated as mill white and retains a higher percentage of molasses and impurities. This gives it a brown appearance. Typically it is produced to be refined into a pure white sugar with virtually no impurities and a brilliant white appearance, making it suitable for industrial applications. Handcraft sugar is the darkest of all in appearance because it contains many impurities. It can be thought of as only partially processed. However, it is a traditional type of sugar and is used for direct human and household consumption.

The average annual crushing capacity and number of mills in each region is set out in chart 2.3. In total there are 28 small mills, crushing less than 150 000 tonnes each per year. There are nine medium sized mills crushing between 150 000 and 350 000 tonnes a year each, and six large mills with

annual throughputs in excess of 350 000 tonnes. There are also several thousand handcraft mills crushing between 3000 and 10 000 tonnes of cane a year. In total, large mills crush over a third of the cane for sugar production, medium mills crush about a third and small mills in aggregate crush a bit less than a third. Mills also produce molasses and ethanol as by-products and raw sugar typically goes on to be refined.

At mills, typically around 400 people are employed, and with 42 mills, this suggest about 17 000 people are employed in milling. Over nine million tonnes of cane is transported to mills over distances ranging up to 100 kilometres, and with each person able to transport about 4000 tonnes in a year using a 10 tonne truck, around 2000 people are involved in cane transport. At handcraft mills, each person produces around 10 tonnes of output a year, and with 250 000 tonnes of output, this suggests some 25 000 people are involved in this activity.

2.3 Average annual cane crush for varying sized mills



Data source: CIE and MARD.

The milling sector is highly capital intensive. With daily crushing capacity costing an average of US\$10 000 a tonne and around 78 000 tonnes of installed daily capacity, the total cost of milling capital is around three quarters of a billion US dollars. This is equal to about twice the normal annual investment in Vietnam agriculture and fisheries. An estimate of the value of investment in new factory capacity only, is 9505 billion VnD or US\$701 million (excluding investment in cane growing areas). Of this,

US\$470 million (67 per cent) is foreign capital, representing one of the largest amounts of foreign capital mobilised for any program in Vietnam.

About 67 per cent of mill capacity is described as involving advanced technology and equipment of UK, French or Australian origin. Mostly this is in the medium to large mills. The remaining 33 per cent of capacity involves technology and equipment of Chinese or India origin. Mostly this is in the small mills (Evaluation Report of Implementation of the Five Year Sugar Program, 2000).

Most mills are state owned enterprises (67 per cent), with 37 per of capacity (15 mills) being owned and controlled by the central government and 29 per cent (23 mills) being owned and controlled by local governments. That said, three of the government mills are described as fully equitised and therefore are joint concerns of Government, mill management, mill workers and cane farmers. The remaining 33 per cent of capacity (six large mills) are either fully foreign owned (three) or joint ventures (three) between local government and foreign companies. Mostly, it is the small and medium sized mills that are state owned.

Consumption can be segmented by product, buyer and region

Households and industrial users in the North, Centre and South regions consume the various products of mills (mill white, raw sugar, refined, molasses or ethanol) or they can be exported. But households and industrial users may also import sugar products, trade barriers permitting. Households also consume the output of handcraft mills and chewing cane. Industrial users do not use handcraft sugar and chewing cane and no international trade appears to take place in either of these products.

Patterns of production, consumption and imports

The distribution of production and consumption by regions and products is outlined in charts 2.4.

The South produces most cane but the Centre produces most sugar

In chart 2.4, the quantity of sugarcane production and its uses are summarised for the year 1999–2000. The South can be seen to be the largest producer of cane and the North the smallest with only about 7 per cent of production. However, in terms of cane used for sugar production, the

2 THE MAIN STRUCTURAL ELEMENTS OF THE INDUSTRY

2.4 Distribution of production

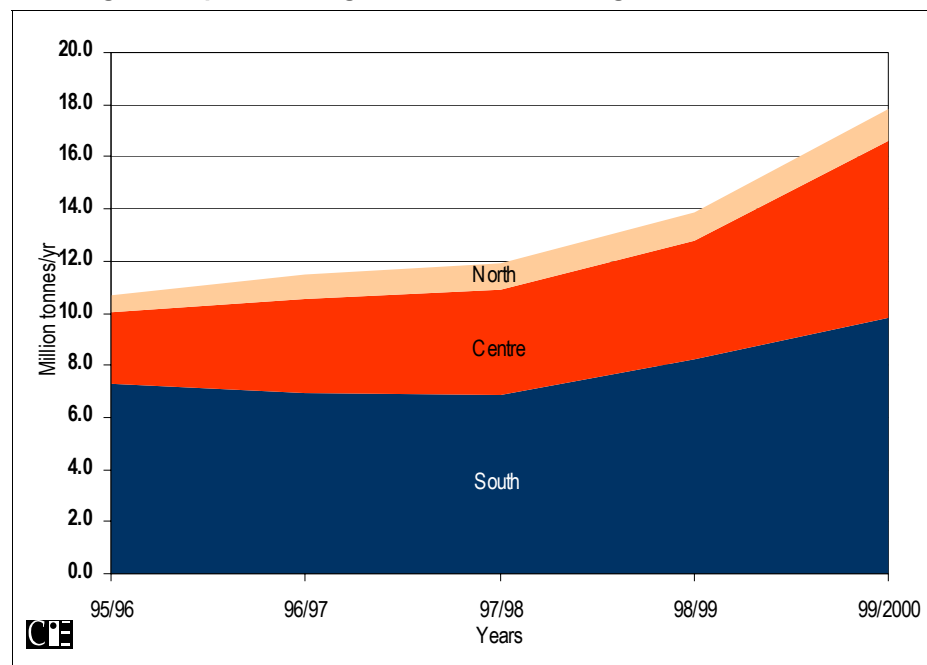
Sugarcane sector production by region and product (million tonnes a year 2000)														
Amounts	17.84 million tonnes of sugarcane													
Regions	South (9.8)				Centre (6.7)				North (1.3)					
Products	Sugar (3.9)		Handicraft (3.7)		Chewing (1.7)	Seed (0.7)	Sugar (4.5)		Handi (1.2)	Chewing (0.6)	Seed (0.3)	Sugar (0.5)	Other (0.9)	
Cane for sugar by region and product (quantity proportions)														
Cane for sugar	South 44%				Centre 50%				North 6%					
Sugar & molasses	Total sugar 29.5%			Molasses 10.5%	Total sugar 35%			Molasses 15%		Sugar 4%	Molasses 2%			
Types of sugar	Mill white 14.5%	Refined 9.5%	Raw 5.5%	Molasses sales 9.1%	Ethanol 1.4%	Mill white 24%		Refined 9%	Raw 2%	Molasses sales 12.7%		Ethanol 2.3%	Mill white 4%	Molasses 2%
Distribution of revenues														
Total value of output	\$322 million													
Value of products	Mill white 40% of value of output			Refined 26% of value of output			Handicraft 15%		Chewing 8%	Raw 7%	Molasses 2%	Ethanol 1%		

Data source: CIE and MARD.

Centre is the largest region and has achieved the most rapid rate of increase in cane production – chart 2.5. The Centre mostly uses cane for sugar whereas in the South cane is used for sugar and handicraft purposes in about equal proportions. In total slightly less than half of all cane is used for sugar production. Most of the rest is used for producing traditional products such as handicraft and chewing cane.

The proportions in which each region produces various final products from cane used for sugar production are presented in chart 2.4 in volume terms. Mill white is the main product. In value terms, the total value of output in 1999–2000 was US\$322 million – chart 2.4. Sales of mill white, refined and raw sugar contributed 73 per cent of this. Traditional products such as handicraft sugar and chewing cane contributed only 23 per cent and molasses and ethanol by-products contributed only 3 per cent. The quality standards achieved for the various classes of sugar generally meet local and international requirements. However, sulphur levels in raw and mill white sugar could be an issues to some higher quality markets.

2.5 Sugarcane production growth has been strongest in the Centre



Data source: MARD.

Consumption is low by world standards but higher in the South

Household survey data suggests that consumption of sugar products varies considerably throughout the country. Consumption per person is highest in

the South where incomes are highest. Consumption of sugar is around 10 kilograms per person per year on average for the entire country. Around 60 per cent of consumption is household consumption of mill white sugar. The other 40 per cent is consumed as fully refined sugar which mostly goes into food processing. About 44 per cent of consumption occurs in the South, 31 per cent in the North and 24 per cent in the Centre – table 2.6.

At 10 kilograms per year consumption is low by world standards. By comparison, Thailand has consumption per person of around 30 kilograms per year, Malaysia and Australia 50, India 15 and China 7. Vietnam has additional consumption of around 4.4 kilograms per person of handicraft sugar and 33 kilograms of chewing cane. With a sugar content of 10 per cent, chewing cane provides approximately 3.3 kilograms of additional sugar consumption. Typically consumption of sugar rises rapidly as income rise from low levels, while consumption of handicraft sugars and chewing cane stagnate or decline. Consumption growth in Vietnam has been rapid in recent years, having approximately doubled in the past decade, implying an average 7 per cent per year growth rate. Estimates of handicraft sugar and chewing cane consumption are less reliable, however, based on cane production and deducting known sugar consumption, growth rates would appear to have been sluggish – chart 2.7.

2.6 Per person and total consumption of sugar products

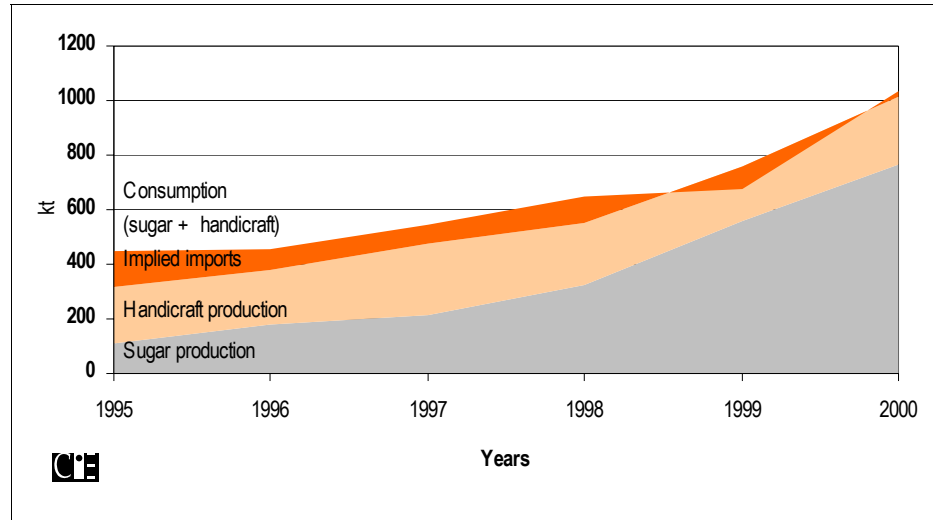
	<i>North</i>	<i>Centre</i>	<i>South</i>	<i>Average</i>
	kg/person	kg/person	kg/person	kg/person
Chewing cane	27.2	27.7	43.0	32.8
Mill white	4.9	5.0	7.8	5.9
Refined sugar	2.8	2.8	4.4	3.3
Handicraft	2.8	2.8	4.4	3.3
	<i>North</i>	<i>Centre</i>	<i>South</i>	<i>Total</i>
Population (millions)	27.9	22.1	26.3	76.3
Total sugar consumption (mt)	0.215	0.172	0.310	0.702
Total handicraft consumption (mt)	0.078	0.062	0.116	0.252

Source: CIE, Household Survey data.

Production has grown more quickly than consumption displacing imports

As seen in chart 2.7, the growth in production has more than matched the growth in consumption causing imports to fall. Data on imports however are not reliable. Considerable anecdotal evidence suggests that smuggling is rife. The incentive for this arises due to restrictions on imports that raise domestic prices above world prices. Since 1994, domestic prices have averaged 56 per cent higher than the equivalent free market import price.

2.7 Growth in production, consumption and imports



Data source: Evaluation Report of Implementation of the Five Year Sugar Program, 2000.

3

Policies affecting the sugar industry

Farmers in Vietnam have a long tradition and extensive experience in producing sugarcane. Until the 1980s, the industry operated under the central planning policies of the Vietnamese economy. Land was cooperatively managed and markets played little role in the allocation of agricultural resources. Under this system 80 per cent of cane was used for handicraft sugar production, while the industrial production of centrifugal sugar was limited to four small state-owned mills using old technology.

Old deteriorated varieties of cane were used which yielded poorly – 42 tonnes per hectare and as low as 32 tonnes per hectare on poor soils. Traditional cultivation and management techniques also resulted in poor quality cane with low sugar content. New varieties and better management allowed for double these yields in other countries.

However, starting in 1981, agricultural policies generally began to change. Land management changed from being cooperatively managed to being managed by households and in 1988 these lands were allocated to individual households under long term tenure. Markets were allowed to play a bigger role in the allocation of resources as controls over pricing, wages, foreign exchange, domestic and international trade and interest rates were relaxed.

In response agricultural productivity, production and exports expanded strongly and across the economy per capita income grew rapidly. In the early 1980s, the area of sugarcane expanded, reaching 162,000 hectares in 1984, but then stagnated, although five new small mills were constructed through the 1980s. Although the agricultural markets were relaxed (decontrolled), industrial processing of sugar remained state-owned, and expansion was tightly controlled by the State. As consumption of sugar products increased with population and income growth in the 1980s and early 1990s, increasing quantities of imports were required to meet domestic demand.

The one-million-tonne sugar program

Aware of the increasing demand for sugar imports, in late 1994, the former Ministry of Agriculture and Food Processing (now the Ministry of Agriculture and Rural Development – MARD) carried out a study titled "Overview of Sugarcane and Sugar Development to the Year 2000". With trade restrictions already in place, domestic sugar prices were well above international prices. Benefit-to-cost analysis, based on high domestic prices, showed favourable returns from sugar production from various sized operations, especially where expected agronomic improvements were anticipated.

Objectives of the program

The study culminated in the decision to set the target of producing one million tonnes of sugar by the year 2000. The program was implemented in early 1995.

Stated objectives

Objectives of the program were stated and adopted in the Resolution of the 8th National Conference of Vietnam Communist Party:

‘Produce one million tons of sugar by the year 2000 in order to fully satisfy demands of Vietnamese people and domestic processing industries which use sugar as raw material. To make intensive investment and expansion of existing sugar mills, build new mills of small to medium size in small material areas and build new mills with advanced technology in large material areas’.

The stated principles of the program are to:

- ensure high efficiency and effectiveness for farmers, mills and the State;
- develop in a quick but sustainable manner;
- develop according to a master-plan and sub-plans, especially raw material area plans;
- apply new, advanced technology, so as to ensure high quality, low cost and international competitiveness.

It was stated in the plan that raw material areas should be built close to mills to ensure a 30 kilometres radius from mill; raw material areas should be concentrated ones with good infrastructure to ensure lowest transport costs; and new high yielding varieties should be introduced.

It was specified in the plan that mills of over 2000 tonnes a day should be built for concentrated raw material areas, and for other areas mills with capacities of between 1000–1500 tonnes a day would be built. The aim was also to build mills with substantial local content – about 40–50 per cent of components and 30 per cent of the total value of equipment – so as to gradually manufacture complete mills locally.

Implied objectives

Implied objectives of the program appear to be to create employment, develop skills within various regional labour forces, make contributions to the reduction of hunger and poverty in rural areas, and to contribute toward the industrialisation of the rural economy.

In the mid 1990s, the Vietnamese Communist Party embarked on an industrialisation and modernisation drive with the aim of helping Vietnam become a largely industrialised country by about 2020. Part of this drive was to industrialise and modernise rural areas. These areas lagged behind cities and urban areas, especially during the earlier years of reform. An aim was to open these areas up to foreign investment.

Sugar production was the first major coordinated program in the agriculture sector toward the Party's rural modernisation agenda. It was seen as appropriate for that objective, because it could combine two major components: construction of industrial plants in rural areas; and development of concentrated raw material areas in remote, poor areas, which often required restructuring of subsistence food crops into marketable commercial crops.

Other aims and targets

According to the "Overview of Sugarcane and Sugar Development to the Year 2000", the program was aimed at developing 200,000 hectares of cane, over and above the 150 000 that already existed, creating jobs for 200,000 households, each of which would earn 15 million VnD (US\$1034) per year. The import-substitution aim of the program was to save US\$350 million a year from imports of sugar. The program was designed to give priority to development in poor areas in Central mountainous and Mekong delta regions, because cane growing can make use of hilly land and acidic soils where other crops are less competitive or cannot grow. By so doing, the program aimed to help farmers in those already poor regions.

Consistency of objectives

The program has many objectives and there are no clear priorities between them. There are however clear conflicts between many of these objectives.

- To strive to achieve high levels of efficiency but place restrictions on the size of mills is one obvious conflict given the economies of scale involved in milling.
- To strive for large, technologically advanced and efficient mills in large, concentrated cane areas and small, technologically less advanced mills (read less efficiency) in small, non-concentrated areas, is to imply efficiency and competition are likely to be compromised.

Instruments of the policy

The most critical instruments of Vietnam sugar policy are:

- its trade restrictions which protect the industry from world prices and on average raise domestic prices well above world prices;
- the role of government in raising, allocating, securing and distributing milling investment and working capital through Government's:
 - use of state owned enterprises as vehicles of investment;
 - controls and regulation of direct foreign investment and private investment;
 - ownership and control of banking;
 - investment licensing and approval procedures;
 - land allocation procedures;
- the role of Government in supporting financially troubled mills;
- subsidies paid for infrastructure in cane growing regions including:
 - payment for roads, bridges and irrigation works;
 - land development;
 - research, development and extension

Trade restrictions help raise the financial returns of sugar related investments. Government controls over investment and the potential for these to be politically manipulated have the potential to have a big influence on the number, size, location, technology, operational performance and growth of mills. Similarly, Government's role in supporting troubled mills affects the structure, conduct and performance of mills. All these measures affect the competition between mills, their

efficiency and international competitiveness. And government subsidies to cane growing help to divert agricultural resources away from competing activities to cane.

Trade restrictions and interventions

The Government of Vietnam has long managed international trade through a system of central decisions, planning authorities, multiple exchange rates, quotas, prohibitions, targets, shipment licenses, trade subsidies and state trading monopolies. Decisions made about trade had a large bearing over the direction and speed of development of the economy. Although trade has been liberalised somewhat since the introduction of *doi moi* in 1986, still trade remains heavily managed especially for seven export items and 12 import commodities. Sugar is one such import commodity. Non-tariff barriers including variable quotas and temporary bans, as well as a 40 per cent tariff apply. The Ministry of Trade (MOT) in consultation with the Ministry of Planning and Investment (MPI), Ministry of Finance (MOF) and the Ministry of Agriculture and Rural Development (MARD) sets these.

The restrictions to trade are used to manage trade throughout the year with a view to 'balancing the needs of producers and consumers', but mostly they are used to protect chosen industries and to promote import replacement. In the case of sugar, they underpin the target of the 'one-million-tonne sugar program' to protect and promote sugar production to meet rising domestic demand for sugar from domestic resources.

However, various international trade obligations are likely to put pressure on Vietnam to reduce its import restrictions. The most pressing of these is the ASEAN Free Trade Agreement (AFTA). Currently under AFTA, sugar is on the list of sensitive-agriculture commodities. Such status requires no member country to reduce its protection on sugar. However, this status shall only apply until 2010. After that, the agreement calls for all ASEAN countries to lower their tariff to no higher than 5 per cent. Potential membership of APEC and the WTO is also likely to see pressure applied to reduce sugar protection.

There are small tariffs on fertilisers and machinery used for sugar milling. Exemptions were granted for imported machinery originally used to establish mills. The tariffs are so low that they are unlikely to be distortionary.

Controls and intervention in milling investment

It is through its power to provide approvals for mill construction and to influence state bank lending and foreign direct investments that the Government of Vietnam largely regulates the structure of the industry.

Initiating investment proposals

In the case of the one-million-tonne program, the Central Government announced its intentions to promote sugar production in various regions through its master plan and million tonne target. This signalled to local governments (Provincial People's Committees), existing state-owned-enterprises and foreign investors the Central Government's favourable predisposition to establish mills within specified guidelines. Entities in a position to form further state-owned mills under the program appear to have been the two existing state-owned sugar corporations, General Sugar Corporation No. 1 and General Sugar Corporation No. 2 and Provincial People's Committees. General Sugar Corporation No. 1 is a conglomeration of several northern mills while the other is a conglomeration of southern mills. However, in terms of the number of new mills, Provincial People's Committees initiated the majority. Foreign investors also initiated the establishment of mills in the form of joint ventures or fully foreign owned enterprises.

Approval procedures

To seek approval, eligible entities are required to work through a two step process. First they need to prepare preliminary project proposals to submit to MARD. The Steering Committee of the Sugar Program and other relevant departments of MARD appraise these. Based on their merits and suitability to fulfil program objectives, MARD then coordinates with the Ministry of Planning (MPI) and Ministry of Finance (MOF) to appraise and submit the projects to the Government for the Prime Minister's final approval. Ultimate Prime Ministerial approval is required for all projects with a value of over 100 billion VnD. Projects with a lesser value may only require Ministerial or Provincial approval.

The Ministry of Planning and Investment (MPI) coordinates with relevant ministries, branches and localities to approve and issue certificates of investment privileges to enterprises. These privileges depend on whether the investments are in socially and economically difficult areas, but include reductions of 50-75 per cent of land use right fees, corporate income tax of 15-25 per cent compared with the normal rate of 35 per cent, and the possibility of other measures as well.

Since early 1995, MARD and People's Committees of central provinces and cities have been in charge of planning sugar mills and raw material zones, and controlling land of each locality so that People's Committees can have consistent decisions on cane development. Sugar mills are allocated or leased with land to build and expand their mills.

Terms and conditions of loans and magnitude of investments

Once accepted, the Government's approvals serve as conditions for bankers and equipment suppliers to offer loans and equipment. Although the Government does not officially guarantee loans, in reality, the Government's ownership of the four state banks makes it liable for any defaults and capable of directing investments flows. The World Bank (2001) notes that lending to state-owned-enterprises is viewed more favourably than lending to the private sector. The Government's control of the banking systems means it can also favour designated state-owned enterprises and therefore influence the allocation of investment funds across the economy.

Superficially, the Board of Directors of a state-owned mill is responsible for its loans. However, if a mill faces a loss, it shall be underwritten by the State. The State does not establish a separate fund for compensating losses of the sugar sector. When losses occur, the Board of Directors must report this situation to functional bodies and request for compensation. When such requests are approved, funds shall be provided. If not approved, the Government would ultimately bear responsibility for the loan through its ownership of the banking system.

The average interest rates charged state-owned mills under the program are as follows:

- from 1995 to 1997: 1.1 per cent a month, 13.2 per cent a year
- from 1 January 1998 to 31 December 1999: 0.81 per cent a month, 9.7 per cent a year
- from 1 January 2000: 0.75 per cent a month, 9.0 per cent a year.

The average rate for the whole period has been around 11 per cent a year.

The total value of domestic loans to finance state-owned mills is reportedly 4,969 billion VnD (US\$350 million). Mainly these are loans from the Bank for Investment and Development and VIETCOMBANK (HO 2000). As at 31 December 2000, the outstanding amount of these loans was 4,647 billion VnD, with 322 billion VnD (equal to 6.45% of the total) having been repaid. The duration of these loans shall not exceed 12 years and includes a five years grace period. This leaves a seven-year period to repay principal.

In addition to these loans is an additional US\$470 million of foreign capital (MARD' Evaluation Report of Implementation of the Five Year Sugar Program, 2000). This is invested as foreign direct investment in stand-alone or joint ventures and foreign loans used to fund equipment purchases.

Regulation of industry conduct

Through its state-ownership the Vietnamese Government also regulates important aspects of how mills are managed. Potentially Government's auditing, accounting, dividend and management policies have a big impact on the incentives facing mill managers and therefore on their operational performance. As a general rule governance of state-owned-enterprises is not clear, which raises many questions about the their performance.

In the case of sugar mills in particular, who mill managers are accountable to is not well defined. In principle a Board of Directors is responsible for maintaining the value of State capital and assets invested in a particular mill and for operating it efficiently. However, there is no clear penalty if they fail to do so, and no benchmark for their efficiency and performance. It also appears that mill management is partially accountable to several ministries as well as local government interests. This makes it unclear whether any single entity takes full responsibility for the mill's performance.

Either MARD or a Provincial Peoples Committee are the official 'owners' of mills and mill managers report on the technical and financial performance of their mills to these entities. However, in reality it seems, full reports are not made to owners. There is reporting of financial performance to the Department of Enterprise Finance, at the Ministry of Finance (MOF). MOF is responsible for monitoring financial reports and debt repayment capability of state-owned-enterprises generally, undertaking financial analysis on financial problems, monitoring the management and use of State capital, and for making financial subsidies. At very least there is overlapping of lines of accountability.

Governance functions appear to be fragmented and passive. No single agency or entity seems to be actively involved in reviewing or being accountable for the operation and performance of a mill enterprise. And like other state-owned enterprises, sugar mills are not required to be independently audited, although they may be selectively audited by the State Audit Agency (SAGO). However, the number of state-owned-enterprises audited by SAGO has been very small, and most of them are either large, strategic state-owned-enterprises or troubled state-owned-enterprises that are put under special control. Lack of auditing

requirements lowers accounting standards and compliance. Moreover, the fragmented governance functions mean mill managers' objectives are likely to be many and unclearly prioritised, leaving open the possibility that commercial objectives are not strongly pursued. There is no target rate of return on investment specified, and mill managers' performance does not appear to be performance based.

Governance is also confused by the joint roles of MARD as regulator and owner. Within MARD a Sugar Program Executing Board operates. A MARD Vice Minister chairs it, and its members include representatives from various departments. The Board functions like a policy and strategy arm of MARD on sugar development, but it also has executing mandates, including that of coordination. In addition, two ad-hoc bodies exist. One is the Project Appraisal Committee, which assists MARD to appraise preliminary feasibility studies and the full feasibility studies or other project proposal documents of provinces and Sugar Corporations. The other is the Board for Supervision of Sugar Distribution and Consumption, to monitor the compliance with government policy, regulations and commitments of sugar mills toward cane and sugar prices.

Profit distributions of state-owned mills:

Although there is no target rate of return on investment expected from mill managers, when made, profits are distributed as follows. First, it shall be used to

- cover losses from previous years,
- pay for use of State capital, and
- deduct fines incurred by enterprises.

Remaining profits shall be distributed as follows:

- Financial reserve Fund: 25 per cent
- Investment and Development Fund of the mill: 50 per cent
- Employment Assistance Fund: 0.5 per cent

The remaining 24.5 per cent shall be used for welfare and bonuses. The State shall not use profits of one mill to compensate losses of others.

Without a target rate of return, the profit distribution formula does not create incentives for mills to declare profits. Mill managers and local groups affected by the mill may be better off to see costs inflated to increase returns to them, rather than ensuring a profit is made.

Treatment of depreciation of state-owned mills

Allowance made for depreciation is paid to the State Budget on a yearly accounting basis. This payment may be suspended in accordance with State decisions.

The depreciation level may be decided by an enterprise, depending on the expected duration of use of fixed assets. If the enterprises does not decide its own level, the general duration of depreciation of 10 years applies. All mills apply the straight-line depreciation method. While some better performing sugar mills have applied a fast depreciation regime (5-7 years), most new sugar mills have found it difficult to apply the 10 year duration rule, and have applied for a 15 year duration.

Governance of equitised mills

In the three equitised mills, governance appears to be better defined. A board of directors exists, independent audits are undertaken, an annual report is made to shareholders and profits are paid to workers, farmers, mill managers and the Government according to proportional share holdings. Capital can be raised from shareholders or under their approval. The MOF and or line ministries or Provincial People's Committees normally settle debts incurred by these mills before equitisation. Exactly how they are settled may depend on the size of mills, but also upon whether any bad debts are the fault of the SOE or more general economic events. Some debt may be written off on these grounds, and assets that shall not be useful for an equitised mill will be returned to the State.

Governance and foreign mills

Foreign mills are subject to approval procedures for establishing a new mill, and would face similar procedures should they wish to undertake major investments in new capacity. Because three of the six are joint ventures, the State is involved in the governance of these mills as well. State involvement raises the possibilities of objectives extending beyond purely commercial ones. But perhaps more importantly, the Government's governance of state-owned mills indirectly affects foreign owned mills. Any measures supporting or underwriting losses or poor performance of state-owned mills, whether they are direct subsidies, interest rate concessions or the underwriting of debt, all affect the ability of foreign owned mills to compete for cane. Foreign owned mills are not eligible for similar subsidies.

Competition between mills

The government encourages each mill to have its own specialised raw material area, and does not promote fierce competition between mills. This is considered to be destabilising for both farmers and mills. However, in practice mills often strongly compete for cane supplies, especially at times of shortage. Some mills travel over 100 kilometres into areas supposed to be the domain of other mills to procure their cane supplies.

To curb this situation, a Board for Supervision of Sugar Distribution was created in 2000 to monitor adherence to cane pricing and supply contracts. In 1999 the Prime Minister ordered that cane prices must be announced from the beginning of the season, and must ensure that cane growers receive income higher than they would achieve from other crops. Each mill signs economic contracts with farmers before each cane-growing season. Buying prices and qualities of cane are agreed in each contract. Payments are made at the end of each harvesting season depending on the quantity and sugar content of cane.

Before 1998, the State, through a Government Pricing Committee, announced the floor price for buying cane with a sugar content of 10 CCS – a commercial measure of sugar content approximating 10 per cent. The floor price was the basis for farmers and sugar mills to sign contracts. Since 1998, the State has only recommended prices of cane as raw materials, leaving open the opportunity for farmers and sugar processors to negotiate the price of cane, and avoiding unilateral price-fixing.

Nonetheless, to help coordinate supplies and limit competition, the Government supports the idea of a nationwide sugar and sugarcane association that could coordinate supply of sugarcane between mills and farmers. There have also been suggestions that there should be tri-partite contracts between banks, sugar mills and farmers, to ensure the compliance of contracts for growing and supply of sugarcane between farmers and mills with loans from banks.

To further limit competition, the Government has signalled that it will not support the building of any new mills, although two are still being completed. In June 2000, the Government issued Resolution No.09/2000/NQ-CP, which decreed ‘no more sugar factories will be built, just rearranging and bringing into full play present capacities of existing factories.’

Support for troubled mills

As well as approving finance for their construction, the Government provides assistance to state-owned mills in various other ways.

Working capital

As difficulties of newly built sugar mills began to mount in 1999, the Government decided to assist them with working capital and compensation for foreign exchange rate movements and burdensome interest repayments. For the 1999–2000 season 395 billion VnD (US\$27 million) was issued as working capital. According to Decision 194/1999/QĐ-TTg of the Prime Minister, 30 new sugar mills were entitled to such assistance. For the 2001–2002 season, with required working capital of sugar mills estimated at 1,450 billion VnD, the amount to be provided by the State is 463 billion VnD. The provision of working capital is an allocation from the State budget, at both the central and provincial levels, for state-mills only, and is free. Profit-making mills are expected to provide a return to the State through the payment of a capital use tax. Loss-making mills may be waived such payments with agreement of MOF. While the amount of working capital required to be borrowed by mills on their own account was 987 billion VnD, they could in practice only borrow about 60 per cent of this amount.

In addition, the Government provides working capital for mills to assist in raw material development. In the 2000–2001 season, for example, 50 billion VnD was provided for mills for this purpose, of which 30 billion VnD was for mills under MARD control, and 20 billion for mills under provincial controls.

Subsidies were also provided for the stocking of sugar, thereby relieving working capital pressure of mills. According to Decision 562/CP-NN of the Prime Minister dated June 2000, the Government approved the stocking of 100 000 tonne of sugar for 2000–2001 season, with interest free loans guaranteed by the Government.

Some mills may also qualify for subsidised grants and loans from the Development Support Fund. However, to qualify, they are required to export over 30 per cent of their production. In 1999–2000, some mills exported sugar.

Exemptions to value added tax

In 2000 the Government temporarily reduced value-added taxes paid by mills by 50 per cent - Decision 65/2000/QD-TTg issued by the Prime Minister. The tax reduction is applied to sugar products, by-products, and substances recovered during the processing of sugar. The Decision also decreased the payable VAT for 1999 by an amount equivalent to each mills loss but not exceeding the value of VAT payable, normally paid at 10 per cent of revenue minus VAT on materials. For products made from molasses and mud, no VAT is charged. These arrangements continue to apply.

Subsidies to cane growing

MARD estimate that perhaps as much as 5000 billion VnD (US\$345 million) have been invested in sugarcane growing areas over the life of the one-million-tonne program (MARD's Evaluation Report of the Implementation of the Five Year Sugar Program). This cannot be accurately accounted for, as there are various sources of funds. In the main it appears to have come from the Government budget, provincial budgets and soft loans. These funds appear to have been used to fund:

- farmers conversion from alternative crops to sugarcane;
- the rehabilitation of land to form larger plot sizes;
- upgrading of roads and bridges;
- extension services;
- irrigation and drainage works.

To the extent that these funds are grants to the industry attaching no obligation of direct repayment or are soft loans, they represent subsidies to the industry.

Soft loans

An important source of funds was unsecured loans to cane growing households. Each household could access a loan of up to 10 million VnD without collateral. Had 500 000 households taken up these loans, total loans of 5000 billion VnD would have been issued. Moreover, poor household with certification of their local authority are entitled to take up these loans at concessional (perhaps half) interest rates of 0.7 per cent a month from the Bank for the Poor. Moreover, the State provides preferential investment credits (interest rate: 0.8 per cent per month) to mills to assist farmers by:

- providing seed cane;

- providing fertiliser and pesticides;
- mechanising land preparation;
- free-of-charge technical training.

Although estimates of the total lending over the life of the program are not available, in 1999–2000, banks made loans worth 568 billion VnD (US\$39 million) for sugarcane farming (Report of the MARD's Sugar Program Steering Board)

Infrastructure related subsidies

Provincial People's Committees are charged with responsibility for developing new cane areas in designated areas around mills. This requires various infrastructure development, varietal and soil research, development and extension activities, persuasion of farmers and restructuring or rehabilitation of land. The difficulties and expense involved may be reflected in the fact that eventually 42 per cent of new sugarcane areas were established outside originally specified cane zones and at considerable distance from the mills, fragmenting supplies, adding to transport costs and reducing technical economies of scale and scope in extension. Apparently, funds needed for required infrastructure only met 15 to 20 per cent of requirements (Report of the MARD's Sugar Program Steering Board)

In addition, the State budget is used for training and extension services. During the five years of the Program, 13 000 people received formal education and training, of which 173 people received university degrees in economics and management and 250 people obtained engineering degrees. A substantial percentage of trained people were employed to assist with raw material development.

Extension services were provided at various levels to farmers, coordinated by the Extension Services Department of MARD. Extension services encompassed several forms, notably demonstration courses for farmers and dissemination of techniques and information. With Government funding, over 4000 dissemination courses were organised during the five years for over 45 000 attendants.

In addition, mills sent farming coordinators to each commune in raw material zones to be in charge of training on cultivation and development of cane, and supervising contracts between mills and farmers. Around 56 000 farmers and agricultural workers received training on techniques of cultivation and agricultural machinery use.

Mills assist to establish cooperatives of cane farmers in accordance with the Law on Cooperatives. Highly qualified individual farmers can access preferential loans for purchasing vehicles to transport cane and materials locally. Mills also provide guarantees for bank loans of farmers who do not have assets for mortgage but have land for cane development.

In 1999, responsibilities for the further development of infrastructure were specified more precisely.

To further implement the sugar program, regarding infrastructure development, provinces and authorities should introduce advanced technology and best management practices. Regarding roads for transport of sugarcane, provinces must use State budget allocations to build main roads outside mills and raw material areas. Roads, which are within raw material areas, shall be built by capital contributed by farmers and mills. For irrigation, on the basis of approved projects, the State budget shall provide for key irrigation works such as reservoir and main canals, while farmers and mills shall pay for small, intra-area works. Mills can use 10 per cent of the cane price to develop raw material areas and to invest in transport and irrigation works for their raw material areas. Order 27/1999/CT-TTg dated 23 September 1999 of the Prime Minister).

Research and development

Although considerable sums of money appear to have been spent on extension, very little is spent on research and development. MARD is involved in running research stations, but their funding appears to be so restricted that it greatly limits their effectiveness.

Subsidies relating to land ownership

Depending on each project, the State may provide a range of reductions in charges relating to land, such as:

- exemption or reduction of land rent and tax on agricultural land used by sugar investors and processors in areas with (extremely) difficult conditions - the duration of the land rent exemption or reduction shall be from 3 to 15 years, or for projects in extremely hazardous areas, such duration may last until the expiry of the projects;
- investment projects in areas with difficult conditions shall enjoy a 50 per cent reduction for 7-10 years in land use tax, commencing with the time of land hand-over - projects in extremely hazardous areas shall be free from land use tax for 11-15 years or even the whole length of the projects;

- exemptions from income tax, VAT and import or export duties for raw materials, products and equipment;
- exemptions and reduction of agricultural land use tax for areas subject to storm, flood and special natural conditions;
- exemptions or reduction of agricultural land use tax equivalent to actual losses or damages farmers incur when subject to drastic changes in raw material price, when sales can not cover production costs or when delayed harvests affect following crops.

4

Effects of policy

The nature of Vietnamese sugar policies has the potential to have a large impact on the efficiency of resource use in the industry. There appears to be little reliance on open, free and competitive markets to allocate resources. Instead, resources are allocated centrally by people not directly affected by the economic outcomes of their decisions. The incentives faced by these decision-makers tend to reflect the diverse range of objectives influencing the program. This may be to establish a small mill in a depressed region to increase incomes for people in that region. But this may also require charging sugar consumers in other regions prices set above import price levels. This might be good for the mill but costly for consumers.

Here we outline the in-principle, potential impacts of various policy instruments. This provides a consistent framework by which to measure the economic impacts, which we do in chapters 5 and 6.

Economic effects of trade policies

The potential economic effects of Vietnamese sugar trade policies are outlined in box 4.1. The analysis shows that restricting imports separates the domestic sugar market from the world market and the world sugar price. Consumers are forced to compete for restricted domestic supplies of sugar and in so doing they bid up the price of sugar domestically. This has far reaching implications.

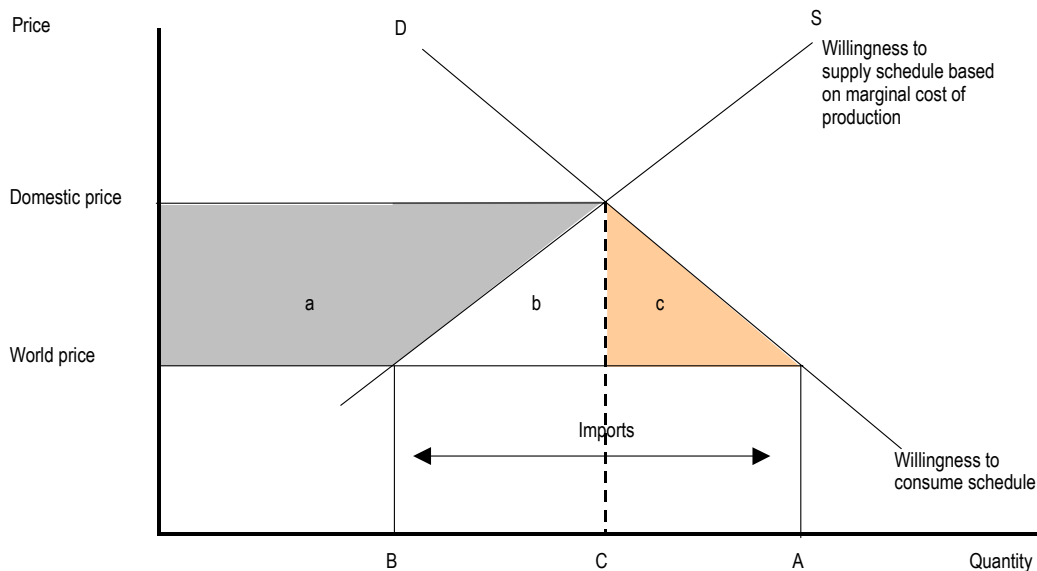
- The quantity of sugar consumed by consumers is decreased while their higher expenditure on sugar lowers their spending power, which is equivalent to lowering their incomes.
 - Industrial users of sugar will also be forced to pay more for their sugar, which raises their costs, lowers their competitiveness, lowering their output, incomes and perhaps exports.
 - Wealthier consumers will tend to outbid less wealthy consumers to procure their supplies, so the price rise will impact most on the poor.

4.1 Economic impacts of trade restrictions

In the accompanying chart, 'D' represents the willingness of consumers to demand various quantities of sugar at various prices – the willingness to demand schedule. As the price falls, they will be prepared to purchase more of the product. 'S' represents the willingness of producers to supply sugar at various prices – the willingness to supply schedule. As prices rise, sugar production will become more profitable relative to alternative crops and producers will increase their supply of the product. In an open and competitive market, import prices (world prices) would set the market price for sugar. Consumers would be willing to demand quantity 'A' of sugar at the competitive world price 'wp'. Producers would be willing to supply quantity 'B' of sugar. They would not be prepared to supply more, because their marginal costs of production would be above the price and they would lose money. Imports would equal 'A' minus 'B'.

If policy makers decided to totally prohibit the imports of sugar, consumers would, according to their willingness to pay, compete for the restricted supplies driving prices up. Higher prices would raise the profitability of sugar production relative to other crops and other manufactured products. Despite rising marginal costs, farmers and manufactures could afford to divert resources away from other activities toward sugar production. As they diverted resources they would lose income earned from alternative crops and activities. Nonetheless, they would be prepared to forgo income from alternative crops, provided the income they made on sugar exceeded the income forgone from alternative crops. The higher the price of sugar the more alternative income they would be prepared to forgo and the better the land and other resources they would be willing to divert to sugar, and so the greater their willingness to increase supply.

With consumers bidding up prices and decreasing consumption and producers increasing production while ever the sugar income per hectare exceeded forgone income from alternative crops, eventually a level of production would be reached at which the willingness to demand exactly equalled the willingness to supply – point 'C' in the chart. At this point producers' gross incomes would have expanded from 'B' times the world price to 'C' times the domestic price. However, producers would have forgone or raised their costs of production by an amount equal to 'b' to produce 'C'. Therefore their net increase in income would be equal to area 'a' only. However, consumers would be required to pay 'a' plus 'b' extra for the sugar they consume, plus they would lose income equal to 'c' from the lost opportunity to consume more sugar. In total the country would lose 'b' plus 'c' in income. Although producers would be wealthier by 'a', consumers would be poorer by 'a' plus 'b' plus 'c'.



- The profitability of producing sugar is raised, which attracts resources from alternative crops and other parts of the economy, resulting in increased domestic production and increased producer incomes, but:
 - the income previously earned from alternative crops is lost;
 - the costs of producing additional sugar are above the world price of sugar and therefore above the costs that efficient exporters can supply sugar to the domestic market;
 - more resources or more expensive resources are used up to meet Vietnam's sugar needs, and this must be paid for by someone, namely Vietnamese consumers.
- The extra that consumers must pay for sugar is transferred to producers, but because producers must use up more resources and forgo the alternative income from these resources to produce extra sugar, the net increase in producers' incomes is less than the decrease in consumers' incomes. In total, Vietnamese income is reduced.
- The Vietnamese economy in total is made worse off, although some groups (producers) are made better off but only at the expense of some other groups (consumers).

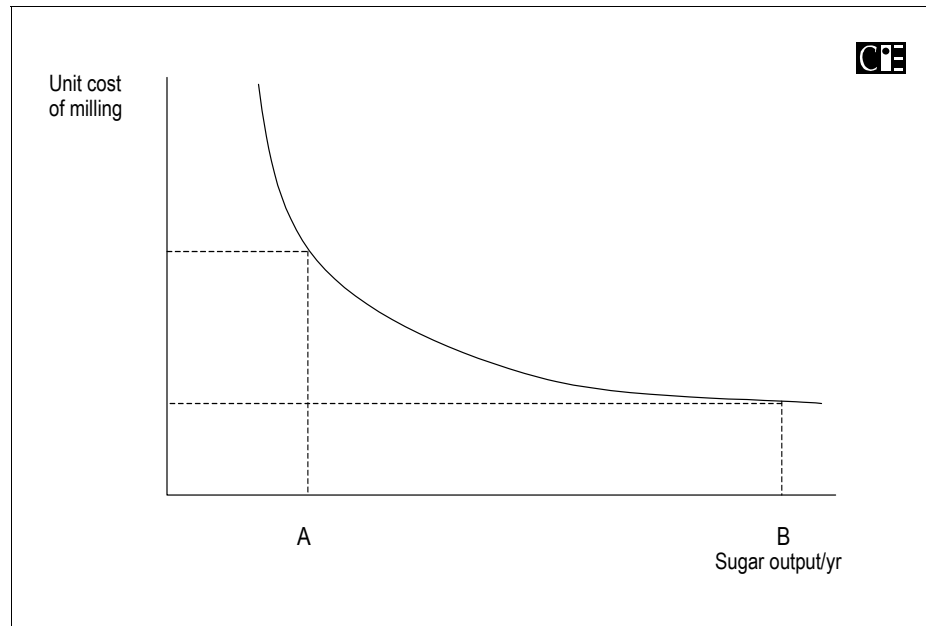
Economic effects of government controls over milling

There are pronounced economies of scale in sugar milling. Costs of production decline as the volume processed rises and the output of sugar increases – chart 4.2.

Except for the cost of cane, chemicals and some other materials, most of a mill's costs are fixed. Capital costs are a major fixed component of costs and the greater the throughput per year the lower the unit costs of operation. In particular, the larger the mill the more likely it is to be able to afford the fixed costs of the management it needs to ensure capital is used efficiently, so that:

- breakdowns are minimised;
- supplies of cane are continuous;
- season length is as long as possible;
- extraction rates of sugar are as high as possible;
- extension back to farmers is efficient so that the sugar content of cane is high and output of sugar per unit of cane input is high.

4.2 There are distinct economies of scale in milling



Data source: CIE.

Labour costs are also mostly fixed. The number of workers required to run big and small mills are similar. The same sorts of jobs must be completed irrespective of size. So the larger the mill, the lower the unit costs of labour. Repairs and maintenance within the season and between seasons are also likely to be similar irrespective of size. So again, the larger the mill the lower the unit cost of repairs and maintenance. Also, the larger the mill the more likely it is to be able to use energy efficiently. And the more efficiently it uses energy the more likely it is to generate surplus energy which can be used for other enterprises. Similarly, the more efficiently a mill uses its fixed resources the larger the profit available for reinvestment and the greater are the opportunities to use surplus resources for synergistic enterprises.

Government involvement encourages the establishment of high cost mills

Government involvement in decisions about number, size and location of mills runs the risk of restricting mill throughput because objectives other than purely commercial ones are likely to be pursued. Selecting a greater number of small mills over fewer larger ones to satisfy regional objectives for instance could result in the building of high cost mills with throughputs such as 'A' in chart 4.2, instead fewer larger optimal sizes mills - 'B' in chart 4.2. As a result unit costs of milling could be substantially higher than need be.

Trade protection and state-ownership add to pressures for small mills

Moreover, coupled with trade protection that raises domestic prices, and effective Government underwriting of the debts of state-owned mills, the pressure to choose optimal sized mills is diminished. With high domestic prices, even high cost mills may appear to be able to operate viably. This is also likely to make the pursuit of non-commercial objectives appear all the easier. No doubt, high prices helped make pre-feasibility studies for many small mill projects in many regions appear viable. High prices are also likely to have increased the Government's confidence to announce a one-million-tonne program in the first place. And Government underwriting of debt means that the risk of mill failure rests with the Government rather than those seeking to establish a mill.

Mill size becomes a forgotten criteria

In an uncompetitive investment environment, the Government is vulnerable to various lobbying pressures (especially from People's Committees in the provinces) and the criterion of mill size is not likely to receive the importance it should. Indeed, as the million tonne program proceeded, in many cases People's Committees went ahead with the development of raw material (cane) areas before preparing and submitting a detailed feasibility study, so that raw materials would be ready for the mill when its construction was completed. In instances when a proposed mill was not first approved by MARD, especially in the late 90s when over capacity was becoming apparent, provinces exerted considerable political pressures to proceed, even knowing that such mills may be not be viable.

Given the emphasis placed on the social objective of helping the poor regions, there was a lot of pressure and lobbying efforts from social and political bodies, including from the National Assembly and the Communist Party General Secretary. For example, when the MARD decided to put on hold the construction of Son Hoa sugar mill in Binh Thuan province, both the province and the National Assembly created pressure for it to go ahead. They argued that farmers under instruction from the province had already developed 7000 out of 10 000 hectares needed for that mill. The go-ahead had been based on MARD's earlier acceptance of the pre-feasibility study in 1997.

Inconsistencies in capital expenditure regulations promote small mills

The construction of small mills also seems to have been encouraged by the capital expenditure regulation that allows ministries and provinces to decide on projects that are under 100 billion VnD. To quickly get a project

started, many provinces deliberately wanted a small project, or underestimated capital requirements to ensure they secured some of the new industrial activity backed by the Government program. Once started these projects were difficult to stop despite their sub-optimal size. This helps explain why so many small mills were built and why eventual capital expenditure for a mill was typically much higher than first planned. On average, capital costs exceeded budgeted estimates by 30–40 per cent, and in some cases they were 50–66 per cent higher as in the cases of Phung Hiep and Tri An mills.

State-ownership prevents competition from larger mills

State ownership of mills and Government's implied underwriting of their financial failures has also greatly reduced competitive pressures between different sized mills. Small high cost mills are less likely to be able to compete for cane than large low cost mills in open and competitive markets. Larger mills are likely to be able to pay higher prices for cane and they are more likely to be able to engage in the type of extension effort that help farmers realise their yield potential and lower their costs.

However, if Government is prepared to underwrite the losses of small mills, they are likely to be able to go on matching the prices paid for cane by big mills, even if this means operating at a loss. Without such financial support from Government, small mills would feel the full competitive forces of large efficient mills and would be unable to continue operating. This would create two benefits. Costs of milling would fall as low cost mills replaced small high cost mills and large mills would get larger achieving even better economies of scale.

Effects of higher costs

The effects of higher mill and cane growing costs due to the construction of sub-optimal mills are demonstrated in box 4.3. In summary:

- they reduce the competitiveness of producers and thereby reduce the output of sugar at any given price and so:
 - higher domestic prices are required to make the country self-sufficient in sugar than would be the case with larger mills;
 - production and consumption are reduced because more resources are required to produce less sugar;
- they reduce consumption because prices have gone up, which reduces consumers' incomes;

- the higher prices paid by consumers are transferred to producers, which increases producer incomes, but:
 - because costs are higher than with large mills and more resources are used up producing sugar, income is forgone from not using these resources to produce alternative products;
 - the income forgone from alternative uses, plus the loss of consumer income is greater than the increase in producer income;
 - national income is reduced although some groups, producers, may win at the expense of other groups, consumers

Economic effects of subsidies

The implications of paying subsidies to troubled mills or to build infrastructure to encourage cane production are similar to each other in an economic sense. These are represented in box 4.4.

If subsidies are paid to producers to compensate for high milling costs, this will prevent falls in production that might otherwise have occurred. Maintaining production through subsidies means that relative to consumer demand, supplies are more abundant than would be the case with lower production. So consumers are not put in a position where they would otherwise bid up prices. This is good for consumers. However, resource use and costs will be higher than in the non-subsidised case because production will be maintained at a higher level. This cost will have to be paid through taxes on other sectors of the economy. Similarly, subsidies paid to fund infrastructure and the establishment of cane will use up resources, preventing those resources being used to undertake some other economic activity in another industry, causing a loss of income somewhere else in the economy. In economic terms, the income not earned on these resources in other industries is equivalent to a cost on other sectors of the economy.

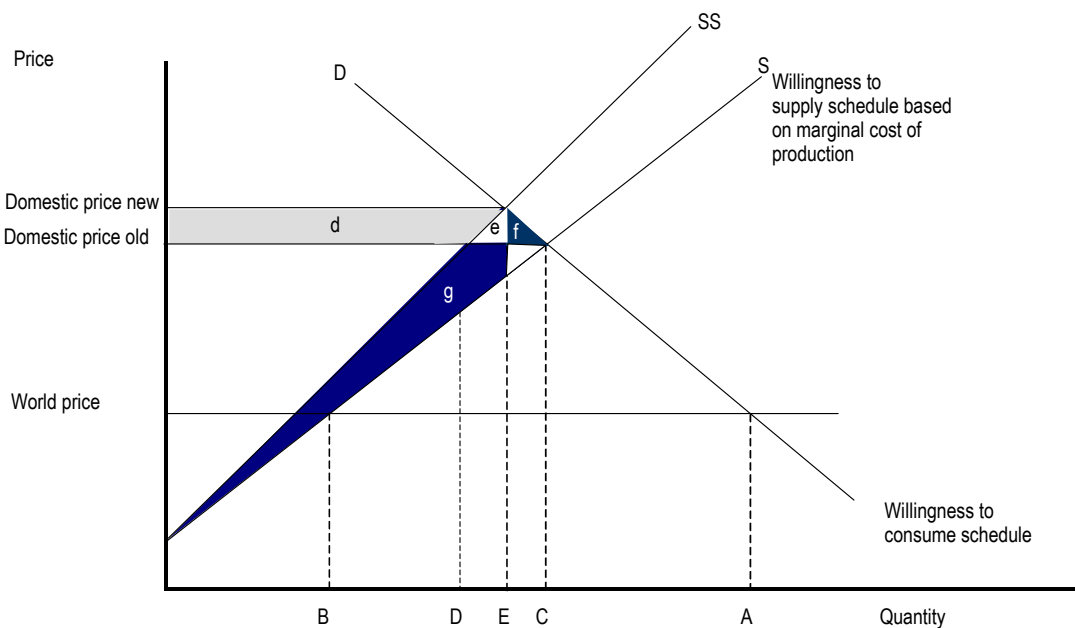
Strong market intervention discourages efficient investment

Strong government intervention and influence in markets encourages political and other objectives to be pursued in place of commercial objectives. Commercial disciplines to strive to lower costs and find productivity raising solutions are undermined. The more intervention and control, the more bureaucratic and administrative discretion is created, and the less predictable policy implementation becomes. This raises risks and costs and creates a less attractive investment environment. The more

4.3 Economic impacts of small mills and high costs

In the accompanying chart, 'D' and 'S' are as defined in box 4.1. The effect of permitting high cost mills to operate instead of large low cost mills is to reduce producers' willingness to supply a given volume of sugar at any given price. This shifts the supply schedule from 'S' to 'SS'. For any tonne of sugar production the marginal cost is higher than would be the case with larger mills. It requires more resources to produce each tonne of sugar and therefore requires forgoing the alternative income that could have been earned on those resources employed in alternative activities. At the going domestic price, 'domestic price old', producers would be forced to reduce production to 'D' to prevent making marginal losses. However, if the Government were to maintain its ban on imports, with supplies restricted, consumers would be prepared to bid up the price to 'domestic price new'. Consumption and production would come into balance at 'E'. But compared with the previous balance point at 'C', both production and consumption would be less.

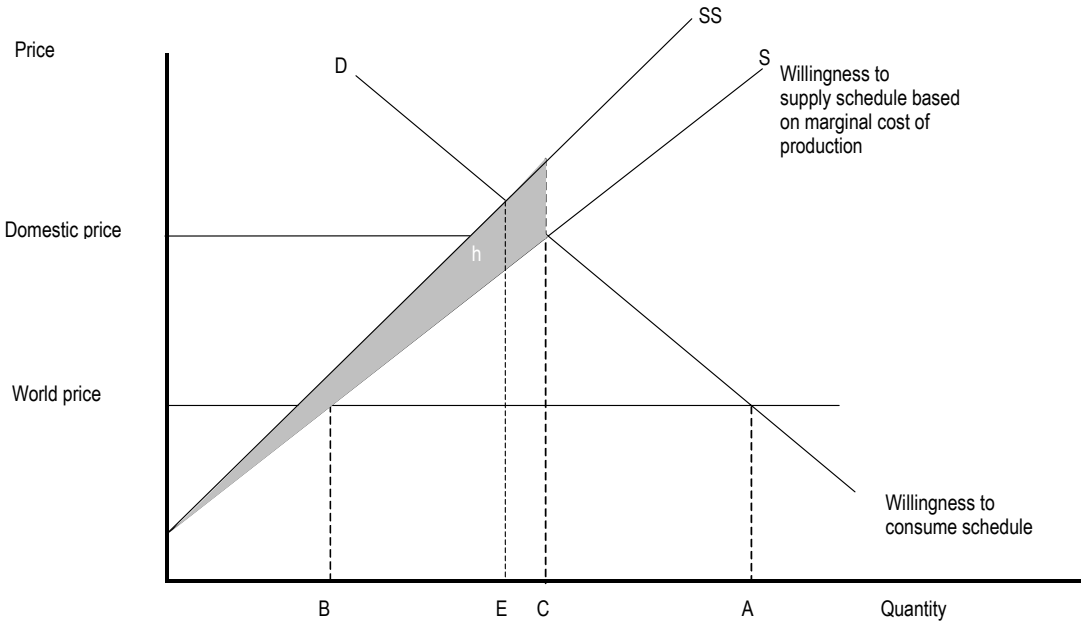
At 'E', consumers' incomes would have declined by 'd' plus 'e' plus 'f'. Producers' incomes would have expanded by only 'd' due to the increase in price. However, on top of this cost is the extra cost of additional resources used to produce sugar. Total costs of production increase by the area defined by 'g' plus 'e'. These represent the additional costs to producers from operating small mills rather than large mills. In total, the Vietnamese economy is made worse off by the areas 'g' plus 'e' plus 'f'.



constraints and restrictions the less room entrepreneurs and innovators have to pursue world's best practice solutions. Yet to succeed in a highly competitive world market, business dynamism is needed. This means attracting the best capital and best management from around the world, neither of which will be attracted if constrained markets limit opportunities.

4.4 Economic impacts of subsidies

Building on from box 4.3, if Government subsidises high cost mills, production and consumption would remain at 'C' instead of decreasing to 'E', but costs would expand by 'h' as shown below. To pay for the additional cost of resources used up to produce 'C' of sugar, Government would have to tax other industries by at least the amount 'h' to be able to transfer this to small mills to allow them to cover their costs. The Vietnamese economy would be made worse off by at least 'h'.



5

Economic performance

The strong growth in sugarcane and sugar production achieved in Vietnam since 1994 is impressive in its scope and in achieving its targeted objective of a million tonnes of sugar (mill white plus refined plus handicraft). However, the impetus for the growth relied strongly on subsidies and protection from international competition, and, as shown in chapter 4, these sorts of incentives for expansion cloud the true competitiveness of the Vietnam sugar industry.

Competitiveness of sugar production

Comparing the Vietnam sugar industry against various international benchmarks and assessing the financial performance of farms and mills provides some indicators of its competitiveness.

Productivity of farms

Yields of cane per hectare and sugar content of cane are good indicators of farm productivity and costs. Before the introduction of the million tonne sugar program, yields of cane averaged around 42 tonnes per hectare. Since, they have increased to average around 50 tonnes and in concentrated growing areas yields averaging 54–55 tonnes per hectare have been achieved (Ho 2000). In some mill areas yields of over 80 tonnes have been achieved over reasonably large tracts of land. Nonetheless, by world standards, Vietnamese cane and sugar yields remain low – chart 5.1. Yields of cane appear to be only about 60 per cent of leading cane producers, whereas yields of sugar appear to be about half. Inferior varieties, poor irrigation strategies, small-scale production, incorrect applications of fertiliser and pesticides and poor harvesting coordination all place Vietnam at an international disadvantage.

Regionally, the Centre appears to have agronomic advantages in terms of sugar content, while the South has advantages in terms of cane yields – table 5.2. The North appears to be at considerable disadvantage in terms of cane yields. Sunshine and topography tend to favour the Centre. Longer

sunshine hours and more complete drying of soils before harvesting encourage higher yields of sugar in the Centre compared with the South. In the South, where sugarcane is often grown in conjunction with rice that is irrigated, it is difficult to dry off cane. Moreover, the topography, especially in the Mekong delta where the land is flat, does not drain well, and does not naturally define large areas suited to cane over rice. Nonetheless, the higher soil moisture conditions do promote higher cane yields in the South over the Centre and the North.

In terms of tonnes of sugar produced per hectare, the South appears to be 6 per cent higher than the Centre but 30 per cent higher than the North – table 5.2 – averaging 5.5 tonnes of sugar per hectare compared with 5.2 in the Centre and 4.2 in the North. However, tonne for tonne sugar content is more valuable than cane yield per hectare because it reduces harvesting, transport and milling costs per unit of sugar output.

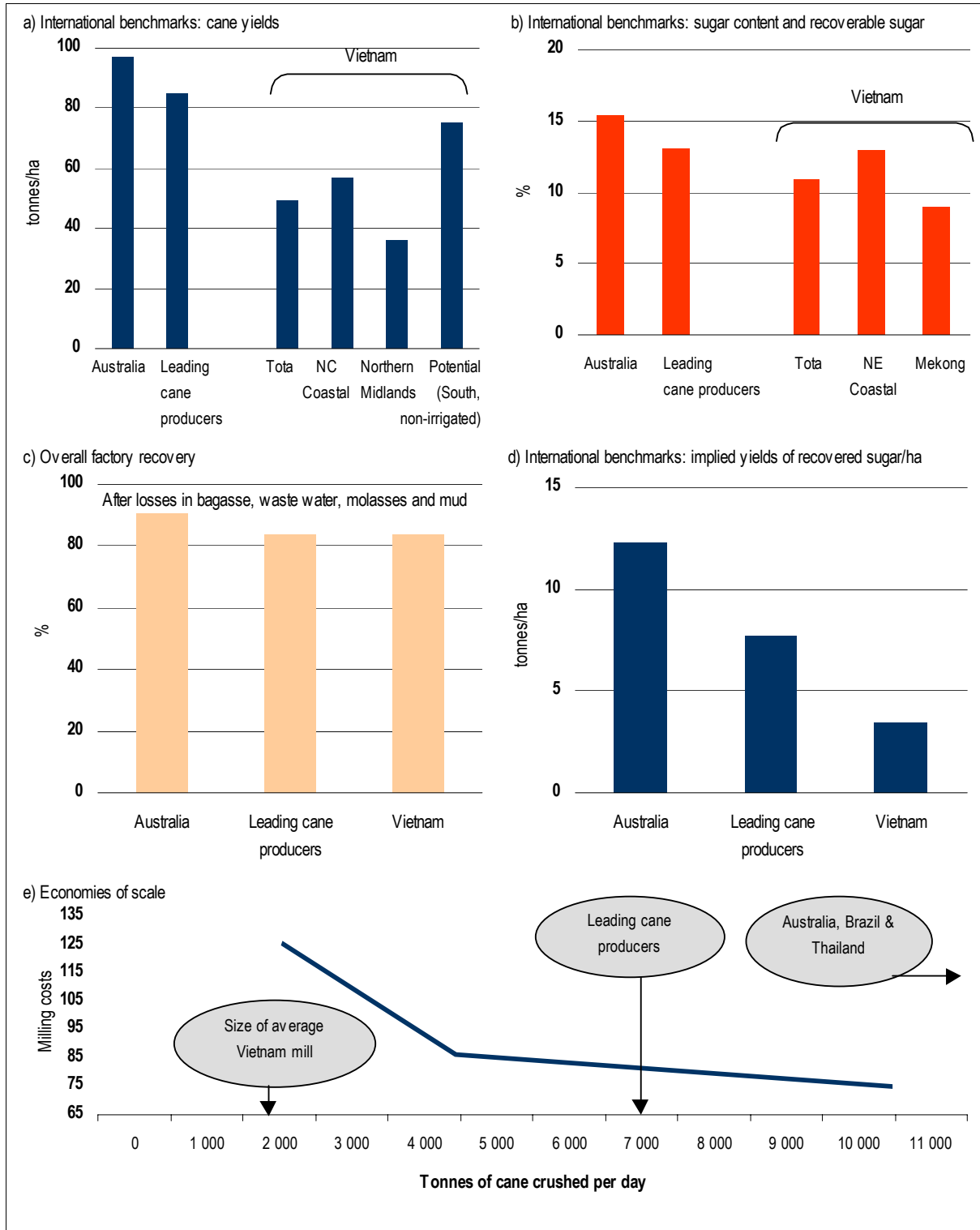
Productivity of mills

Size of mills is an important indicator of milling costs, because there are strongly defined economies of scale in milling – chart 5.1. Although Vietnam has six relatively large mills, the others are very small by world standards – also see chart 5.3. Chart 5.1 suggests we should expect Vietnamese milling costs on average to be more than 50 per cent higher than milling costs of leading cane producers.

The percentage of sugar that mills extract from the cane they crush is around 82 per cent as shown by the overall factory recovery rate in chart 5.1. This is about on a par with world standards but is below best practice of over 90 per cent in Australia.

Utilisation of available mill capacity averages 77 per cent – table 5.2. Climate and the sugar content of cane largely determine the crushing time available, which averages 153 days in Vietnam. Actual crushing time is a measure of the days when the mill was in full operation through the season. This averaged 117 days in 1999–2000. In total, on average 36 days (23 per cent of time) were lost due to mechanical stoppages, wet weather stoppages and stoppages arising due to other disruptions to the supply of cane. This is about in line with that achieved in leading cane producers such as Thailand and Brazil, but is considerably below that achieved in Australia.

5.1 International benchmarks



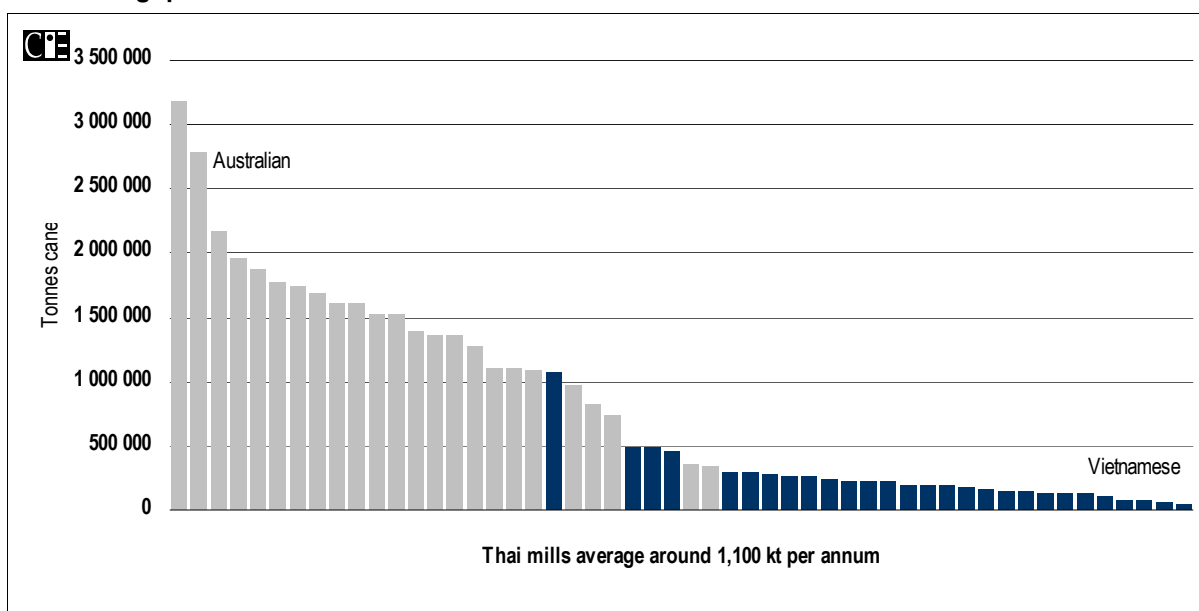
Data source: CIE and MARD.

5.2 Technical performance of farms and mills by region and size (1999–2000)

	Yields			Mill extraction		Capacity utilisation		
	Cane	Sugar content	Sugar	Rate	Yield	Full crushing time achieved	Crushing time available	Utilisation
	t/ha	%	t/ha	%	t cane/ t sugar	Days	Days	%
North								
Small mills/farms	38.8	10.9	4.2	77	12.0	110	149	70
Centre								
Small mills/farms	38.2	10.8	4.2	77	12.0	89	162	55
Medium mills/farms	46.6	11.1	5.2	83	10.8	144	162	88
Large mills/farms	51.3	11.5	5.9	84	10.4	105	162	65
Regional average	46.7	11.2	5.2	82	10.8	109	162	67
South								
Small mills/farms	50.9	10.2	5.2	77	12.8	122	142	86
Medium mills/farms	56.6	10.2	5.8	83	11.8	165	143	116
Large mills/farms	62.3	9.1	5.7	84	13.2	114	143	80
Regional average	56.5	9.8	5.5	82	12.5	132	143	92
Country average	50.8	10.5	5.3	82	11.6	117	153	77

Source: CIE and MARD.

5.3 Throughput of Australian and Vietnam mills



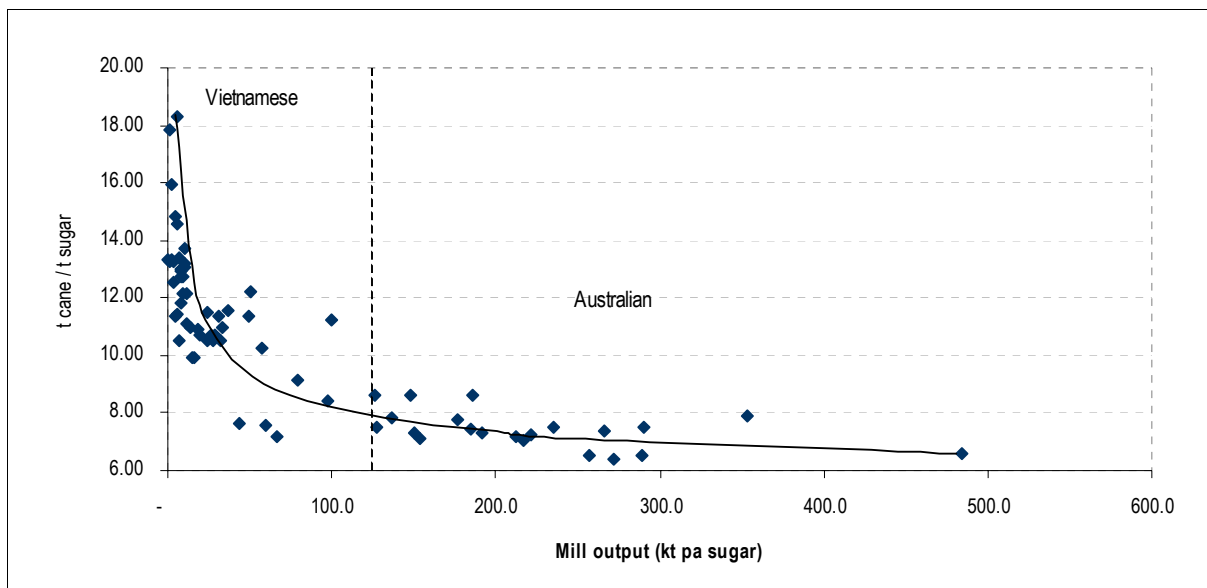
Data source: MARD and CIE.

However, capacity utilisation also depends on season length. Regionally, the Centre appears to be at a distinct advantage over Southern mills with a season length about 13 per cent longer than in the South. That said, there is considerable variability within regions. Some medium sized mills in the South have season lengths of 190 days, and some in the Centre have season lengths as long as 220 days. This provides considerably higher utilisation of milling machinery and labour than is achieved on average. Averaging 153 days of available crushing time, Vietnam would appear to lag behind the 180 days available in most leading cane producing countries.

Combined productivity

Chart 5.4 shows the number of tonnes of cane required to produce one tonne of sugar in Vietnam relative to Australia. It suggests two important points. Vietnam is using nearly twice as much cane to produce one tonne of sugar as Australia, and whether in Vietnam or Australia, the larger the mill the better the efficiency. There are a number of reasons for this but two stand out. Large mills can achieve strong economies of scale and scope and are profitable enough to attract good management and the capital needed for efficient extraction. But what is also likely, is that large mills have the resources to more closely integrate with growing regions and help farmers raise the sugar content of cane. If we measured tonnes of sugar per hectare against mill size, the relationship might be even more pronounced.

5.4 Tonnes of cane required for 1 tonne of sugar and mill size (Australia and Vietnam)



Data source: CIE and MARD.

Domestic and international prices

The difference between world and domestic prices is a good indicator of an industry's competitiveness. If domestic prices are above the world price and the industry is not exporting, chances are large parts of the industry are not highly efficient nor competitive enough to compete with imports from efficient exporting nations.

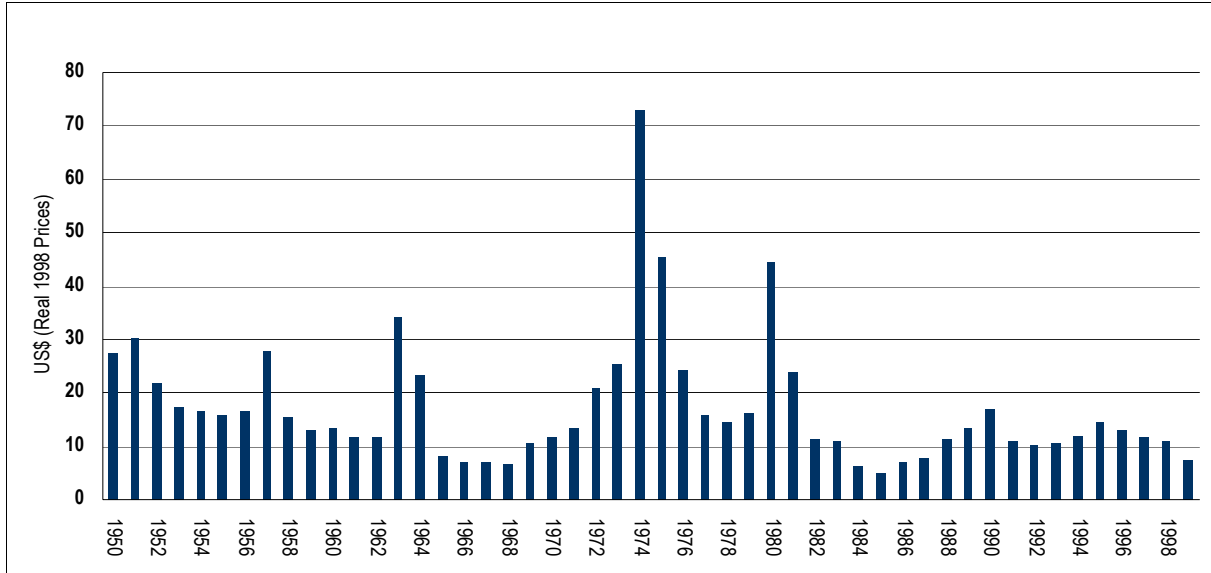
The world sugar price is also an important indicator of the value of allocating resources to producing sugar in any country. If sugar producers can produce sugar for a cost below the world price, a big opportunity exists to reallocate land, labour and capital resources away from some existing activities to sugar production and earn a higher return on those resources. The industry is internationally competitive at the margin.

Alternatively, if sugar producers' cost of production exceed the world price, opportunities exist to import sugar to meet domestic needs and to reallocate resource away from sugar to alternative activities where they can earn a rate of return to justify their cost. In this case the cost of resources is too high to justify using them for sugar production because they could earn more in alternative enterprises. The industry is not internationally competitive at the margin.

Past world prices

The history of the world sugar price is mapped out in chart 5.5. Over the past 12 years it has been more stable than during earlier periods and has averaged slightly over US 11 cents per pound. Structural changes that occurred in the 1980s and early 1990s have stabilised the sugar price around a lower average. In particular, policy reforms in efficient exporting countries such as Australia, Brazil and Thailand have helped provide more reliable export supplies of low cost sugar to the world market. Over the past decade, world prices have been driven by costs of production in these countries (Borrell and Pearce 1999). Moreover, Brazil's declining exchange rate has increased its competitiveness, placing further downward pressure on prices.

5.5 World prices



Data source: World Bank 1990 Price prospects for major primary commodities Report no. 814/90 p97.

Future world prices

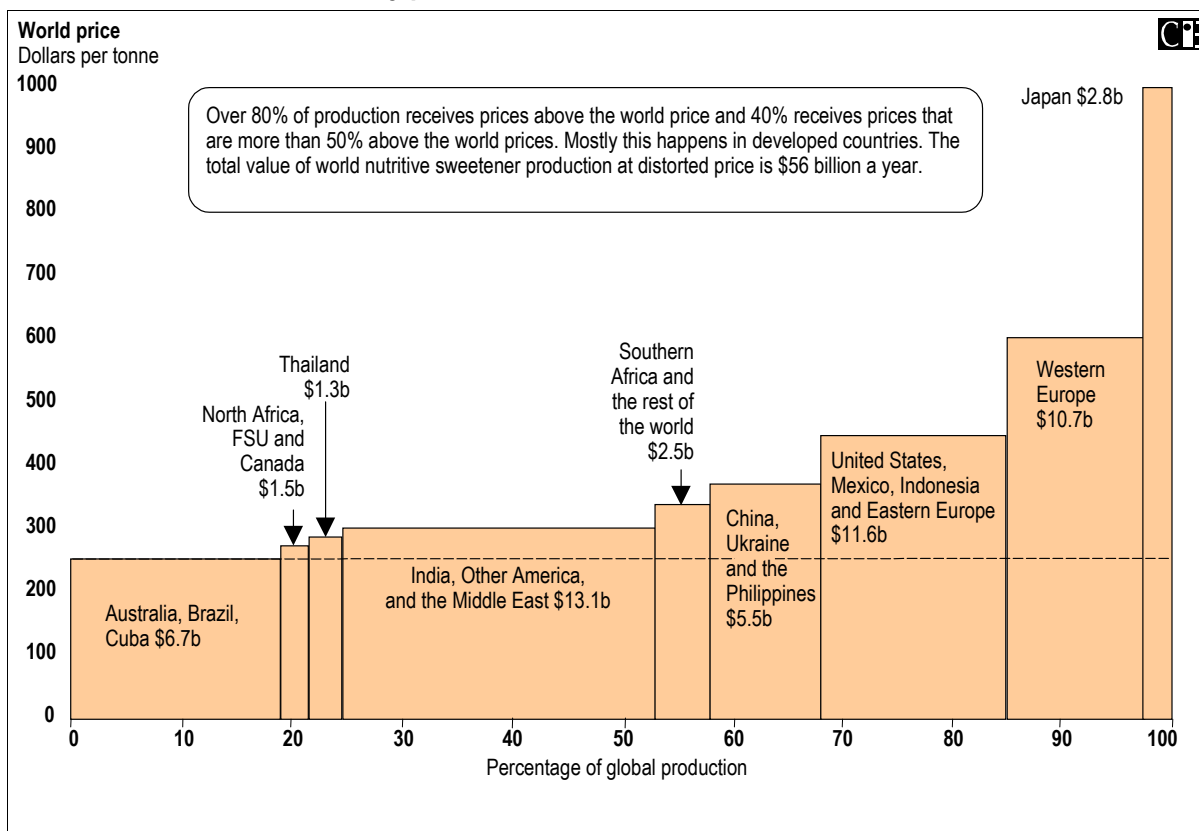
Future world prices are not easy to predict. However, two main forces are likely to impact on the world price.

First is the tendency for commodity prices to decline over time. This is due to the historical fact that globally, the rate of productivity gain in producing commodities tends to grow more quickly than the rate at which demand increases. Without a fall in price, this situation would cause production to expand more quickly than consumption and stocks would build up. To prevent this happening, prices fall to dampen production and encourage consumption, helping to bring them back into balance.

Second is the role of trade protection in the world sugar market. Chart 5.6 shows the prices received by major sugar producers relative to the long-run average world price of around US\$250 per tonne. Over 80 per cent of producers receive prices above the world price and 40 per cent receive prices that are more than 50 per cent above the world price. Among all agricultural commodities, the world sugar market is one of the most highly distorted by trade protectionism. The world dairy market is the only other with similarly high levels of protection. Removal of protection would cause production to fall and consumption to rise in protected countries. Import demand would rise causing world prices to rise as an inducement to raise export supplies from efficient low cost suppliers. Estimates are that should

this occur, world prices could rise by between 30 and 40 per cent (Borrell and Pearce 1999). However, the chances of global sugar protection being wound back quickly or fully within the next decade are not high.

5.6 Relative amount received by producers for sweeteners at the wholesale level in 1997



Data source: Borrell and Pearce, 1999.

The most likely price outlook is for a continuation of what has occurred over the past decade. Converting the world price to an import parity price for Vietnam – the appropriate benchmark price – gives a wholesale price for white sugar of just under VnD4000/kilogram. The import parity price makes adjustments for the price premium received in the Eastern hemisphere and for the costs of freight and insurance.

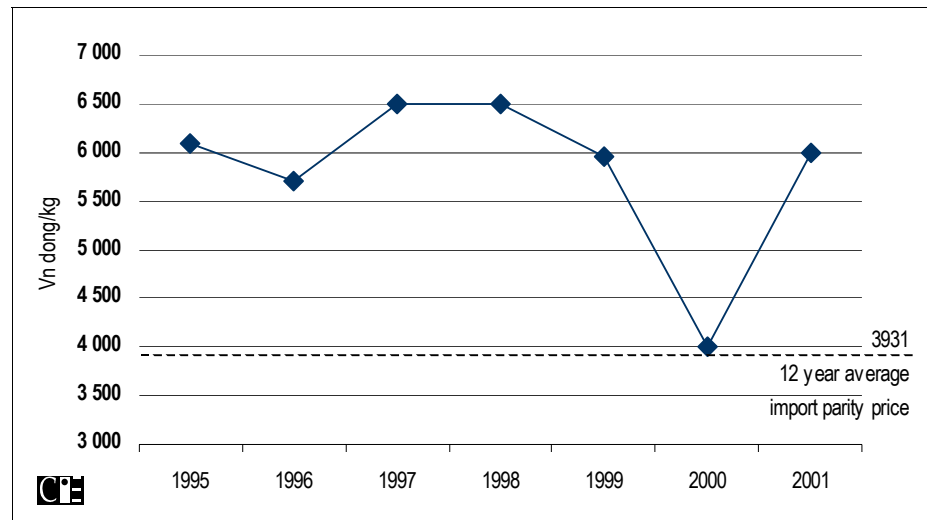
Vietnam prices

For the five years to 1999, Vietnam sugar prices averaged 56 per cent above the import parity level – chart 5.7 – due to government restrictions on imports. The import parity price of sugar has averaged VnD3931 per kilogram over the past 12 year and import restriction provided protection to Vietnam sugar producers by raising their market prices. However, in the

year 2000 prices fell close to the long-run import parity level at around VD4000 per kilogram – chart 5.7. Import controls became largely ineffective as strong domestic production growth created excessive supplies relative to domestic demand. Subsequently prices have risen again on the expectation of a cutback in production in 2001.

Chart 5.7 suggests Vietnam sugar producers have enjoyed nominal rates of trade protection of over 50 per cent in the second half of the 1990s as they rapidly expanded production. This compares with nominal rates of protection of around 11 per cent for agriculture on average (CIE 2000). This differential in protection indicates a strong bias in favour of resource allocation toward sugar compared with other agricultural enterprises. It therefore also suggests potential for a costly misallocation of resources. It also suggest that the industry is not highly competitive. It raises the question of how well the industry might compete without such protection, which is a key question of this study. What the protection has cost consumers and the economy is another key question.

5.7 Domestic wholesale and import parity prices of sugar



Data source: FAO, CIE.

Evaluating the financial performance of farms and mills at the price prevailing last year (the import parity price) gives another indicator of the industry's competitiveness.

Financial performance of farms

With sugar prices at import parity price level, cane growers receive around 52 per cent of the sugar revenue delivered at the mill or around 45 per cent

of the sugar revenue if sold at the farm. After allowing for the costs of cultivation, machinery, land fees, seed cane, fertiliser and harvesting, growers receive returns for their own labour, management and to their land (a gross margin) estimated to be between US\$100 and nearly \$370 per hectare depending on their location and yields – table 5.8. They may also receive additional returns to their own labour where they cultivate and harvest their own cane, as many do. This could boost returns per hectare to farmers by between \$50 and \$100 per hectare.

5.8 Returns to labour, land and management from cane production

	<i>Small North</i>	<i>Small Centre</i>	<i>Medium Centre</i>	<i>Large Centre</i>	<i>Small South</i>	<i>Medium South</i>	<i>Large South</i>
	\$/t	\$/t	\$/t	\$/t	\$/t	\$/t	\$/t
Price	11.8	12.4	12.4	12.4	12.2	12.2	12.2
Costs							
Cultivation	0.4	0.5	0.4	0.3	0.3	0.3	0.3
Machinery	0.2	0.2	0.1	0.1	0.1	0.1	0.1
Land fees	1.6	1.7	1.4	1.2	1.2	1.1	1.0
Seed Cane	1.6	1.7	1.4	1.2	1.2	1.1	1.0
Fertiliser	4.0	4.1	3.3	3.0	3.0	2.7	2.5
Harvesting	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Total cost	9.2	9.4	7.9	7.3	7.4	6.8	6.3
Gross margin	2.6	3.0	4.5	5.1	4.8	5.4	5.9
Gross margin \$/ha	101	116	208	260	246	307	368
Cost \$/t sugar	110	113	86	76	94	80	83
Transport cost \$/t sugar	24.8	24.8	22.3	21.5	26.5	24.4	27.3
Cost to mill \$/t sugar	167	174	156	151	183	168	188

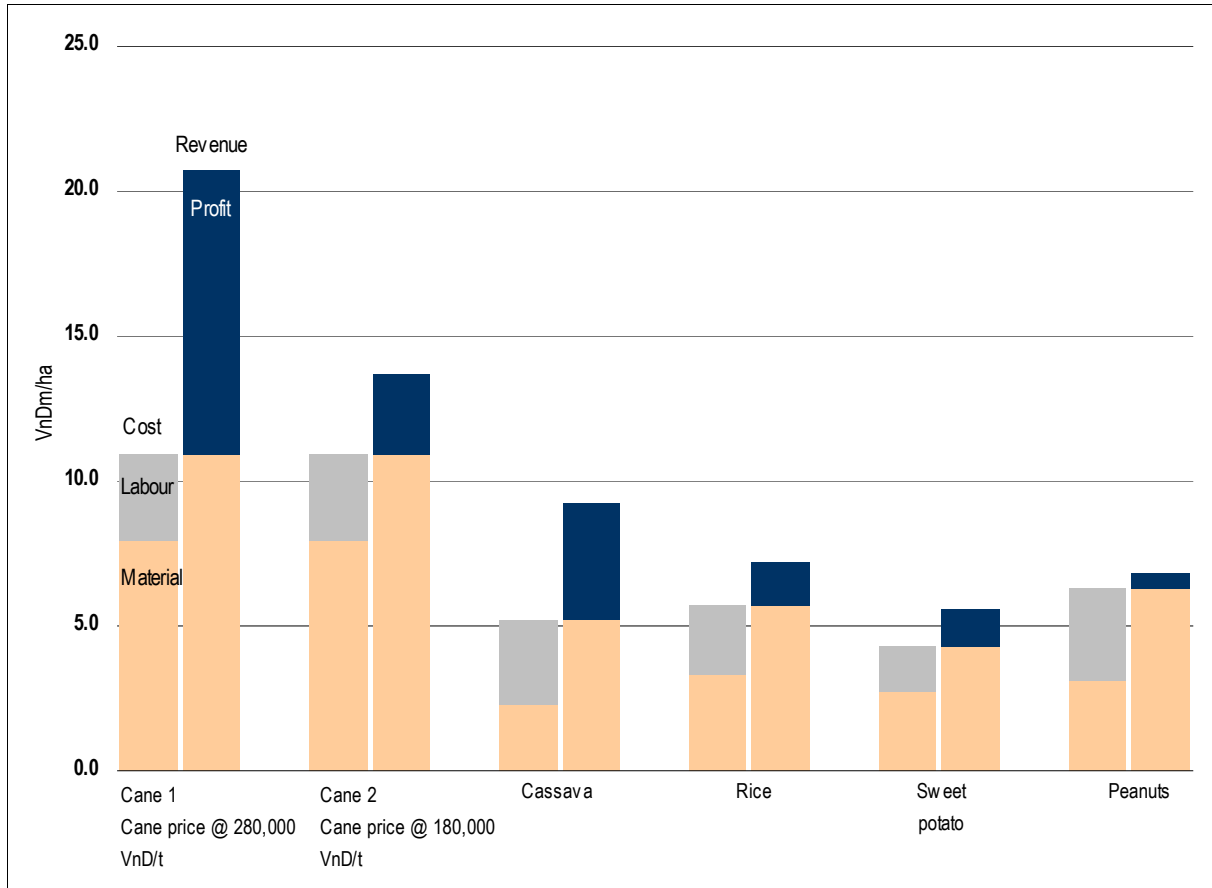
Source: CIE model.

Note: Gross margin measures return to farmer's labour and management over and above variable costs of production — farmers may also receive returns from harvesting and cultivating their own cane.

How returns from cane compare with those for alternative crops in the minds of farmers is not easy to ascertain. Returns are likely to vary from region to region and farmer to farmer depending on managerial abilities and attitudes toward risk and the suitability of land and climate to grow particular crops.

The most comprehensive estimates of relative profitability between sugarcane and alternative crops that we have seen are for the Lam Son mill area (CRP 2000) – chart 5.9. Chart 5.9 shows two profit figures for sugarcane, one at a cane price of VnD 280 000 a tonne of cane for years before 1999–2000 and the other at last year's price of around VnD 180 000 a tonne. At last year's price, cane is seen to be nearly twice as profitable as rice, but less profitable than cassava.

5.9 Relative profitability of competing crops in the Lam Son mill area



Data source: CIE, MARD, Field data.

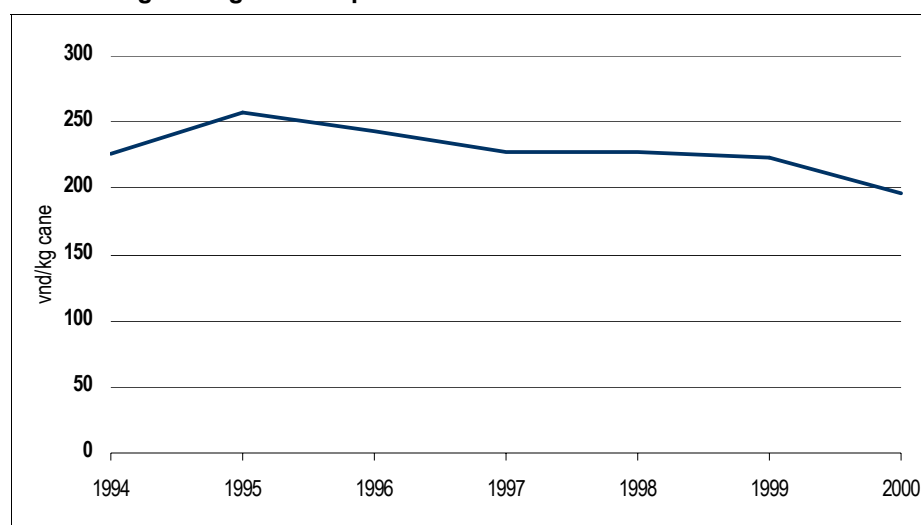
Lam Son mill area achieves well above average yields for sugarcane, 70 tonnes per hectare versus a Vietnam average of around 50 tonnes per hectare. It also faces relatively low rice yields compared with the Vietnam average. This would seem to suggest that in other areas where cane yields are lower and rice yields are higher, the competitiveness of cane is marginal. The FAO (2000) reports income per hectare for rice in the Mekong River Delta at \$303 per hectare, including returns to labour. The FAO estimates are within a comparable range to those for sugar provided in table 5.8.

Nonetheless, the diversity of growing conditions, agronomic practices, availability of land and water, proximity of mills all make it hard to generalise about cane's particular competitiveness relative to other crops. However, from our field visits and other information, we see no reason to believe cane production is exceptionally profitable relative to other crops at import parity sugar prices for vast tracts of land, and at current levels of

productivity. At the same time we see few physical constraints to the production of sugarcane. The main constraint limiting production is managerial ability, which limits the yields that can be achieved. Moreover, sugarcane production has increased dramatically over the past five years despite falling cane prices – chart 5.10. This might suggest that as managerial ability is improving, sugarcane is looking increasingly attractive to farmers.

In table 5.8 we have included an item land fees which covers any land taxes, land rental and normal rate of return to land. This varies by farm type according to yield difference. The lower the yield the higher the land fee. But in general, the opportunity cost of land is around 10 per cent of revenue and 17 per cent of costs.

5.10 Average farmgate cane prices



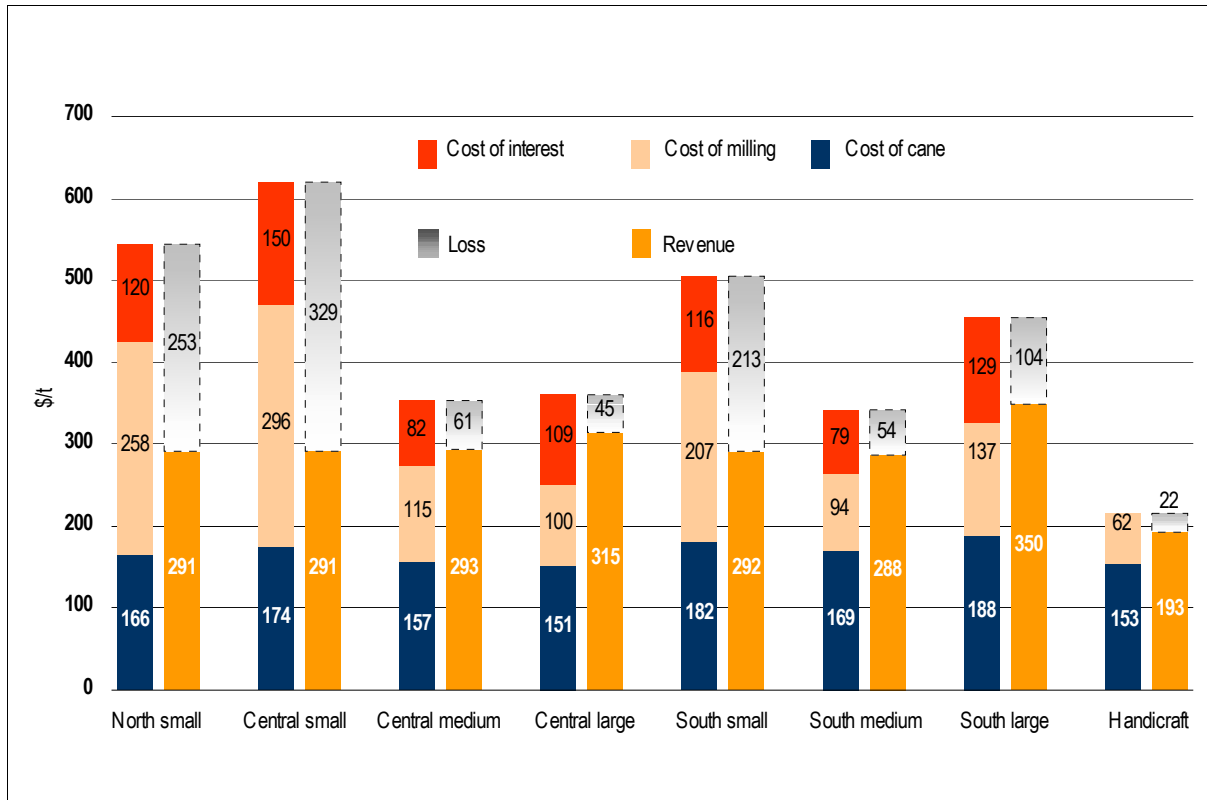
Data source: MARD.

Financial performance of mills

The financial performance of mills varies considerably depending on size, season length, sugar content of cane and extraction rates – chart 5.11. At import parity prices all classes of mills are failing to cover all of their capital costs. Most medium and large mills are able to cover their cash costs at import parity prices and make some return on capital to help pay interest or provide a return on equity. However small mills' costs are so high they are only able to cover between 60 and 75 per cent of their cash costs. The large mills in the South also appear to be having trouble covering all their cash costs. However, there are only two mills in that grouping and one had

a particularly short season last year. So the estimated financial position may not be indicative.

5.11 Average unit costs, revenue, profit and loss for various classes of mills



Data source: CIE model.

The costs included in the cash costs are outlined in table 5.12. Interest costs are calculated at 11 per cent (the common rate charged on loans for the building of sugar mills in Vietnam). Capital invested is calculated at the rate of US\$ 10 000 per tonne of capacity installed. This is the average of reported costs (French Study on Sugar and Cane Industry in Vietnam till 2010–2020) and is consistent with international benchmarks, although in some cases the quality of the capital purchased is not world class. Revenue is calculated as revenue from sales of all mill products (mill white, refined, molasses and ethanol) divided by the output of sugar. For this reason some mills achieve a unit price higher than others.

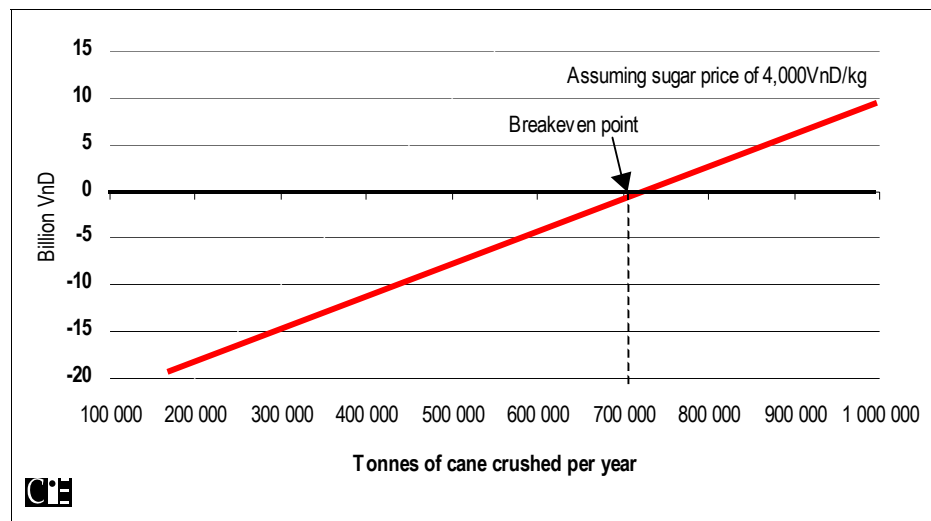
The indicative relationship between mill size and the cashflow breakeven point is illustrated in chart 5.13. There are only two mills in Vietnam with throughputs greater than the breakeven amount, given 1999–2000 cane prices.

5.12 Summary information from financial mills model

		<i>Small mill North</i>	<i>Small mill Central</i>	<i>Medium mill Central</i>	<i>Large mill Central</i>	<i>Small mill South</i>	<i>Medium mill South</i>	<i>Large mill South</i>	<i>Handicraft</i>
Mill Statistics									
Crushing Rate	t / d	767	815	1 600	5 625	950	2 125	5 750	8
Season Length	days	147	162	162	162	143	143	143	300
Factory Lost Time	%	26	45	11	35	14	-16	20	0
Crush	t	83 933	72 300	231 640	590 775	116 310	351 225	660 750	2 400
Sugar Extraction in Factory	%	77	77	83.23	83.6	77	83.2	83.6	70
Sugar content of cane	%	10.86	10.79	11.11	11.47	10.16	10.17	9.07	7.20
Sugar Production									
	t s	7 017	6 008	21 420	56 650	9 100	29 725	50 100	121
Molasses Production	t	3 357	2 892	9 266	23 631	4 652	14 049	26 430	0
Ethanol production	t	0	0	407	1 039	0	618	1 162	0
Total revenue	m Dong	29578	25332	91098	258660	38494	124180	253930	339
Expenses									
Cane Purchases	m Dong	16 887	15 183	48 644	124 063	24 053	72 633	136 643	268
Labour at Factory	m Dong	6 660	6 765	6 765	6 765	6 630	6 630	6 630	106
Materials & energy	m Dong	1 403	1 202	4 284	11 330	1 820	5 945	10 020	0
Corporate Overhead	m Dong	10 000	10 000	10 000	10 000	10 000	10 000	10 000	0
Other	m Dong	1 754	1 502	5 355	14 163	2 275	7 431	12 525	0
Refining margin	m Dong	0	0	0	22 313	0	0	43 286	0
Ethanol costs	m Dong	0	0	1 123	2 865	0	1 703	3 205	0
Total expenses	m Dong	36 705	34 652	76 172	191 498	44 778	104 343	222 309	374
EBIT	m Dong	-7 127	-9 319	14 926	67 161	-6 284	19 837	31 621	-35
Net VAT paid	m Dong	710	573	2 190	6 901	827	2 679	6 056	0
Operational Capital Expenditure	m Dong	5 707	5 726	6040	7 650	5 780	6 250	7 700	4
Cashflow	m Dong	-13 544	-15 618	6 696	52 610	-12 891	10 907	17 865	-38.912
	US\$m	-0.93	-1.07	0.46	3.62	-0.89	0.75	1.23	-0.00
Interest owed	m Dong	12 271	13 050	25 608	90 028	15 205	34 011	92 029	0
Total cost of operation	m Dong	54 682	53 428	107 820	289 176	65 763	144 604	322 038	378
Profit or loss	m Dong	-25 105	-28 096	-16 722	-30 517	-27 269	-20 424	-68 108	-39
	US\$m	-1.73	-1.94	-1.15	-2.1	-1.88	-1.40	-4.70	-0.00

Source: CIE financial model. Note EBIT is earnings before interest and tax.

5.13 Indicative cashflow breakeven point for mills



Data source: CIE model.

Given the distinct economies of scale in milling and Vietnam's reliance on small mills, the poor financial performance of mills is perhaps not surprising. Vietnam's low wage rates appear to provide little advantage to a sector that is highly capital intensive. For a capital-intensive sector such as milling to be competitive, it must use its capital productively. With small mills it seems it is not possible to achieve sufficient throughput to adequately spread the fixed costs of capital and other operational costs.

Sugar's contribution to the Vietnam economy

Combining the indicators and financial information above into our model of the Vietnamese sugar industry (also see appendix B), we are able to make an estimate of what the industry contributes to the Vietnamese economy. The industry's contribution to the economy can be measured in terms of the value of sugar imports it displaces, less the (opportunity) cost of resources used up in producing that sugar.

Because last year's price was close to the long-run average import parity world price of sugar, valuing last year's production and sales at last year's domestic wholesale prices gives a fairly good idea of the gross value of sugar production to the Vietnam economy. This amounted to US\$322 million as summarised in chart 2.4.

The cost of resources used up to produce sugar

By one measure, the cost of resources used up producing the US\$322 million worth of sugar products reported in chart 2.4 amounts to an estimated US\$404 million, some 25 per cent or US\$82 million above the value of output – chart 5.14. However, these costs exclude the cost of capital used up to develop farm infrastructure (US\$345 million). This could have an equivalent annualised cost of another US\$38 million a year. If we include this cost it would alter the distribution of costs and revenues in chart 5.14 to be those in chart 5.15. We have excluded the \$38 million from the model because it represents a one off or sunk cost that is unlikely to be repeated even if sugarcane production expanded further.

Variable inputs

The industry is reliant on buying various inputs from other industries or other countries to maintain production. These vary directly with the volume of output. Variable inputs include such items as fertiliser, energy, pesticides, chemicals, spare parts, other materials and transportation. We have also assumed that land is a variable factor – box 5.16. The cost of land is represented by any taxes and rentals payable plus the normal profit that could be earned from the land were it used for an alternative crop. As discussed earlier, this amounts to about 10 per cent of revenue. Cost of all variable factors is estimated at 33 per cent of total costs valued at their market prices in chart 5.14 and 30 per cent in chart 5.15.

Labour

Over one million people are involved at least part time in the industry. The costs of labour in cane growing, harvesting, loading and milling amount to an estimated 29 per cent valued at market rates in chart 5.14 and 27 per cent in chart 5.15.

Return to management and entrepreneurship

To induce farmers to switch from other crops to sugarcane, they must anticipate a return that covers the profit they would receive from an alternative crop plus a premium over and above this amount to make their switching worthwhile. The profit from alternative crops we have already accounted for under variable factors as land fees. The estimated cost that must be paid to farmers as managers and entrepreneurs to switch their land and other resources to sugarcane production is around 10 per cent of

5.14 Distribution of costs and revenues

Costs of production	\$404 million				
Cost of inputs	Payment for variable inputs 33%	Payments to labour 29%	Cost of fixed factors in cane 10%	Cost of capital 28%	
Total value of output	\$322 million 80%			Financial loss \$82 million 20%	
Returns to activities	Returns to cane growing 58% of value of output		Returns to milling 39% of value of output		Implicit negative return to financiers
Returns to factors	Returns to purchased inputs 33%	Returns to labour 29%	Return to fixed factors in cane 10%	Return to milling capital 8%	Implicit subsidy from financiers 15%
				Refined 4%	Handicraft 3%
					Ethanol 1%

Data source: CIE model and MARD.

5.15 Costs and revenues with cane infrastructure costs

Costs of production	\$442 million				
Cost of inputs	30% Variable inputs	27% Labour	9% Fixed factors (Cane)	26% Milling capital	8% Cost of cane growing infrastructure
Total value of output and financial loss	\$322 million 73%			Financial loss \$120 million 27%	

Data source: CIE model and MARD.

total costs in chart 5.14 and 9 per cent in chart 5.15. This is termed the return to fixed factors in chart 5.14. Also see box 5.16 and later discussion.

Milling capital and management

The milling sector is highly capital intensive. With crushing capacity costing an average of US\$ 10 000 a tonne and around 78 000 tonnes of installed capacity, the total cost of milling capital is around three-quarters of a billion US dollars. At an interest rate of 11 per cent (the common interest rate being charged on sugar investments in Vietnam), the annualised cost of capital is about US\$80 million a year. On top of this, is a cost to induce capital and management to switch from alternative activities to sugar milling. In aggregate, we estimate the cost of milling capital and management (mostly interest) to be around 28 per cent of total costs valued at an 11 per cent expected rate of return in chart 5.14 and 26 per cent in chart 5.15.

One-off capital costs of infrastructure in cane areas

As discussed, considerable capital (\$345 million) has been invested in infrastructure in cane areas to assist farmers to convert from other crops to cane. At an interest rate of 11 per cent, the annualised costs of the capital is \$38 million or 8 per cent of total annual costs shown in chart 5.15.

The sugar industry appears to be imposing a cost on the economy

On the basis of the estimates in chart 5.14 and 5.15, the industry is not covering its costs of capital and not making a positive contribution to the economy. At import parity prices it could not repay its interest. In effect, subsidies of US\$82 to 120 million a year are required from the rest of the economy to cover its costs. The industry would appear to be imposing a US\$82 to 120 million a year loss on the Vietnam economy. However, the contribution of the industry to the Vietnam economy also depends to some extent on the values placed on the inputs used up. These values depend critically on what the resources could have earned in alternative activities.

The opportunity cost of capital

In the case of the capital employed, assuming it could have earned 11 per cent somewhere else in Vietnam seems reasonable, especially given that much of the money borrowed was at this rate. However, we also note that some enterprises in Vietnam (particularly private ones) have to pay 15 per cent rates of interest or higher. This suggests those industries are able to

make a rate of return on capital higher than the interest rate. If so, this suggests that by allocating capital to the sugar industry we may be forgoing the opportunity to allocate it to other industries (or sectors) where it could earn much higher rates of return. On this basis, it might be argued we may be underestimating the cost of capital. We should therefore treat the \$82 to 120 million a year financial loss as a minimum estimate.

The opportunity cost of capital is now largely a forgone opportunity to the economy because, once invested the capital is sunk. It cannot be reallocated to other industries. And it is for this reason that the decision to allocate it to sugar has prevented it returning a sound income stream to the economy in the future.

Many people will argue that the investment in mills and cane area infrastructure is not an on-going annual cost in an economic sense, although it may be visible as an ongoing annualised financial cost in the form of interest repayments. Much of the \$345 million invested in infrastructure may have been paid for by the Government at the time and no longer be an on-going cost to the Government or industry. It is now a sunk cost. It nonetheless has imposed an on-going opportunity cost on the economy. This can best be illustrated by imagining if the Government had borrowed the money internationally to invest in infrastructure. It would then need to service that debt at a rate of around \$38 million a year. This would be income not available to Vietnam. But even if it did not borrow the money, that it was spent on sugarcane areas, means it could not be spent on other investments that by now we would expect to be earning at least \$38 million a year for the economy. This income opportunity has been forgone and therefore represents a lost opportunity to the economy.

The same is true for milling capital. Investments in mills may be regarded as mostly sunk costs. They have nevertheless prevented that capital being invested in other industries and so income has been forgone. In the case of milling, the interest payable on loans borrowed to fund mill construction helps make this cost to the economy more visible.

The opportunity cost of labour and purchased inputs

The use of market prices to value the costs of variable purchased inputs seems reasonable as it assumes that these same inputs could have been used at that price somewhere else in the economy or that they could have been exported, or not imported in the case of imports.

The use of market wage rates to value labour similarly assumes that the amount of labour could have been employed elsewhere in the economy at

its market rate. Some people may argue that this is not the case: that if sugar related employment was not available, the people now employed would be under-employed and unable to earn the wages they do. However, this implies wages are being paid that are substantially above market wage rates and that the land being used to grow cane does not have alternative uses that would provide work. This may be true in some cases but is unlikely to be true in general.

The opportunity cost of land and economic gain from producing sugarcane

The cost that must be paid to induce farmers to switch their land from rice, cassava or some other crop is estimated as a residual, after taking account of all revenues and other costs. For cane growing to be attractive, farmers must at least receive the profits they would anticipate from alternative crops – the opportunity value (cost) of land. Over and above this amount farmers are likely to expect to make a premium as a return to their management specialisation or perceived risk of growing an alternative crop – box 5.16. There is no opportunity cost associated with this premium and it therefore represents a gain in income to the economy.

We cannot be sure of the division between the opportunity cost of land and the premium that might be achieved from growing cane. As stated before:

- they are likely to vary from region to region and farmer to farmer depending on managerial abilities and attitudes toward risk and the suitability of land and climate to grow particular crops; and
- we see no reason to believe cane production is exceptionally profitable relative to other crops at import parity prices for vast tracts of land, and at current levels of productivity.

Although we see no evidence that the premium from sugarcane is large, it must be large enough to induce farmers to switch from an alternative crop. Given the increase in production in recent years, cane farmers must be realising some premium. Our judgement is that a premium of around 10 per cent of costs would be needed to keep current quantities of resources locked into cane production. On this basis, we conclude that sugarcane provides a pure gain to the economy of around \$40 million a year.

The value of output minus the costs of inputs

However, set against the \$40 million gain to the economy coming from the benefits of growing cane is the \$38 million opportunity cost of capital used up to develop infrastructure for cane growing regions. These two items

roughly cancel each other out, delivering a net gain of only \$2 million annually. This leaves the loss on milling capital and management, which is a 20 per cent deficit of revenues over costs or US\$81.5 million dollar annually. Adding the net gain of \$2 million, the cost of the sugar industry and its policies to the Vietnamese economy is an estimated \$79.5 million a year.

5.16 Payments to fixed factors

Land is usually considered to be a scarce or fixed factor of production. The value of land, which reflects its scarcity, would depend on three factors:

- the amount of available land
- its ownership structure
- the profitability of relative crops.

Although total agriculture land is scarce, within an effective mill area, land available for sugar would not be tightly limited. The effective mill area would be that where it is feasible to transport cane to a mill for processing. In most regions, land planted to cane accounts for only part of the effective mill area.

Ownership is also an important factor. The ownership structure of land in Vietnam has devolved from a communal system to one involving land being allocated to a large number of small holders. Farmers use land on a leasehold basis but are required to pay fees. From an industry perspective, there are no constraints to land being used for sugar through ownership.

Finally, the decision on how much land to allocate to sugar would then depend on the relative profitability of each crop. Indeed, land allocated to sugar has changed dramatically in recent years. How these decisions are made would also depend on:

- relative prices
- attitudes to risk
- management skill.

The decision for small holders to grow several crops is a sensible risk management strategy. Those who grow more cane than the average small holder may do so because of management experience relative to other crops.

Given that land available for sugar appears not to be a scarce factor and that relative prices of competing crops remains unchanged — we assume that land is a variable factor of production which can be switched quite easily between crops over the short to medium term. The payment to land would include the opportunity cost of other crops.

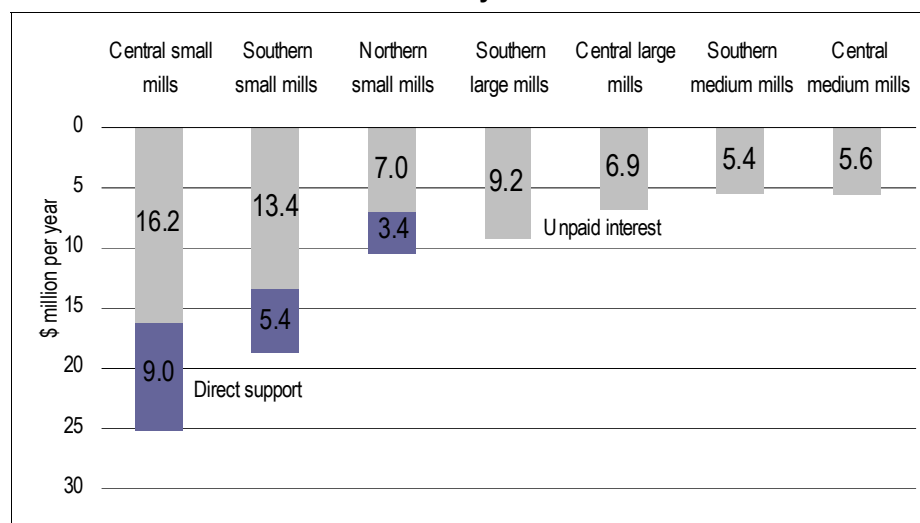
Therefore, management capabilities and attitudes to risk appear to be scarce factors — the value added remaining after payments to land and labour is therefore the return to the fixed factor — management.

Although some farmers may be enjoying slightly higher returns per hectare from switching to cane, this has only been possible due to losses being made in milling and from installing the initial infrastructure to allow this to happen. For most mills, there is insufficient revenue to cover interest costs

or the opportunity cost of capital which makes up 75 per cent of the financial loss. This is an implied subsidy to mills from financiers who would not receive their interest at import parity price levels. For most of the small mills there is also insufficient revenue from sales to cover all cash costs of labour and variable inputs. At import parity price level these mills would require a direct subsidy in the form of direct support from government or a government backed loans from banks to remain solvent.

The distribution of subsidies by mill size and region is set out in chart 5.17. It can be seen that small mills receive all the direct support and most of the interest subsidy in terms of unpaid interest. In total small mills receive \$54.4 million dollars or 67 per cent of the subsidies or supports.

5.17 Breakdown of \$81.5 million subsidy



Data source: CIE model.

Should mills be granted direct supports, the division of sales revenue plus the direct subsidy would provide the returns to various activities as shown in chart 5.14. Fifty-eight per cent of returns would accrue to cane growing. This may seem high, but most of the return to the handicraft and chewing cane activities returns directly to the farm, and total revenue from sales of handicraft sugar and chewing cane amount to 23 per cent in total – chart 2.4. Thirty-nine per cent of returns would accrue to milling, and minor returns would accrue to refining, handicraft milling and ethanol distilling.

6

Future competitiveness

The results and indicators presented in chapter 5 raise many questions about how the industry will perform in the future. Technical indicators suggest Vietnam has considerable scope to increase productivity, but as was discussed in chapter 4, if small state-owned mills continue to be subsidised by Government, and imports continue to be restricted raising domestic prices, competition and the incentive to adopt better technologies may be reduced. Moreover, if Government continues to restrict imports, and productivity growth is slow, rapidly rising demand may force domestic prices higher imposing additional costs on the economy. To investigate these matters further, here we use the value chain model to assess how efficiently the industry might develop under a range of policy scenarios.

Future consumption growth

With population growth at over 1.5 per cent a year and annual per capita income growth of around 4 per cent, it is not difficult to envisage sugar consumption growth of around 5 per cent per annum over the next five years. Typically in countries with low per capita consumption, as incomes increase consumers have a relatively high propensity to spend additional income on sugar. Typically, consumption growth is at least proportional to income growth, so a one per cent increase in income results in a one per cent increase in sugar consumption.

In table 6.1, we show two results from simulations using the model. The first column of results (scenario 1) summarises production, consumption, trade, prices and measures of welfare estimated from the model for the 1999–2000 season. The US\$119.5 million in annualised subsidies discussed in chapter 5 (\$17.9 million in direct subsidy, \$63.6 million in interest subsidy to mills and \$38 million in annualised infrastructure costs) are included. The producer income or pure economic gain of \$40 million being derived from the industry is also included. This is shown as a negative cost and therefore is a benefit. Consumer income is seen to be zero as the industry neither adds to nor subtracts from their income when import parity prices are charged. So the annualised net cost to the economy

(including annualised sunk costs) is \$79.5 million. The price is that which was observed in 1999–2000 of 4000 VnD per kilogram or the import parity price.

6.1 Simulation results

	Scenario 1 2000 <i>(Model base)</i>	Scenario 2 2005 <i>(Demand increase)</i>
Production		
Cane (mt)	17.8	17.8
Sugar (kt)	763	763
Handicraft (kt)	254	255
Consumption		
Sugar (kt)	704	999
Handicraft (kt)	254	255
Trade		
Exports (kt)	50	
Imports (kt)		246
Mill white price (dong/kg)	4 000	4 000
Tariff %	0	0
Costs		
Explicit subsidy (\$m/yr)	17.9	17.9
Interest subsidy on mills (\$m/yr)	63.5	63.5
Subsidy on infrastructure (\$m/yr)	38.0	38.0
Producers' income (\$m/yr)	-40.0	-40.0
Consumers' incomes (\$m/yr)	0.0	0.0
Total (\$m/yr)	79.5	79.5

Source: CIE model.

Consumption is likely to increase by over 40 per cent by 2005

For the purposes of analysis and comparison, in the second column of table 6.1, we project forward the economic situation that applied in 1999–2000 by five years to take account of the potential for consumption to increase. We assume 1999–2000 import parity price of sugar to prevail by assuming trade barriers remain ineffective or do not apply. We also assume that, without trade protection, the subsidies of US\$81.5 million a year would be required to keep all mills open, and so we leave these in place. So the annual cost of the sugar industry on the economy is \$79.5 million a year. However, to project consumption forward 5 years, we allow consumption to grow in response to population and income growth. The increase in consumption measures the demand potential if consumers were charged the world import parity price of sugar. The result indicates the scope for consumption growth of over 40 per cent.

The industry faces a big challenge to match consumption growth

With no changes to prices, subsidies or productivity, production would stagnate at 17.8 million tonnes of cane and 763 thousand tonnes of sugar. Imports, which reach 246 thousand tonnes by 2005, or around 25 per cent of consumption, make up the shortfall of production over consumption.

Although scenario 2 helps measure the potential for sugar consumption to expand at competitive world prices, it does not measure fully the impact of competitive world prices on production, as the industry remains protected from the full forces of international trade by the subsidies received.

The impact of subsidies on the industry and wider economy

To assess the industry's international competitiveness it is necessary to remove the subsidies. This we do in scenario 3 – table 6.2.

Without subsidies, or tariff protection small mills close

Scenario 3 suggests that if fully exposed to global competition, the Vietnamese sugar industry would contract substantially – 35 per cent – to 495 thousand tonnes a year. By 2005, production would only meet about 50 per cent of consumption. The remainder would be imported. Removing all subsidies would:

- close down all small mills in the South and Centre and most of the mills in the North:
 - small mills could no longer compete for cane with large and medium sized mills;
 - to keep remaining mills open and viable, cane prices would need to fall by 20 to 30 per cent depending on the region;
- the fall in cane prices would induce reductions in cane production;
 - cane production would fall 20 per cent overall;
 - but cane production for sugar milling would decline by 30 per cent;
- with the lowering of cane prices, handicraft sugar production and consumption would increase somewhat, as would chewing cane.

Larger mills become more competitive but cane prices fall

The results clearly demonstrate how subsidies to small mills help them compete with medium and large mills and protect small mills from the

forces of international competition. Medium and large mills and the cane farmers supplying them appear to be internationally competitive, provided subsidies are not paid. However, to remain viable without interest rate subsidies themselves, medium and large mills are forced to lower cane prices substantially. Although the reduction in prices causes relatively inefficient cane producers to switch to alternative crops, relatively efficient farmers are able to maintain production despite the fall in price. This reduces growers' incomes considerably, but for some, sugarcane remains the most profitable crop.

6.2 Simulation results: effect of subsidies

	Scenario 2 2005 (Demand increase)	Scenario 3 2005 (No subsidies)
Production		
Cane (mt)	17.8	14.7
Sugar (kt)	763	495
Handicraft (kt)	255	265
Consumption		
Sugar (kt)	999	999
Handicraft (kt)	255	265
Trade		
Exports (kt)		
Imports (kt)	246	515
Mill white price (dong/kg)	4 000	4 000
Tariff %	0	0
Costs (including sunk costs)		
Explicit subsidy (\$m/yr)	17.9	0
Interest subsidy (\$m/yr)	63.5	0
Cost of bad debt (\$m/yr) – sunk	0.0	38.1
Subsidy on infrastructure (\$m/yr) – sunk	38.0	38.0
Producers' income (\$m/yr)	–40.0	(–40 +34.3) –5.7
Consumers' incomes (\$m/yr)	0.0	–3.4
Total (\$m/yr)	79.5	67.0
Less sunk costs	–76.1	–76.1
Current benefit to the economy	–3.4	9.1

Source: CIE model.

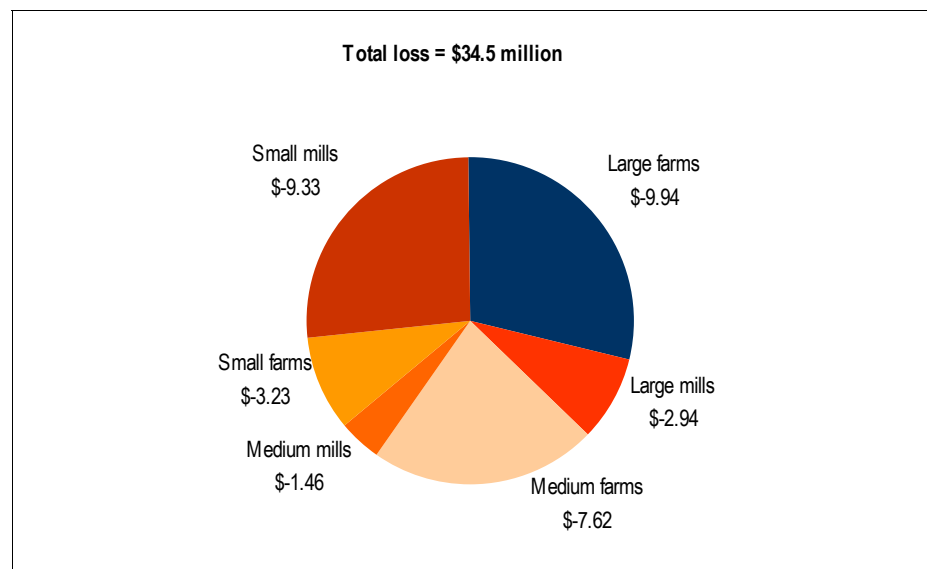
Lower cane prices hurt cane farmers most

Reductions in producers' incomes due to the withdrawal of the subsidies are summarised in chart 6.3. In total producers' incomes decline by US\$34.5 million a year, but farmers' incomes decline the most. This is due to the fact that when forced to cover all their costs themselves, mills cannot afford to

pay the prices they have been paying for cane. This reduces the returns to cane farming.

However, producers' incomes do not decline by the full amount of the removed subsidy. The closing of small mills eliminates the explicit subsidy of US\$17.9 and therefore eliminates wasteful resource use. But the closures also leave US\$38.1 million a year in unpaid interest on the capital embodied in small mills. This needs to be written off as a bad debt and represents the annualised value of the sunk cost in milling capital. The lump sum sunk cost is \$346 million. Producers are in no position to repay this amount and therefore the loss is likely to be imposed on the wider economy, as the Government is likely to be required to raise taxes to pay for the loss.

6.3 Losses are passed to farmers mostly



Source: CIE model.

Removing the subsidy lowers the cost of the program

Relative to the situation where the industry's losses are fully subsidised (scenario 2), without the subsidy (scenario 3) the total annualised cost that the industry is imposing on the economy is reduced to US\$67 million a year, US\$12.5 million a year (or 15 per cent) lower than scenario 2. Of the original \$79.5 million cost (scenario 2), closure of small mills leaves \$38.1 million a year in unpaid interest or bad debt that must be met by Government. Producers lose \$34.5 million because \$25.5 million of debt is transferred to remaining mills and cane prices decline transferring this to cane farmers. However consumers of handicraft sugar and chewing cane

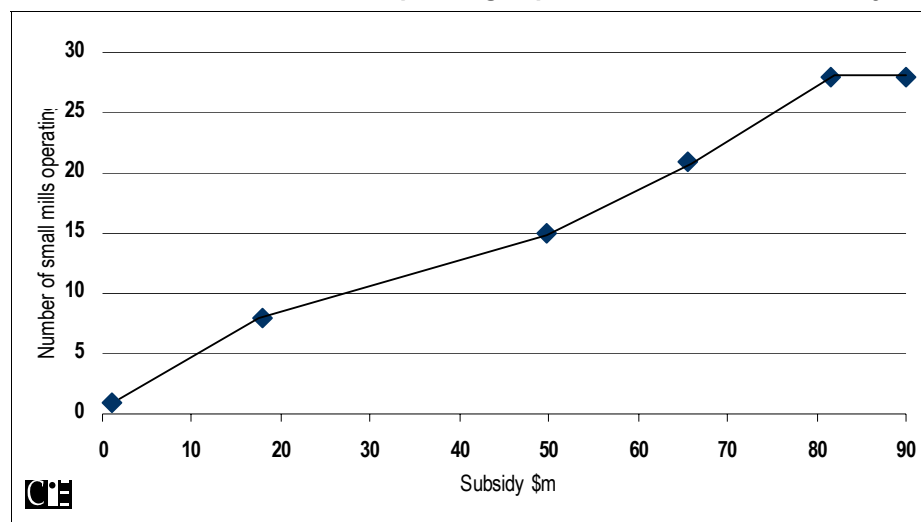
receive a small benefit of \$3.4 million due to the decline in cane prices. Sugar prices do not decline as the price is set by import parity prices. Overall, the net effect of all these changes on the economy is to make it better off by \$12.5 million than under scenario 2. Omitting sunk costs, the industry would make a \$9.1 million dollar current contribution to the economy compared with a current \$3.4 million dollar loss.

The increase in efficiency would be considerably greater (\$38.1 million a year) were the investment in small mills not made in the first place. Then the annual debt of \$38.1 million could have been avoided.

Small mills are highly dependent on receiving the subsidy

The relationship between the level of subsidy and the number of small mills that remain open is shown in chart 6.4. To obtain these results we ran the model several times to simulate various levels of subsidy paid. The chart shows there is an almost linear relationship between the number of mills left open and the amount of subsidy paid. Each additional US\$3 million a year in subsidy spending keeps one additional small mill open.

6.4 The number of small mills operating depends on the level of subsidy



Data source: CIE model.

A huge increase in subsidy would be required to make the country self-sufficient

Estimating the impact of removing subsidies is instructive to evaluate how competitive the Vietnamese sugar industry might be if fully exposed to global competition. However, politically mill closures would be unpopular.

Indeed groups and regions associated with small mills may lobby for increased subsidies to raise levels of self-sufficiency.

To assess the costs of using subsidies to expand production to remain self-sufficient in sugar, we solve the model to derive such a subsidy. It turns out that this would cost an estimated additional US\$109 million a year on top of the US\$81.5 million dollar annualised subsidy already discussed. The total subsidy would then reach US\$190.5 million a year. This would be a very large and visible on-budget item.

A large proportion of the subsidy would end up being paid to cane farmers to encourage them to produce more cane and to cover their increasing marginal costs. The higher costs of cane would drive up the price of handicraft sugar and chewing cane, reducing consumers' incomes by around US\$20 million. This would appear to be an expensive option for targeting an objective of self-sufficiency. However, it would keep all mills open and see even small mills expand.

The impact of trade restrictions on the industry and economy

Politically, subsidies may create various problems. Their large and rising costs are likely to be highly visible. Politically and economically their continuation will be difficult to justify in an economy with little capital and many competing alternative uses for funds. They may even be unpopular within the industry because the industry will continually operate under a threat of losing its subsidies.

Politically, trade restrictions are likely to be a preferred and less visible way of protecting the industry. These are already in place although they became ineffective in 1999–2000 due to the surge in production and the small excess of production over consumption in that year. In expectation of a smaller crop in 2000–2001, growing consumption and no market excess, prices have increased well above import parity level again. As long as consumption grows more quickly than production, and smuggling can be controlled, trade restrictions are likely to offer protection to the industry. The industry is likely to lobby strongly for this sort of protection rather than subsidies. As consumption grows, Government is likely to come under pressure to maintain protection at levels that will achieve self-sufficiency. This raises questions about the costs of such protection.

A 40 per cent tariff would achieve self-sufficiency

Model results indicate that trade restrictions that raise the domestic wholesale price by around 40 per cent above the import parity price are required to achieve self-sufficiency – scenario 4 table 6.5. This could be achieved through quantitative import controls or a 40 per cent *ad valorem* tariff. With this level of trade protection, self-sufficiency could be achieved without the need for subsidies.

6.5 Simulation results: effects of trade restrictions

	Scenario 2 2005 (Demand increase)	Scenario 3 2005 (No subsidies)	Scenario 4 2005 (Tariff)
Production			
Cane (mt)	17.8	14.7	18.3
Sugar (kt)	763	495	815
Handicraft (kt)	255	265	249
Consumption			
Sugar (kt)	999	999	753
Handicraft (kt)	255	265	249
Trade			
Exports (kt)			50
Imports (kt)	246	515	
Mill white price (dong/kg)	4 000	4 000	5 750
Tariff %	0	0	39
Costs (including sunk costs)			
Explicit subsidy (\$m/yr)	17.9	0	0
Interest subsidy (\$m/yr)	63.5	0	0
Cost of bad debt (\$m/yr) - sunk	0	38.1	28.2
Subsidy on infrastructure (\$m/yr) - sunk	38.0	38.0	38.0
Producers' income (\$m/yr)	-40.0	-5.7	(-40-23.5) -63.5
Consumers' incomes (\$m/yr)	0.0	-3.4	95.6
Total (\$m/yr)	79.5	67.0	98.3
Less sunk costs	-76.1	-76.1	-76.1
Current annual benefit to the economy	-3.4	9.1	-22.2

Source: CIE model.

Consumption would decline more than production would increase

Higher domestic prices achieve self-sufficiency in two ways. They encourage production, but also discourage consumption. In scenario 4, most of the adjustment can be seen to occur on the consumption side. Compared with scenario 2, consumption declines by around 25 per cent, while production increases by only 7 per cent. Although producers receive

sugar prices 40 per cent higher than in scenario 2, they also lose their subsidies. The increased revenue puts them in a position to pay their interest and we have assumed the Government would no longer pay direct subsidies to small mills.

With the loss of subsidy mills' profitability is not increased as greatly as might be expected from a 40 per cent increase in price alone. However this varies by type of mill. Small mills gain least in total because the increase in price is virtually offset by the loss of subsidy. By contrast medium and large mills that received low subsidies in scenario 2 gain greatly. This also raises their competitiveness relative to small mills.

Medium and large mills become more competitive relative to small mills

To expand, medium and large mills must encourage cane farmers to increase production. In competing for cane they bid up its price. In the Centre prices are bid up around 20 per cent. In the South the increase in price is less but averages around 4 per cent. In the North where there are no medium or large mills, cane prices fall, indicating that the increase in sugar price does not completely compensate mills for their loss of subsidy.

Medium and large mills expand but many small mills close

The added ability of medium and large mills to bid up prices relative to small mills sees medium and large mills expand by between 30 and 50 per cent. However, the combination of higher cane prices and withdrawal of subsidies leaves small mills unable to compete for cane with bigger mills and they are forced to close. The reduced ability to bid for cane by small mills in the Centre causes all such mills to close. In the North and South 20 to 30 per cent of them are also forced to close. In total, 17 of the 28 small mills would close, but cane production would expand by 3 per cent.

Medium and large mills would absorb much of the cane of farms that previously supplied to small mills. They would also attract some cane away from handicraft and chewing activities. Transport costs of medium and large mills would increase but with better use of excess capacity, milling costs would decline. In total these two influences would roughly compensate for each other.

The costs of subsidies would decline, but consumer costs would soar

The increasing concentration of production in efficient mills would increase the efficiency of resource use and lower costs. The elimination of the

explicit subsidy would be a saving to taxpayers. The bad debt for interest unpaid would decline to \$28.2 million. All open mills would pay their interest, but the interest due from the 17 closed mills would be passed to taxpayers or the wider economy. Because of increased prices to remaining mills and higher cane prices to cane farmers, producers' incomes would increase by an estimated \$23.5 million. However, the higher prices of sugar paid by consumers and the 25 per cent decrease in consumption that induced would reduce their incomes by the equivalent of \$95.6 million a year. Handicraft sugar and chewing cane consumption would also fall due to the increase in cane prices. In total, sugar policies would cost the country around \$100 million a year including sunk costs compared with \$67 million only under free trade and no subsidies - scenario 3.

On a current cost basis the sugar industry policies would make the economy \$22.2 million a year worse off, compared with contributing \$9.1 million under free trade. Effectively, trade restrictions would cost the economy \$31.3 million a year.

With trade protection costs are passed to consumers

Trade protection may appeal to producers and be politically more appealing because compared with a subsidy, the costs are off-budget. Nonetheless, the costs of supporting uncompetitive levels of production are still imposed on the economy. Instead of being visible and on budget, they are hidden away as relatively small costs to millions of consumers. In addition, costs will be imposed on the economy in terms of a misallocation of resources away from activities that are economical for the country toward an activity that is not. Production of sugar will be at a level that is not economical for the country.

Although household consumers may tolerate the loss of income, industrial users will be more aware of the effects of high prices. High prices will reduce their competitiveness on the domestic and export markets. As a result their outputs and incomes will be lower. They are likely to resist the trade restriction measures.

Restrictions on imports do not sit comfortably with Vietnamese ambitions to gain benefits from more open trade through memberships of regional and multilateral trade agreements such as AFTA, APEC and the WTO. Restrictions on sugar imports will attract the attention of the international community and Vietnam will increasingly come under pressure to lower its sugar protection. Moreover, restricting imports of sugar may attract retaliatory actions from other countries. Vietnam may be denied access for some of its exports. This would impose additional costs on the economy.

The impact of higher productivity on the industry and economy

The considerable variation in technical performance of sugar enterprises in Vietnam and the industry's comparative international performance against various international benchmarks suggests there is substantial scope for productivity increases. Over the next five years Vietnam is likely to achieve productivity gains on farm and in mills. Moreover, the greater the concentration of milling in medium and large mills, the greater the likelihood of such gains being achieved. As previously discussed, larger enterprises are likely to be able to command the resources required to conduct successful research, development and extension programs. And the greater the competition between mills and the fewer discriminatory subsidies paid, the greater the incentive for these mills to pursue productivity gains.

The scope for productivity growth

An earlier study (Study on Sugar and Cane Industry in Vietnam till 2010-2020 – French) on the technical potential of the Vietnamese sugar industry concluded that current yields of sugar per hectare are only 55 per cent of their potential. An 80 per cent increase in yields may be possible under ideal conditions, made up from the multiplicative effects of about a 50 per cent increase in cane yields and a 20 per cent increase in sugar content of cane. However, while the potential appears enormous, the study notes that since 1985, yield increases have occurred at the rate of about 1.7 per cent a year only. In the four years to 1997 the rate had speeded up to around 2.3 per cent, although four years of data is not very reliable. At these rates of increase it would take about 30 to 35 years to realise the potential.

Our own field visit observations confirm that the technical potential suggested by the French study may be possible. The main question is one of timing. Such gains would come from:

- implementing proven agronomic practices:
 - better application of fertiliser;
 - basic controls of various cane diseases and pests;
 - better control of soil moisture through drainage, irrigation, growth of cane in larger more concentrated continuous areas and scheduling of harvesting;
 - better timing of input applications;
- the selection of better cane varieties;

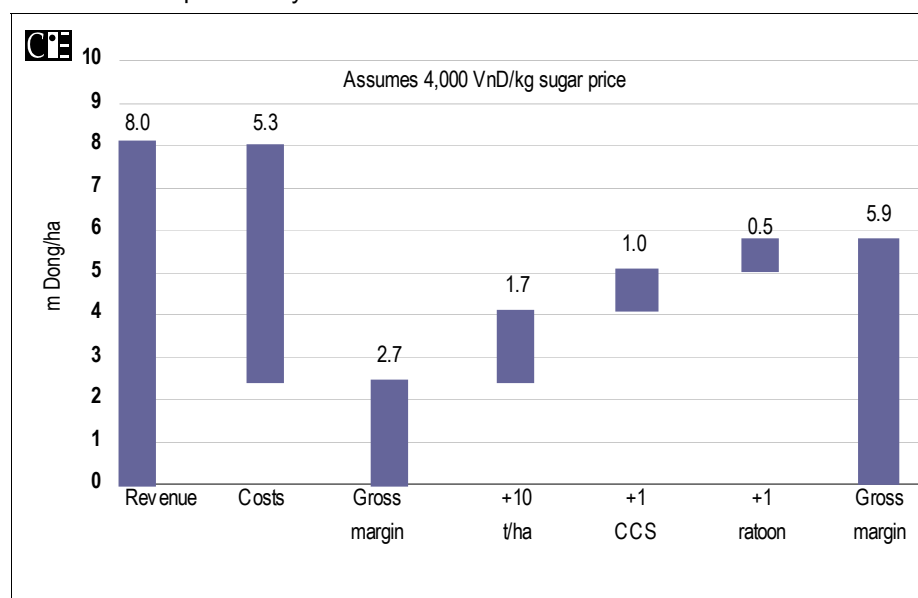
- growing more ratoon crops as a result of better farm management practices without large yield declines; and
- growing cane in more concentrated areas and closer to mills to reduce transport costs and achieve various agronomic economies of scale.

Such changes would be relatively simple to achieve over time. Vietnam has low labour costs per tonne of cane compared with most other cane producing countries, and increasing yields could lower them further. Given the low labour costs little is to be gained from mechanising cane production, particularly in harvesting.

The financial effects of the sorts of productivity increase that might be achieved over a five to ten year period for a hectare of land are outlined in chart 6.6. The indicative numbers assume a 20 per cent increase in cane yield, a 10 per cent increase in sugar content and a cost saving arising from achieving an additional ratoon crop before replanting. Such changes could double the gross margin per hectare.

At mills the potential for achieving productivity increases is probably less. Unlike in farming where sugar yields per hectare could, at the extreme, be nearly doubled, in milling there are more defined limits: extraction rates could be raised perhaps 12 per cent, and capacity utilisation perhaps 30 to 40 per cent. However, increases in sugar content on-farm also provide a boost to productivity in the mill, which is captured automatically in the model.

6.6 Indicative increases in farm productivity over the next five to ten years: effects on profitability



Data source: CIE model.

Larger mills will be better able financially than small mills to undertake changes necessary to achieve productivity increases. Indeed, small mills are unlikely to be able to afford the sorts of changes needed, which are likely to be expensive because of the sort of technology they have installed. Productivity gains will show a distinct bias toward large mills.

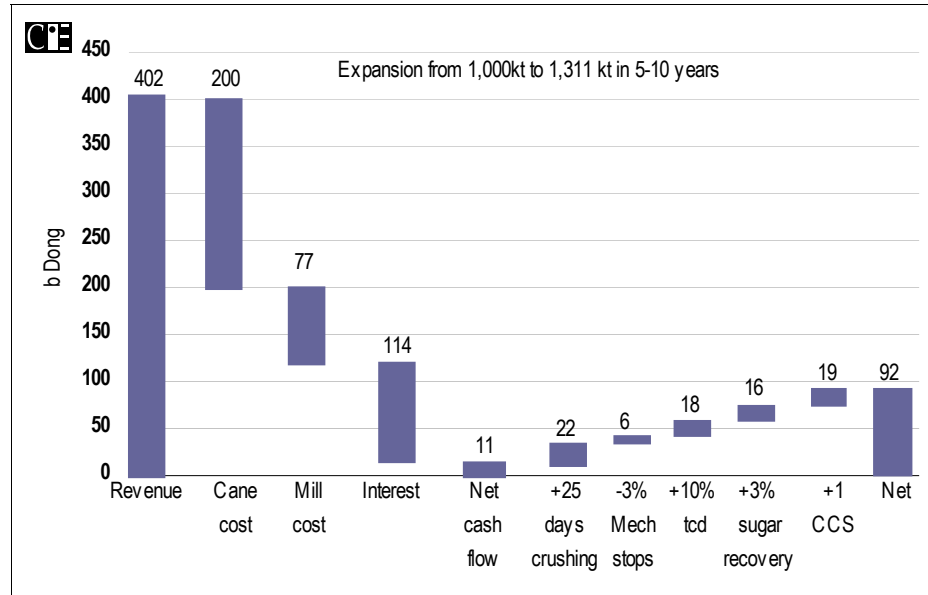
Productivity gains are likely to arise from:

- installing better equipment as inter-season repairs and maintenance is conducted, such as better shredders that macerate the cane more fully so less sugar is trapped in fibre;
- operating machinery more efficiently using more automation so correct milling pressures are applied to ensure higher extraction rates;
- better monitoring of equipment performance to anticipate breakdowns so stoppages can be minimised;
- better scheduling of cane through the mill to avoid stoppages and to ensure the freshness of cane and preservation of sugar content of the cane;
- better scheduling of growing and harvesting of various varieties of cane to help extend season length while preserving sugar content of cane; and
- removing bottlenecks in the processing chain as equipment is upgraded during annual maintenance work, to expand capacity at minimal cost.

The financial effects of the sorts of productivity increases that might be achieved over a five to ten year period for a large mill are outlined in chart 6.7. The indicative numbers assume a:

- 15 per cent increase in season length;
- 3 per cent increase in crushing time due to reduced mechanical breakdowns;
- 10 per cent increase in crushing due to reduced bottlenecks and better scheduling;
- 3 per cent increase in sugar recovery due to better operation of machinery arising from more automation, monitoring and adjustment; and a
- 10 per cent increase in the sugar content of sugar.

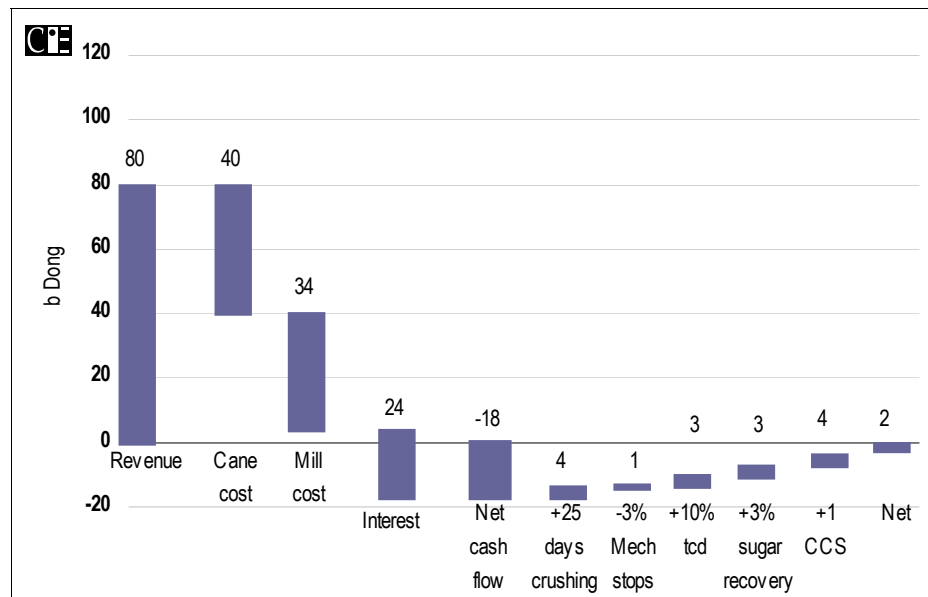
6.7 Indicative increases in mill productivity over the next five to ten years: effects on a large mill's profitability



Data source CIE model.

Such changes could greatly increase the net cashflow position of such a mill, assuming no change in the cane price. The same changes for a medium sized mill could also increase its cashflow position, but may not be enough to put it in a positive position – chart 6.8.

6.8 Indicative increases in mill productivity over the next five to ten years: effects on a medium sized mill's profitability

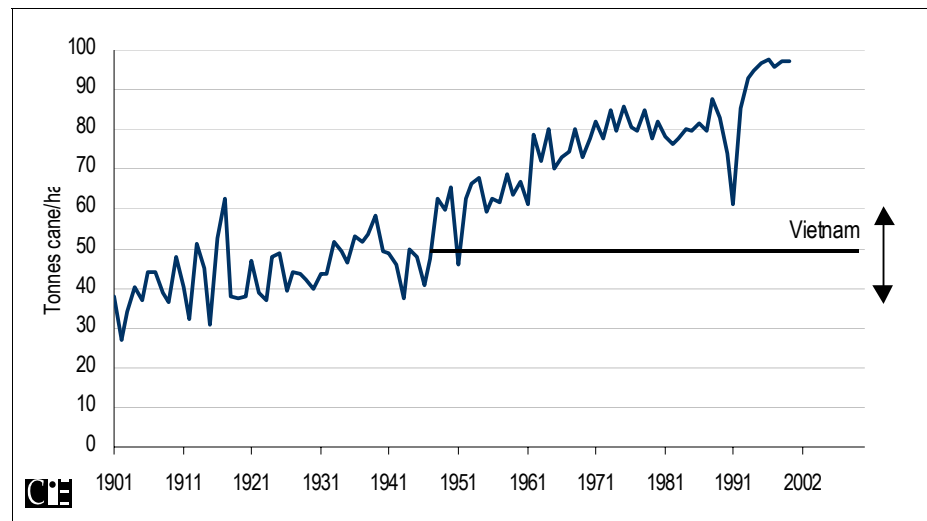


Data source: CIE model.

Scope for productivity gains over the next five years

At what rate productivity gains will be achieved is a difficult question to answer. Much will depend on the policy environment in which they take place and on the various cultural, political and economic impediments that stand in the way. Historical data on what has been achieved in other countries may provide a starting point about what might be achieved. Chart 6.9 shows the rate of sugarcane yield increases in Australia over a hundred years. Australia has long been a technological leader in sugarcane growing and processing and so was limited in what it could copy from other countries. The chart also indicates Vietnam's current yields relative to Australia's history. Australia achieved a slow but fairly steady rate of increase of less than 1.0 per cent a year.

6.9 Cane yield improvements take time to achieve



Data source: CIE.

Productivity gains will depend on policy but will not be achieved easily

Vietnam has the potential to achieve productivity gains more quickly than Australia by adopting existing practices and varieties. Nonetheless, despite other countries' efforts to also catch-up to Australia, few have. Achieving technological catch-up is possible but not easily achieved. Often it is not until efforts are made to achieve gains that various cultural, climatic, agronomic or other social, political, technical and economic impediments are discovered. Invariably technological catch-up looks easier than it is.

Cane yield increases of 2 per cent a year would be a good result

Nonetheless, it is probably reasonable to assume that Vietnam could maintain historical growth rates for some time and achieve twice the rate that Australia was able to achieve, say 2 per cent a year on-farm. As discussed, this is likely to be biased toward the farms supplying medium and larger mills see table 6.10. Although if small mills are closing this may have little impact on the final result.

6.10 Productivity increases by 2005

	<i>Small</i>	<i>Medium</i>	<i>Large</i>	<i>Annual average</i>
	% increase			
Cane yields (sugar/ha)	5	10	15	2
Mill productivity	0	5	8	1+

Source: CIE model.

Productivity increases of 1 per cent may be sustainable in milling

At mills the potential for achieving productivity increases may be quicker because the mills are under more direct control than farms are. However, as mentioned, the scope for achieving productivity gains is probably less. For reasons outlined, productivity gains will show a distinct bias toward large mills – table 6.10.

Productivity gains with trade protection

Compared with scenario 4, where self-sufficiency was achieved through trade protection, were the productivity increases listed in table 6.10 achieved, the annual costs of the sugar program and trade protection could be reduced by nearly 25 per cent. Increased productivity would raise production. But to induce consumers to consume this output price would need to fall. Production would therefore not expand at the rate productivity growth might suggest, as lower prices would dampen expansion. The lower price would ensure that the gain in productivity would be shared between producers and consumers.

Model results – scenario 5 in table 6.11 – show production and consumption increasing by around 6 per cent. However, the price decline would favour consumers over producers. Consumers would be made US\$29.3 million a year better off while producers' incomes would increase by only US\$4.2 million. Nonetheless, consumers still incur costs of US\$66.3 million due to trade protection and prices 35 per cent above import parity level.

The productivity gains would increase medium and large mills' competitiveness relative to small mills. Their increased competition for cane would close the 11 small mills that remained open in scenario 4. This would raise the interest rate subsidy needing to be paid by taxpayers from US\$28.2 million a year to US\$38.1 million. In total the cost of the program would amount to US\$74.7 million including annualised sunk costs, but contribute \$1.4 million on a current cost basis.

With productivity increases in the place, an interesting question is how well the industry would compete if exposed to world prices?

6.11 Simulation results: impact of productivity growth

	Scenario 2 2005 (Demand increase)	Scenario 3 2005 (No subsidies)	Scenario 4 2005 (Tariff)	Scenario 5 2005 (Productivity)
Production				
Cane (mt)	17.8	14.7	18.3	18.8
Sugar (kt)	763	495	815	863
Handicraft (kt)	255	265	249	275
Consumption				
Sugar (kt)	999	999	753	800
Handicraft (kt)	255	265	249	275
Trade				
Exports (kt)			50	50
Imports (kt)	246	515		
Mill white price (dong/kg)	4 000	4 000	5 750	5 591
Tariff %	0	0	39	35
Costs (including sunk costs)				
Explicit subsidy (\$m/yr)	17.9	0	0	0
Interest subsidy (\$m/yr)	63.5	0	0	0
Cost of bad debt (\$m/yr)	0	38.1	28.2	38.1
Subsidy on infrastructure (\$m/yr)	38.0	38.0	38.0	38.0
Producers' income (\$m/yr)	-40.0	-5.7	-63.5	(-40-27.7) -67.7
Consumers' incomes (\$m/yr)	0.0	-3.4	95.6	66.3
Total (\$m/yr)	79.5	67.0	98.3	74.7
Less sunk costs	-76.1	-76.1	-76.1	-76.1
Current annual benefit to the economy	-3.4	9.1	-22.2	1.4

Source: CIE model.

Plausible productivity gains without trade protection

Without trade protection the industry would contract relative to scenario 5, and consumption would expand to its free trade level – scenario 6, table 6.12. The higher productivity would deliver benefits in excess of those

achieved under completely free trade without the productivity increase – scenario 3, however the industry would achieve an estimated 65 per cent level of self-sufficiency only. The sugar industry would be smaller than its 1999–2000 level by 15 per cent, although the cane industry would be smaller by only 7 per cent. All small mills would be closed but medium and large mills would on average be about 15 per cent larger relative to scenario 2. In the Centre, large mills would expand by 40 per cent relative to now. However, to pay all their costs and remain viable, operating mills would still need to reduce cane prices by between 24 and 36 per cent. With higher productivity on-farm, farmers would be in a stronger position to endure this relative to scenario 3, where no productivity gains were assumed.

6.12 Simulation results: productivity growth without trade restrictions

	<i>Scenario 2 2005 (Demand increase)</i>	<i>Scenario 3 2005 (No subsidies)</i>	<i>Scenario 4 2005 (Tariff)</i>	<i>Scenario 5 2005 (Productivity)</i>	<i>Scenario 6 2005 (No tariff)</i>
Production					
Cane (mt)	17.8	14.7	18.3	18.8	16.6
Sugar (kt)	763	495	815	863	652
Handicraft (kt)	255	265	249	275	284
Consumption					
Sugar (kt)	999	999	753	800	999
Handicraft (kt)	255	265	249	275	284
Trade					
Exports (kt)			50	50	
Imports (kt)	246	515			358
Mill white price (dong/kg)	4 000	4 000	5 750	5 591	4 000
Tariff %	0	0	39	35	0
Costs (including sunk costs)					
Explicit subsidy (\$m/yr)	17.9	0	0	0	0
Interest subsidy (\$m/yr)	63.5	0	0	0	0
Cost of bad debt (\$m/yr)		38.1	28.2	38.1	38.1
Subsidy on infrastructure (\$m/yr)	38.0	38.0	38.0	38.0	38.0
Producers' income (\$m/yr)	-40.0	-5.7	-63.5	-67.7	(-40+20.3) -19.7
Consumers' incomes (\$m/yr)	0.0	-3.4	95.6	66.3	-9.9
Total (\$m/yr)	79.5	67.0	98.3	74.7	46.5
Less sunk costs	-76.1	-76.1	-76.1	-76.1	-76.1
Current annual benefit to the economy	-3.4	9.1	-22.2	1.4	29.6

Source: CIE model.

Taxpayers would still need to take responsibility for the interest costs of closed small mills. However, in total the costs of the sugar program to the Vietnamese economy would be an estimated US\$46.5 million a year instead of the current estimated \$79.5 million including annualised sunk costs. On

a current cost basis the industry would contribute \$29.6 million a year to the economy.

However, given the competitive free market scenario – scenario 6 – an argument may be made that incentives would be in place to pursue more rapid rates of productivity increase than are assumed – table 6.10. With completely free trade, without subsidies and therefore strong competition among mills, with the concentration of milling toward the most efficient enterprises, mill managers and cane farmers would face strong incentives to pursue productivity gains.

Optimistic productivity gains without trade protection

An optimistic achievement in terms of productivity growth would be for the industry to achieve the productivity gains indicated in table 6.13 over the next five years. This would imply that by 2005 the industry would be achieving average cane yields of around 65 tonnes per hectare compared with 50 tonnes per hectare now. It would also imply milling costs were around 20 per cent lower than now. This is not beyond the realms of possibility but it is optimistic.

6.13 Optimistic productivity increases (% increase)

	<i>Small</i>	<i>Medium</i>	<i>Large</i>	<i>Refining</i>	<i>Annual average</i>
Cane yields (sugar/ha)	5	20	30		4 +
Mill productivity	0	15	25	15	4

Source: CIE model.

Model results – scenario 7, table 6.14 – suggest that with this level of productivity growth the industry would be competitive enough to enable Vietnam to be roughly self-sufficiency in sugar production. Sugar production would increase an estimated 28 per cent from a 6 per cent increase in cane production. Rising sugar content of cane, higher extraction rates and some switching of cane from alternative uses is sufficient to underpin these sugar increases under this scenario. With much higher yields, cane farmers can sustain price decreases yet still increase incomes. The lower cane price helps raise the profitability of milling and underpin major expansions of mills. Large mills in the Centre are 150 per cent larger than now and medium sized mills in the South are 60 per cent larger. This requires investment in existing mills.

All small mills remain closed. They can not compete with medium and large mills. Even when we assume that small mills achieve the same productivity gains as large mills, (which seems highly unlikely), they

cannot compete for cane against medium and large mills. Only if we give small mills larger subsidies than other mills can they compete with other mills (this is unrealistic).

With high productivity gains, consumers and producers in aggregate are better off than now and the cost of subsidies is quarantined at US\$38.1 million. In total, the costs to the economy of the industry and program could be reduced to an estimated US\$6.7 million a year including annualised sunk costs. On a current cost basis the industry would contribute \$69.4 million a year to the Vietnamese economy.

6.14 Simulation results: optimistic productivity growth

	<i>Scenario 2 2005 (Demand increase)</i>	<i>Scenario 3 2005 (No subsidies)</i>	<i>Scenario 4 2005 (Tariff)</i>	<i>Scenario 5 2005 (Productivity)</i>	<i>Scenario 6 2005 (No tariff)</i>	<i>Scenario 7 2005 (High productivity)</i>
Production						
Cane (mt)	17.8	14.7	18.3	18.8	16.6	18.9
Sugar (kt)	763	495	815	863	652	975
Handicraft (kt)	255	265	249	275	284	295
Consumption						
Sugar (kt)	999	999	753	800	999	999
Handicraft (kt)	255	265	249	275	284	295
Trade						
Exports (kt)			50	50		15
Imports (kt)	246	515			358	
Mill white price (dong/kg)	4 000	4 000	5 750	5 591	4 000	4 000
Tariff %	0	0	39	35	0	0
Costs						
Explicit subsidy (\$m/yr)	17.9	0	0	0	0	0
Interest subsidy (\$m/yr)	63.5	0	0	0	0	0
Cost of bad debt (\$m/yr)		38.1	28.2	38.1	38.1	38.1
Subsidy on infrastructure (\$m/yr)	38.0	38.0	38.0	38.0	38.0	38.0
Producers' income (\$m/yr)	-40.0	-5.7	-63.5	-67.7	-19.7	(-40-15.7) -55.7
Consumers' incomes (\$m/yr)	0.0	-3.4	95.6	66.3	-9.9	-13.7
Total (\$m/yr)	79.5	67.0	98.3	74.7	46.5	6.7
Less sunk costs	-76.1	-76.1	-76.1	-76.1	-76.1	-76.1
Current annual benefit to the economy	-3.4	9.1	-22.2	1.4	29.6	69.4

Source: CIE model.

Emerging principles

- Small mills are highly inefficient by world standards, but are also uncompetitive with medium and large mills in Vietnam.
- Keeping them in operation will be costly to the economy.
- Only with continued subsidies are small mills likely to be able to continue in operation.
 - This is likely to be the case even if trade protection is held at a high level, or if small mills could match the productivity growth of other mills. The only other possibility is if small mills' productivity growth could exceed that of other mills, so increasing their relative competitiveness. By any fair assessment this seems like wishful thinking.
 - Without subsidies, small mills will not be able to compete with medium and large mills for cane.
 - But subsidies are extremely costly; they are on-budget, visible and likely to be politically and economically unsustainable.
 - Any attempt to pursue a goal of self-sufficiency through direct subsidisation of mills would see budgetary costs soar.
- The closure of small mills could eliminate over half of the on-going cost of the sugar program.
 - However, it seems that an annualised cost of capital of an estimated US\$38.1 million associated with small mills would need to be written off.
 - The cost of this would fall on the State budget and therefore on taxpayers and the wider economy.
 - This cost seems to be inevitable. Either it is paid as a price of closing small mills, or a much larger cost will need to be paid to keep them open.
- Trade protection could be used to fund some of the on-going costs of the sugar program. However, this would:
 - increase the costs of the program to the economy by transferring much of the cost to consumers;
 - not keep small mills open;
 - not avoid the minimum annualised cost of US\$38.1 million that would need to be written off.
- Achieving productivity growth, without subsidies and without trade protection, minimises the on-going costs of the program to the economy. Such an environment would:

- enhance competition among mills and cane growing areas;
- concentrate and expand milling and cane growing among the most efficient enterprises;
- provide strong incentives to quickly pursue productivity growth;
- achieve economies of scale and scope in mill area based research, development and extension to help hasten productivity growth;
- encourage efficient resource use;
- provide the greatest benefit from mill closures by encouraging the transfer of cane currently supplied to small mills to more efficient mills in the South and Centre;
- increase the efficiency of remaining mills by increasing their throughput;
- minimise the costs of mill closures; and
- create the possibility that the industry could become internationally competitive enough to meet all domestic needs for sugar without subsidies or protection.

7

Policy challenges

Many people worried about the current difficulties faced by the Vietnamese sugar industry are likely to be heartened by our finding that the industry has the productivity potential to be roughly self-sufficient without subsidies or protection. Other readers may be concerned that the findings reveal stark policy choices that need to be made and something of a policy dilemma. The stark choices are that Vietnam can either pursue the policy objective of:

- realising its productivity potential and international competitiveness;
- or attempt to industrially develop and modernise backward regions by establishing and financially supporting small mills suited to the scale of particular areas.

The policy dilemma is that Vietnamese policy makers are trying to pursue both objectives. Our findings suggest they cannot. They must choose one over the other.

- Pursuing the first objective is good for the economy as a whole, but will probably involve the closure of 28 small and non-viable mills. Politically this is likely to be unpopular in those regions with recently constructed small mills.
- Pursuing the second objective will be extremely costly to the economy, but could keep small inefficient mills operating, at least while subsidies last.

Pursuing the second objective would largely involve a continuation of existing policies. The main policy challenge would be to find the money to continually subsidise mills and to try to politically and economically justify its continuation. However, pursuing this objective would require trade protection by trade restrictions or subsidies, which would be inconsistent with the Vietnamese Government's objective to open its markets to international trade and to become more integrated with the global economy.

Pursuing the first objective would represent a new policy challenge and would require considerable policy change. It would be consistent with the Government's objective of further integration with the world economy, it

would allow the country to meet its international obligations under AFTA and WTO, and it would maximise the efficiency of resource use so promoting economic growth and rising living standards.

Policies to realise the productivity potential of the industry

The overwhelming requirement to put the Vietnamese sugar industry on a strong growth path, is to make it highly competitive domestically and internationally. In practical terms, competitiveness requires achieving economies of scale in milling, competition for cane and competition for land. Competition is a spur to technological development and improvement. It encourages those who are able to use resources most efficiently to excel, which also provides a model for others to follow. It also discourages those who use resources wastefully from continuing their inefficient practices. More efficient resource use means resources can be used to produce more and so provide more income. To increase competition would require changes to subsidies, regulatory controls, ownership structures, mill governance, trade restrictions, research, development and extension.

Promoting domestic competitiveness

To ensure strong competitive pressures in an industry, three major requirements must be met:

- no enterprise within the industry should be given an unfair advantage or disadvantage by Government policy;
- those making investment decisions need to stand responsible for any losses made, and profits earned; and
- there should be few if any restrictions to entry of an enterprise to the industry.

Removing unfair advantages and disadvantages

The Vietnamese Government favours state-owned mills over private or joint venture mills by underwriting their debt and losses, and providing concessional credit. The Government also tends to favour small loss-making state-owned mills over larger more efficient state-owned mills. This prevents small inefficient mills closing and larger more efficient mills expanding. To promote competition between mills and to encourage efficiency, direct and indirect Government subsidies to small state-owned mills should cease.

Strengthening responsibility for profits and losses

Even with the removal of direct and indirect subsidies, state-owned mills are likely to be at an advantage, and therefore will be favoured, over private or joint venture mills. This reduces competitive pressures and incentives for the quickest up-take of productivity enhancing technology.

Private and joint venture companies must, by their very nature, take responsibility for any financial losses and or profits. Private entities investing money in such mills do so with the primary purpose of earning a commercial rate of return on their investment. Ownership is fairly concentrated meaning each owner has a keen interest in seeing profits made. Because of this, the primary objectives of private mills are commercial. They must aim to meet a target rate of profitable return on capital before addressing other objectives, such as certain social objectives. Penalties and rewards to management and the company's board of directors (who represent owners) are based on their performance relative to such benchmarks.

The private ownership structure places powerful incentives on the company's management to be as efficient as possible in its use of resources. It must achieve productivity gains as quickly as possible and if facing world prices, must aim to catch-up technologically to international best practice. It also places powerful incentives on the board of directors to appoint the best management possible to achieve such objectives.

By comparison, managers and boards of directors of state-owned mills do not face the same powerful commercial incentives and disciplines. Government as owner of state-owned mills, while interested in commercial objectives, is also influenced strongly by political objectives. Often these reflect the interests of various small groups associated with a mill rather than the anonymous taxpayers who are indirectly owners. Moreover, because funding is through the state, effective ownership is highly dispersed. Theoretically every taxpayer has a tiny share. But the share is so small that no owner takes any true responsibility for the profitability of the mill. Under these circumstances, several, often conflicting, objectives are targeted. At a minimum, this compromises commercial objectives and reduces the emphasis on achieving a target rate of return on investment.

Compromised commercial objectives promote inefficiencies in two ways. First, they mitigate incentives to achieve productivity gains as quickly as possible. Funds may be used for other purposes. Second, they provide funds to state-owned mills to bid cane away from more efficient

unsubsidised or private mills. This puts efficient private mills at a relative disadvantage and may prevent their efficient expansion.

To promote competition between mills, to encourage efficient mills over inefficient mills and to speed up the adoption of best-practice technologies, at a minimum, governance of state-owned mills need to be restructured to resemble that of private mills. Equitisation of mills is an important route to this end and a precedent has been set in this area. Three mills have been equitised.

If equitisation cannot be achieved easily, as an interim measure, the following changes would help.

- Establish a target rate of return on capital (a dividend rate) and other commercial performance benchmarks to ensure that state-owned mills aim to perform in accordance with normal business expectations.
- Specify clear and non-conflicting commercial objectives for state-owned mills built around this target rate.
- Appoint boards of directors with the commercial skills to ensure these objectives be met.
- Reward mill managers and boards of directors according to commercial performance.
- Ensure mills pay taxes on the same basis as private mills and eliminate any other investment privileges relating to reductions in corporate and land taxes.
- Separate non-commercial objectives and seek to achieve these independently through separate funding, or fund these in an open and transparent fashion out of after tax profits.
- Eliminate non-commercial lending by banks.

Removing restrictions on entry

Improving milling practices and achieving international best-practice can only occur if mill managers are free to choose their own scale, structure, number of plants and locations. Those responsible for the profitability of mills will have the strongest incentives to make the correct decisions. Moreover, allowing any qualified owners of capital (domestic or foreign) to compete in this industry will increase its contestability. This will keep the industry open to new and better ways of doing things. This is likely to be important to attract the best managers and most suitable capital. Restrictions on number, size, location or type of owners will constrain the adoption of best practices and restrict competition.

Encouraging the flow of technology and management expertise from abroad may be very important. Already foreign investment has played a big role in ensuring the establishment of several relatively efficient mills. Ensuring that the commercial environment remains attractive to foreign investment is likely to be important. With foreign investment will come best practices, foreign education, technical assistance and knowledge transmission. For the best type of foreign investment, an attractive commercial environment is one that is benign. This is an environment that:

- does not discriminate against or favour one mill over another;
- does not place restrictions on:
 - mill managers' options to choose what combination of inputs and technology to use;
 - what scale to produce at;
 - where to operate or how to market the output; and
- is predictable and transparent in terms of implementation and administration of any regulations.

To achieve optimal industry structures, mill sizes and international best practices, mill managers and owners need more freedom and less threat of intervention from Government than now. MARD's approval and planning procedures need to be less influential and recede to being a process of registration and compliance with local but generalised by-laws, provided subsidies cease and non-commercial lending practices of banks are stopped. Then commercial disciplines should be enough to encourage sensible economic decisions.

Implications of more domestic competition

Allowing more domestic competition is likely to see large changes to the structure and behaviour of the industry. Various policy implications will follow.

Closure of small mills

Eliminating subsidies to non-viable small mills is likely to leave them bankrupt. Government and Provincial Peoples' Parties as owners or banks as lenders would need to resume responsibility for the debt and to close the mills. Assets could be sold off to the highest bidder. Medium and large mills may find value in some of the assets. Centrifuges may be relocated to help expand other mills and parts of boilers and milling trains may help in overcoming bottlenecks in other mills. Any funds recovered through the

sale of these assets could be used to offset debt. However, in all likelihood these assets will not be valued highly, reflecting their loss making status and old technology.

Need for social safety-nets for mill workers

Closure of small mills will displace mill workers. Social safety-nets may need to be established to assist affected mill workers. For cane farmers, mill closures will have mixed effects. In the North where all mills are small and are likely to close, closures will require conversion to crops previously grown or new crops. Some assistance may be required to facilitate their re-establishment.

Most cane farmers will benefit from supplying larger mills

In the Centre and South, mostly the distance from one mill area to another is less than the maximum distances currently travelled by most mills to collect cane. Distances between mills range from 30 to 100 kilometres and it is not uncommon for cane to be transported these sorts of distances. By world standards, cane transport costs are not high. With mill closures many growers in the Centre and South would still have access to an alternative larger mill. To better utilise their equipment and to gain other economies of scale, medium and large mills are likely to be keen to take such cane. The economies of scale they achieve will also enable them to pay for higher transport costs. In addition, larger mills are likely to be able to better help farmers to achieve higher yields through more targeted extension programs. Higher yields will also help defray higher transport costs.

Regional adjustments will be mostly in the North

In the Centre and the South regional adjustments will need to mainly concentrate on displaced mill workers from small mills that close. Most cane farmers should face opportunities to expand production and supply to larger mills. Model results show production increasing by 24 per cent in the Centre and 8 per cent in the South (scenario 7, table 6.14). In the North, however, cane production ceases along with the closure of small mills. Particular attention will need to be paid to adjustment issues to help farmers and mill workers through the difficulties this will create.

Mills' bargaining power

Some people worry that the closure of small mills will place remaining mills in a strong regional bargaining position, allowing them to drive down

cane prices. However, model results suggest mills will face incentives to keep cane prices as high as possible subject to keeping themselves viable. Mills will need to compete with cane farmers' ability to grow alternative crops. If they fail to pay a sufficient profit margin over and above alternative crops, they will lose throughput. And the economies of scale are such that losses of throughput will raise their unit costs of milling, placing mills in a precarious financial position. Moreover, if mills are facing world prices for their output, their own profit margins are likely to be tight. Under these circumstances, mills will need to concentrate on increasing throughput by paying as attractive prices as possible and helping farmers to achieve yield increases as quickly as possible.

Already the Government has two initiatives in place to monitor cane pricing and to facilitate contracting between mills and growers. The role of the Board for Supervision of Sugar Distribution, to encourage forward contracting of sugarcane, is sensible. Especially if facing world prices for sugar, large efficient mills could be in a position to make forward contracts that would benefit them and growers. They would need to hedge against price movements on the world sugar futures markets, and would need to know they could enforce contracts made. Government suggestions for tripartite contracts between banks, sugar mills and farmers, to ensure the compliance of contracts, should be more widely applied.

To enable mills to hedge, controls on foreign currency transactions would need to be eased. Exchange rate changes may also need to be hedged against. Foreign owned mills might be better placed than others to do this, given restrictions on currency transactions.

Terms and conditions of delivery, scheduling and transport

Another Government suggestion concerning cane pricing is to establish a nation-wide sugar and sugarcane association that could coordinate supply of sugarcane between mills and farmers (zoning). This needs to be very carefully considered. If not handled carefully, this could end up being highly anticompetitive.

Providing a mill guaranteed supply over particular areas of cane (zones) will confer considerable bargaining power to mills. If margins are tight, mills will still need to compete against alternative crops and try to achieve economies of scale. They will therefore need to pay cane farmers as best they can afford to maintain throughput. However, if other mills are more efficient, with lower milling costs, and therefore in a position to pay higher prices, a guaranteed zone would prevent this improvement occurring. This will slow productivity growth.

Some people may argue that without zoning, competition among mills for cane leads to inefficient cane scheduling, transport and pricing. Uncertainty over cane supplies makes it difficult for a mill to plan to achieve economies of scale in processing. It may also reduce incentives for mills to conduct extension efforts if they cannot capture any advantage from this and the benefits are dissipated to other mills. This does not necessarily make a case for zoning. What it does emphasise is the challenge for Government to facilitate better forward contracting.

Enforceable two to three year ahead forward contracts would overcome scheduling and transport problems, but leave open the option for other mills to compete for cane in the longer-term. The threat of competition from other mills should help to maintain competitive pressures on mills. Here there may be a role for Government in advocating the desirable features of contracts for commercial relationships between growers and mills. Nonetheless, flexibility would need to be maintained to ensure individual mills and growers could evolve terms and conditions to exploit their particular regional or other advantage. There may also be a need to strengthen contract law and dispute settlement procedures.

The current use of the Australian cane prices formula as a basis for commercial contracts should continue to be encouraged. Stricter adherence to some of its features may benefit the industry. Implemented properly, the formula has many advantages in rewarding quality improvements by growers and millers. The incentive structures it creates are adequate for the industry given its current level of development. Government may have a role in trying to standardise and police the accuracy of measurement of sugar content used in the formula.

Given there are so many small growers, Government may also have a role to play in providing a framework for growers to form voluntary organisations to collectively negotiate cane prices with mills. Government may also assist to heighten competition by collecting and publishing cane prices paid by each mill. An aim should be to facilitate efficient commercial contracting between the two parties, while ensuring minimal political direction and administered discretion in price formation.

Sound long-term commercial contracting is a first best cane-pricing outcome. However, should there be considerable evidence of contract failure, Government should stand ready to implement a zoning system. Indeed, Government's preparedness to intervene could help serve as an incentive for mills and growers to seek sensible commercial solutions. However, if not, it may fall to Government to implement a second best solution: one that involves zoning.

A second best zoning and pricing option.

International experience is that if zoning becomes necessary to overcome contract failures, standard minimum cane pricing terms and conditions need to be introduced across the industry and zones need to be made fully tradeable assets of mills.

Minimum standard cane pricing terms and conditions separate the price growers receive from the financial performance of the mill they supply. Theoretically this would also happen to some extent in a competitive market and prices would come to reflect the financial performance of the most efficient mills. As much as possible the minimum standard price should be set to reflect average mill financial and technical performance for average sugarcane quality. The standard price however should vary according to the quality (sugar content) of cane, as it does now through the Australian formula. Put another way, constants in the formula should reflect average technical performance of mills and growers, but variables should allow it to alter to reflect sugar content of growers.

Regardless of the actual performance of the mill they are zoned to, growers should then receive the same minimum (average) price for cane of a particular quality as they would from another mill. This should reduce the incentive of growers to switch between mills and zoning should prevent mills bidding for cane beyond their zone. Growers can concentrate on increasing volume and quality and need not worry so much about the performance of their mill. Mills also receive a strong incentive to improve their performance. The costs of below average performance fall directly on the mill and are not passed back to growers. Similarly the benefits of above average performance are captured fully by the mill and the mill is under no obligation to share this with the growers. Better mills should not be prevented from paying premiums over and above the standard price within their zone. This way they may induce growers to supply more cane and create even greater efficiencies.

Problems with the zoning approach

However, there are several problems with the standard price. It may be that a below average mill is unable to increase efficiency due to cane supplies or other quality factors affecting its region. Use of the average performance criteria might send the mill bankrupt, even though growers may be willing to take a lower price to keep the mill solvent. To minimise this sort of problem, if zones are made to be tradeable assets of mills, more efficient mills will have an incentive to buy out the zones of less efficient areas, and such mills will have an incentive to close.

Other problems relating to zoning and the formula approach are efficiency is likely to be restricted to a small number of variables in the pricing formula. Many other variables may affect efficiency and these will not be taken into account, so restricting some of the scope for efficiency gains. Also, although rationalisation of mills can occur, it is likely to be slower under the formula-zoning approach than in a completely competitive market. Moreover, two policy instruments are created that may become vulnerable to political capture. Strong vested interests may lobby to influence how these are set in ways that reflect political rather than purely commercial objectives.

Promoting international competitiveness

Promoting domestic competitiveness will do much to promote international competitiveness indirectly. But open trade will provide the ultimate incentive to adopt best practices as quickly as possible. Only by matching best practice will mills be viable in the long-term and internationally competitive. To achieve more open trade, Vietnam needs to:

- replace quantitative import restrictions and procedures to manage trade with specified tariffs; and then
- progressively reduce the tariff to low levels to reflect the long-run import parity price; and
- remove blanket industry-wide subsidies such as concessional financing for stocks, grants to encourage exports and tax concessions.

Shifting to tariffs

Under current import restrictions, the level of protection granted to the industry is unpredictable. As seen in 1999–2000, import controls failed to provide any protection and domestic prices fell to import parity level. Smuggling appears to be placing an upper cap on protection levels. Once the domestic price climbs to be about 50 per cent higher than the import parity price, smuggled imports flood in through Vietnam's porous borders, limiting further price increases. The closer the industry comes to achieving self-sufficiency the less likely import restrictions are to provide protection, as happened in 1999–2000. Then, given ample domestic supplies, mills must discount the price of their output to induce consumers to absorb it. Moreover, even before reaching the point of self-sufficiency, once levels of production are close to meeting domestic consumption needs, a small amount of smuggled imports is enough to cause large price reductions. Domestic prices are highly sensitive to smuggled imports.

The sensitivity to smuggled imports is an important factor in limiting and minimising the costs of trade protection to consumers and the economy generally. Some might argue that as Vietnam's trade opens up generally, given the porous nature of its borders, smuggling of sugar will play an even greater role in limiting the effects of trade protection.

Nonetheless, trade protection potentially imposes big costs on consumers and the economy, and makes the commercial environment for the industry unpredictable. It is unpredictable in terms of the factors likely to affect prices and it sends mixed signals to industry about the Government's intent. It is also inconsistent with the Government's wider intention to further open trade and play an active role in international trade treaties and organisations such as the WTO, APEC and AFTA.

Under AFTA, Vietnam is committed to a change to a tariff only system for sugar by the year 2010. Setting a low tariff rate by then as a formal target for the sugar industry would help signal the Government's intent to the industry and comply with its international commitments. To achieve this, all quantitative restrictions would need to be removed and be replaced by a tariff. Our estimate is that a 40 per cent *ad valorem* tariff would be equivalent to current quantitative restrictions once small mills closed. This could then be progressively reduced until 2010, when a free trade situation would be achieved. Costs of transport, insurance freight and unloading would still provide a small amount of natural protection to the industry.

Implications of removing import restrictions

A set schedule of tariff reductions would put sugar mills on notice that they need to rapidly increase productivity. It would also make predictable the factors likely to drive domestic prices. Although pegging domestic prices to world prices would remove uncertainties and risks associated with domestic prices now, it would expose producers to inherent risks and uncertainties of the world market and the sorts of risks and uncertainties inherent in many agricultural markets.

In many ways exposure to world sugar prices would put sugar on a similar footing to alternative crops grown in Vietnam. This would expose growers and millers to the relative risk profiles of each crop and allow them to respond efficiently to handle that risk, rather than passing it to Government or consumers. With domestic prices pegged to world prices, sugar mills would be in a position to use market-based instruments to manage risk namely futures markets and other financial instruments, provided restrictions on currency transactions were lifted. By hedging, mills could

lock in prices for up to 18 months in advance. These would also enable mills to make advance cane price contracts with growers.

Removing industry-wide subsidies

Relative to the potential impact of trade restrictions, industry-wide subsidies such as VAT exemptions and other exemptions from taxes are relatively small. Nonetheless, they distort resource use and impose costs on the wider economy. These should be eliminated.

Enhancing international competitiveness through RD&E

It appears that the Vietnamese sugar industry has considerable potential to achieve large productivity improvements. Realising these is the challenge. Because much of the potential is likely to be achieved through adopting known varieties and practices from other countries, extension efforts would appear to offer high payoffs. In a competitive environment with viable large mills, mills should face strong incentives, to ensure this happens in the mill as well as on the farm. Furthermore, mills are likely to be the main influential entity acutely aware of the problems faced and the sequence of changes needed to make a difference.

Nonetheless, mills will tend to have a relatively narrow regional focus. They may require support from larger research, development and extension organisations to solve particular problems and other problems. Perhaps those relating to pests and diseases may require more than a regional or mill area effort. MARD currently plays a role here but funding is so tight little effective can be achieved. A strong argument exists to transfer some money currently used for various subsidies to the industry to fund RD&E. As a starting point this could be set equal to around one per cent of sales. Alternatively, levies on mill sales could be introduced to fund such activities. An industry oriented funding entity should be established to administer and allocate funding. The entity should have strong grower and miller representation and mills should be encouraged to take the lead role, at least initially. Strong consideration should be given to attracting international expertise in sugarcane RD&E to get the entity established and running smoothly.

Choosing the high--subsidy option

If closing mills and creating a more competitive environment proves too politically difficult, the alternative is to continue with existing policies. This

is likely to involve paying high subsidies to small mills and will probably involve attempting to maintain protection to the rest of the industry through import restrictions.

Our analysis indicates that import restrictions alone would not be sufficient to keep small mills open. They will not be able to compete with other mills unless favoured by direct subsidies. Should the government choose this option it must be prepared to pay high annual subsidies to small mills. Also, because under such an environment competitive pressures will be fewer, Government is likely to need to support other mills either through import restrictions or subsidies. Import restrictions will pass high costs on to consumers and impose costs on industrial users.

Sugar policy will be vulnerable to various political pressures, as Government will maintain responsibility for its performance. Non-commercial objectives are likely to be given a heavy emphasis. The industry is likely to grow increasingly reliant on Government protection and subsidies. This is likely to see an escalation of costs imposed on the rest of the economy to cross-subsidise sugar. Typically, sugar industries around the world grow to be very high cost industries behind protective barriers and are slow to take up productivity improving technologies. The Philippines is a case in point. Up until the 1980s, the Philippines was a large exporter. But it protected its industry strongly. Thailand at the same time had a small industry with relatively weak protection. The Philippines industry has declined since and now imports sugar. Thailand went from strength to strength exporting at the world price. Its sugar production is now about three times larger than that of the Philippines, and it is one of the world's three large efficient exporters.

To try and minimise costs, there may be value in attempting to 'ring-fence' small mills and their problems by paying them subsidies and then trying to encourage the remainder of the industry to pursue the measures described above. However, medium to large mills will have reduced incentives to invest and expand knowing they cannot compete for the cane of small inefficient mills. They will not achieve the economies of scale and scope that they could if these mills close. They will face reduced incentives to engage in research, development and extension services knowing that there is no value to them of extending such services to growers currently supplying small mills. They will operate under a less predictable and politically influenced policy environment that will make them wary to invest and make changes.

Appendices

A

Organisations consulted as part of this project

A.1 Organisations consulted as part of this project.

Mills visited

- 1 Soc Trans Sugar Corporation
- 2 Tay Ninh Raw Sugar Mill
- 3 Hiep hoa Sugar Company
- 4 Quang Ngai Sugar Corporation
- 5 Binh Dinh Sugar Company
- 6 Tuy Hoa Sugar Company
- 7 Lamson Sugarcane Stock Company
- 8 Nong Cong Sugar Mill
- 9 Hoa binh Sugar Cane Company
- 10 Institute of Sugarcane Research
- 11 Vietnam Sugarcane and Sugar Coporation No.1 (Vinasugar 1)

Government departments

- 1 MARD
- 2 Ministry of Planning and Investment
- 3 Ministry of Finance
- 4 Ministry of Trade
- 5 Tax General Department

Other companies

- 1 Coca Cola Ngoc Hoi Factory
- 2 Vietnam Dairy Products Company (Vinamilk)

Other organisations

- 1 CRP (Central for Rural Progress)
 - 2 Vietnam Bank for Agriculture and Rural Development
 - 3 Bank for Investment and Development of Vietnam
 - 4 Development Assistance Fund
 - 5 State Bank of Vietnam
 - 6 Ministry of Science, Technology and Environment
-

B

Model of the Vietnamese sugar industry

General features

This appendix summarises the structure of the Vietnamese sugar model.

- The model is a simplified representation of the demand and supply interactions along the sugar value chain.
 - Farmers compete for resources to produce cane that has several possible uses and also how much they produce depends on costs, prices and agricultural subsidies they receive.
 - Mills compete for cane and other resources to produce various sugar products and do so according to costs, subsidies and prices.
 - Mills also compete among themselves and with imports to sell sugar products to households and industrial uses.
 - Consumers demand sugar products depending on their price, income and population growth.
 - Imports can be restricted by trade barriers.
 - Sugar prices are determined by the world import parity price of sugar unless trade barriers apply, in which case internal demand and supply interact to determine prices.
 - Cane prices are determined by the interaction of farmers' willingness to supply and millers' willingness to pay according to their profitability.
 - Domestic sugar trade is unrestricted, but some trade in cane is restricted by prohibitive transport costs.
 - Changes in productivity can greatly affect farmer and miller profitability and willingness to supply.
- The model is comparative static and primarily designed to conduct 'what if' experiments. The model can also be used to make projections about the likely size and structure of the sugar sector at a given point in time in the future, given a set of plausible assumptions about income

growth, population growth, changes in subsidies, trade policies or productivity.

- The model is partial equilibrium and therefore does not account for behaviour or interactions outside the sugar sector. These interactions are created by changing world assumptions.
- The model is comprised of two basic components:
 - fundamental input-output relationships between components along the processing chain in the sweetener sector; and
 - economic behaviour of agents represented by maximising behaviour embodied in conventional economic theory.
- A comprehensive structural database is compiled with dimensions covering regions, industries, commodities and factors of production to quantify the economic dimensions of the industry outlined in chart 2.1. A schematic diagram of the model's database is given in tables B.1 and B.2. Sugar products include those for which we explain supply, demand and prices – namely cane, mill whites, refined sugar, handicraft sugar, chewing cane, molasses and ethanol. For other product groups, prices are exogenous. Also, we assume that sugar commodities can be sourced from all model regions including imports from outside Vietnam.
- The objective of this input-output style database is to provide a snapshot of the sector at a point in time. The database uses latest available data from a range of published sources including MARD for 1999–2000 and is supplemented by data collected on field visits and known international benchmarks. The model uses these data to compute value shares in which relative weights – say, the share of mill white sugar in the total sugar budget – are important in determining economic responses to changed circumstances.

Theoretical structure

- Producers choose inputs to minimise production costs subject to a two tier production function. At the first level there is no substitution between input categories and the primary factor bundle. This bundle includes land, any capital, hired and owner's labour. At the second level supply responses are determined by the ability to substitute between factors of production, primarily land and labour.
- The model is based on conventional economic theory representing highly competitive behaviour. Following the assumptions of perfect competition and constant returns to scale technology, profits can accrue

only to factors of production. Supply of each commodity, by region, is equated to demand for that commodity across all regions, thus determining a regional price for each commodity.

- Consumption by commodity depends on retail prices, population and incomes
 - each commodity in the model is homogenous therefore consumers consider products from each region and from overseas as perfect substitutes.

Critical parameters

- Parameters used in the model can be classified thus.
- Technical coefficients relating to input-output coefficients derived from the base data set.
- Critical economic parameters including demand elasticities and cane supply elasticities. Other parameters can be assigned by adoption of polar assumptions. For example, the sugar sector can be assumed to be a small sector of the economy – therefore the price of labour is determined elsewhere and is available in any quantity required.
- Levels of subsidies and taxes. The relative sizes of these impediments are identified in the main body of the report.

B MODEL OF THE INDIAN SUGAR INDUSTRY

B.1 Inputs to sugar production and final demands

	Farms			Mills				Refining	Ethanol	Final demands	
	Small	Medium	Large	Small	Medium	Large	Handicraft			Domestic	Exports
Domestic											
Seed cane	X	X	X								
Sugar cane				X	X	X					
Handicraft cane							X				
Chewing cane										X	
Raw sugar								X			X
Mill white										X	X
Molasses									X	X	X
Handicraft sugar										X	
Refined sugar										X	X
Ethanol										X	X
Other costs	X	X	X	X	X	X	X	X	X		
Labour	X	X	X	X	X	X	X	X	X		
Returns to land and capital	X	X	X	X	X	X	X	X	X		
Imported											
Raw sugar								X			
Mill white										X	
Molasses									X	X	
Refined sugar										X	
Ethanol										X	

Source: CIE.

B.2 Commodities produced by each industry

	Farms			Mills				Refining	Ethanol
	Small	Medium	Large	Small	Medium	Large	Handicraft		
Seed cane	X	X	X						
Sugar cane	X	X	X						
Handicraft cane	X	X	X						
Chewing cane	X	X	X						
Raw sugar					X	X			
Mill white				X	X	X			
Molasses				X	X	X			
Handicraft sugar								X	
Refined sugar								X	
Ethanol									X

Source: CIE.

Demand elasticities

- Critical demand elasticities, are given in table B.3 and B4. These are consistent with international benchmarks for countries at similar levels of development.

B.3 Price elasticities of household and industry demands

Chewing cane	-1.0
Raw sugar	-1.0
Mill white	-1.0
Molasses	-1.0
Handicraft sugar	-1.0
Refined sugar	-1.0
Ethanol	-1.0

Source: CIE.

B.4 Income expenditure elasticities

Chewing cane	-0.20
Raw sugar	1.50
Mill white	1.50
Molasses	0.50
Handicraft sugar	-0.20
Refined sugar	1.50
Ethanol	0.01

Source: CIE.

Supply elasticities

- Critical supply elasticities relate to the cane growing sector. Due to its relatively low value added nature, production of handicraft sugar has highly elastic responses. Many of the important interactions between the growing sector and upstream industries are largely a function of the ability of cane growers to respond, and the relative efficiency of mills of varying sizes.
- Table B.5 lists the supply elasticities used in the model.

B.5 Critical supply elasticities

Small farm	N	0.21
	C	0.31
	S	0.30
Medium farm	C	0.61
	S	0.59
Large farm	C	0.99
	S	0.98
Handimill	N	4.62
	C	4.62
	S	4.62
Small mill	N	0.97
	C	1.01
	S	1.01
Medium mill	C	2.98
	S	3.06
Large mill	C	5.02
	S	5.19
Refining	C	5.02
	S	5.02
Ethanol	C	4.89
	S	4.89

Source: CIE.

Industry cost structures

- The final important component of the model's database is the cost structure of various parts of the value chain. The cost structure of the farming sector was determined by specifying cost and returns for an average farm in each of the regions examined. On the cost side, we included cultivation, machinery, land fees, seed costs, fertiliser and harvesting. Returns are a function of output and price received. Based on average farms for each mill region type we determined a total farm sector for each. The cost structure of the farming sector used in the model are based on data presented in table 5.5. The gross margins of table 5.5 are distributed between returns to labour and management as discussed in chapter 5.
- The cost structure of the milling sector was determined through the use of the financial mills model presented in table 5.8. The model provides a representation of average mill costs by region and mill size.
- On the output side, the model accounts for factors such as crushing rate, season length and factory lost time, which vary across mill type and region. Total revenue is a function of mill output and price received.
- The model accounts for mill expenses such as cane purchases (the price of which is endogenous), factory labour, materials and energy, and corporate overheads. Again, these inputs vary by mill type and region. Total profit or loss is the difference between revenue and expenses, accounting for interest owed by the different operations. Mill subsidies are also represented within the mills profit and loss structure.
- Average mill financial positions were aggregated to form the total mill cost structures by mill type and region used in the model.

C

Comments and responses to the seminar on this report

Introduction

On 28 February 2002, a seminar was arranged to discuss this report. The seminar program is set out in box C.1.

Also set out in boxes below are two sets of notes summarising the comments made about the report by invited speakers. The first is a general summary. The other is a more specific account of the comments.

In the main, the comments tended to cover two main themes and seven main topics as follows

- Comments about implications of the findings.
 - Interpretation of the recommendations, mill closures and road conditions.
 - Scheduling of policy changes.
 - Issues of scale of mills.
 - Opportunity cost of resources and substitution.
 - Costs of the sugar program to the economy.
- Comments about the adequacy of the model.
 - Inclusions.
 - Exclusions.

C.1 Seminar program

8.00-8.10 Introduction by Ms. Chu Thi Hao, Dept for Agriculture & Rural Devt Policy, MARD

8.10-8.20 Opening remark by Vice Minister Cao Duc Phat, MARD

8.20-8.30 Opening remark Kazi Matin, Chief Economist, WB

8.30-9.00 Vietnam sugar industry: current & future competitiveness
Presented by Mr Brent Borrell & team (CIE, Australia)

9.00-9.30 Discussants:

1. Mr Le Viet Thai, Deputy chief for Macroeconomics study, CIEM
2. Mr Nguyen Dinh Long, Deputy Director, Institute for Agricultural Economics, MARD
3. Mr. Tran Dinh Dinh, Deputy Director, Vietnam Bank for Agriculture & RD

9.30-9.50: Tea break

9.50-10.20 Policy recommendations & possible impacts on Vietnam sugar industry
Presented by Brent Borrell & team (CIE, Australia)

10.20-10.50 Discussants:

1. Mr Ngo Doan Vinh, Deputy Director, Institute of Development strategies, MPI
2. Mr Nguyen Thang, Senior Researcher, Center for Rural Progress (Vietnamese NGO)
3. Mr. Nguyen Van Nam, Director, Institute of Foreign Trade, MOT

10.50-11.20 Open discussion

11.20-11.35 Closing by Ms. Chu Thi Hao, MARD and Mr. Dinh Tuan Viet, WB

List of invitees*I. MARD*

1. Mr Nguyen Thien Luan, Vice Minister,
2. Mr Cao Duc Phat, Vice Minister,
3. Dept. of planning and projection
4. Dept of external cooperation
5. Dept of finance and accounting
6. Dept of processing and rural industries
7. Dept of agro-forestry extension
8. Sugar general corporation No.1
9. Institute for agricultural economics
10. Information center,

II. MPI

11. Dept of agriculture & rural development
12. Dept of foreign economic relations
13. Dept of general economics affairs
14. Dept of local economies
15. Institute for development strategies (DSI)
16. CIEM

III. Ministry of Trade

17. Dept of imports-exports
18. Dept of planning and statistics
19. Dept of multilateral trade policies

IV. Ministry of Finance

20. Dept of financial policies
21. National fund for development assistance
22. Dept of corporate finance

V. Banking institutions

23. Dept of banking strategies, SBV
24. Vietnam Bank for agriculture & rural devt (VBA)
25. VN Bank for investment & devt (BIDV)

VI. Foreign donors: WB, ADB, AusAid, AFD, EU, FAO, IMF, UNDP

VII. NGOs: Oxfam UK, Oxfam Hongkong, Action Aid, CIDSE, Center for rural progress

Comments about implications of the findings

Interpretation of the recommendation, mill closures and road conditions

Most commentators are extremely concerned about the idea of 28 mills closing, as rightly they should be. Politically and socially it would cause some disruption. However, as discussed in the report, the disruption is likely to be less than is readily apparent. First, although 28 out of 43 mills (65 per cent) may seem a lot, it should be remembered that these 28 mills produce less than a third of the sugar. Moreover, although 65 per cent of mills may close, the model results show that this leads to a 30 per cent expansion of the industry, not a contraction, and to the development of a viable industry from one that is currently unviable. So, although it puts in jeopardy some jobs, the expansion is likely to create more jobs elsewhere and to make most jobs in the industry more secure in the long-run by increasing the prosperity of the industry.

Several commentators also suggest that the report fails to provide a solution about what to do with displaced mill workers and farmers who lose their opportunity to supply to mill. However, this is dealt with in the report - pages 88 to 93.

The closure of 28 mills would see roughly 10 000 mill workers lose their jobs. This is a concern and it is suggested in the report that some form of social safety-net may need to be established to assist affected mill workers. Although the costs and disruption placed on 10 000 mill workers is a significant concern, placed along side the benefits that would arise from mill rationalisation and closures, it would be possible to afford to provide them with some direct, targeted assistance. In total the Vietnamese sugar industry provides at least part-time employment for about a million people. Removing subsidies and promoting mill rationalisation will enable the industry to grow (about 30 per cent) and prosper more generally. As stated, this will help to secure the one million jobs involved and possibly create more cane production and harvesting jobs. Continuing to subsidise the industry will cost the estimated \$81.5 million discussed in the report and jeopardise the whole industry's long-term viability. Fully compensating the 10 000 mill workers for their loss of income would cost only \$12 million a year, and an efficiently devised social safety-net would be considerably cheaper than this.

In terms of a safety-net to farmers, this appears likely to be mainly an issue in the North, as discussed in the report. Only 6 per cent of cane for sugar production is produced in the North. With mill closures, farmers would need to grow other crops. In many cases they grew other crops before they

shifted to sugarcane. Closure of the mills would see them return to these alternative crops. The impact on them financially is likely to be limited as the premiums paid to induce them to grow sugarcane over an alternative cannot have been large or mills would have been able to secure bigger and more reliable supplies than they have been able to, to date. In the report it is argued that some assistance may be required to help farmers re-establish previously grown crops. Again, relative to the benefits to be derived from eliminating subsidies, the small amounts of compensation required to do this would be affordable.

In areas where land was previously not used for anything else, the opportunity cost of resources may be sufficiently low that it is viable for the region to go on producing sugar and for the mill to remain open. The policy recommendation does not preclude this possibility. Where the mill does close, again an argument for some form of compensation may be made. But the cost is likely to be small relative to the overall benefit of making the other 94 per cent of the industry more prosperous.

Several commentators have interpreted the report as recommending closing 28 mills. While the model projects that this is the likely outcome of the favoured policy option, the recommendation is not to close them but rather to remove subsidies to them. There is a subtle, but important, difference. Under the policy recommendation, if some small mills are efficient, and if some small (particularly isolated) mill areas have very low opportunity costs (as claimed - see later), they may remain viable without subsidy and remain open. If that were to occur that would be a good outcome and it would be consistent with the favoured recommendation.

Some commentators have argued that, as well as in the North, some farmers in the Centre may be unable to supply alternative larger mills due to the poor condition of roads in some areas. This may be true in some particular instances, but based on the data available to us, does not appear to be true in general. Moreover, as stated in the report, where increased supplies are made available to larger mills, their economies of scale will increase further. This will lower unit costs of milling, thus increasing the viability of mills to collect even greater volumes from more distant regions. This was allowed for in the model. In some cases, some of the savings in milling will be channelled back into improving roads and access. Further, as discussed in the report and as confirmed by some commentators, a switch in supply from small mills to larger mills is likely to see farmers gaining access to better extension services. Access to these services is likely to open up the increased productivity potential available for many farms. If yields can be increased 10 or 20 per cent as a result, which seem likely,

farmers will also be able to either afford higher transport costs or collectively put money into improving roads.

Where none of the above apply, which may be true in a small number of cases, the arguments for compensation, safety-nets or assistance made above should apply equally.

Scheduling of policy changes

Some commentators have asked about the scheduling of policy changes. At what rate should subsidies and trade protection be removed? These are good questions.

On the one hand the model results show that removal of subsidies and trade protection will eliminate costs to the economy of between about US\$80 and 120 million a year. Achieving these gains as soon as possible makes sense from an economic point of view. This would imply immediately removing all subsidies and trade protection. However, to obtain the full benefits of change requires that most existing cane supplied to small inefficient mills be re-supplied to alternative larger mills. For this to occur smoothly, existing medium to large sized mills will need to expand capacity. Although medium to larger mills generally have some additional capacity, it would take time to expand capacity sufficiently to accommodate all re-routed cane. For this reason, a strong argument could be made for phasing in changes over a period reflecting the time required to make adjustments.

A five-year phasing-out period would provide time for medium and larger mills to plan and invest. A known schedule of phase-out would also put sugar mills and their supplying cane farmers on notice that they would need to rapidly take up productivity improving technologies available to them. One way to achieve the phase-out would be to immediately remove all subsidies to medium and large mills, and replace this and all quantitative import restrictions with a 40 per cent *ad valorem* tariff, as discussed in the report. The tariff could then be progressively reduced to zero by the fifth year.

Subsidies to small mills in the North should also be immediately eliminated and social safety-nets and compensating assistance be offered immediately in its place. There is no sense in delaying adjustments in the North, as there are no alternative medium or large mills to supply to.

In the Centre and South, maintaining subsidies for three years would enable these mills to maintain production until such time as medium and

large mills could take over their cane supplies. To avoid perverse incentives for small mills to give up their subsidise, in the second and third years they should be entitled to their subsidies irrespective of their throughput.

Issues of scale of mills

Some commentators argue that small mills can be efficient. However, the Vietnamese and international evidence about the superior efficiency of large mills over small mills is overwhelming. And Vietnam's small mills are tiny. The assertion that there is no indication in the report of what is the right size of mill for Vietnam is hard to follow. The report clearly shows that Vietnam's 28 small mills are only likely to survive if they are directly subsidised. Medium and large mills have greater scope of becoming internationally efficient. Chapters 5 and 6 contain numerous charts, tables and commentary addressing this issue.

The suggestion that small mills may become more efficient as they grow is possible. However, were Vietnam to grow all 28 of its small mills while retaining its existing medium and large mills, the country would need to produce six or seven times as much sugar as now and export it, if all mills were to reach an internationally competitive scale. This is unrealistic. The reality is, Vietnam will be better off making its current medium and large mills bigger rather than making the small (tiny) mills larger.

The suggestion that some of the 28 small mills are efficient may be correct, although it would seem unlikely based on the evidence available to us. However, if it is true, the policy suggestion in the report for increasing efficiency of the Vietnamese sugar industry should be no threat to those efficient small mills and they are likely to survive. So, if this evidence is correct, it should not change the policy conclusions.

Opportunity cost of resources, substitution and mill closures

Several people have asserted that the policy recommendations fail to take account of the real opportunity cost of resources. They argue that the opportunity costs are lower than are used in the model. As part of this argument, the claim is made that there are few alternatives to growing sugarcane particularly in some regions and that this has not been adequately accounted for.

If we examine chart 5.14 of the report, the costs of the various resources are set out. The opportunity costs of capital and variable inputs are hard to argue with. If anything the cost of capital may be understated. The main

item claimed to be over-valued is labour. Some commentators are arguing that there is little else for labour to do. But this makes up only 29 per cent of total costs. Moreover, at mills, labour costs are only around 12 per cent of small mills' costs and only around 2 per cent of large mills. Most milling costs are capital or cane related. Halving mill labour costs is unlikely to change the outlook for small mills. Halving, non-mill labour costs could mean that farmers would be prepared to take a lower price for their cane from mills. This would help the viability of small mills, but would be insufficient to keep them solvent given their losses shown in chart 5.11 and it would not make them competitive with medium and larger mills for cane. It would not change the policy conclusions.

The other item that may be argued to be over-valued is the cost of fixed factors in cane. Essentially, this represents the premium that must be paid over and above what could be earned from alternative uses of the land to attract farmers to sugarcane growing. Were this also halved it would not be sufficient to make small mills viable on average and it would not alter the policy conclusions.

Because we have not modelled all small mills individually, it is possible that if labour and fixed factor costs are half those modelled, it may mean one or two of the most efficient small mills could be financially solvent, especially if they did not face competition from medium and larger mills. However, if so, this too would not change the policy conclusions. If the policy changes suggested to achieve maximum efficiency were pursued, these mills, because of their relative efficiency, isolation from competition from other mills and low opportunity costs of other crops, may survive. That would be a good outcome. The main point is, that if the opportunity cost is lower than modelled, this increases the chances of some small mills being competitive, but it does not create an argument to subsidise them.

Regarding alternative crops, the main ones we have considered are rice and cassava. It may be true that in some mill regions there are few if any alternatives. However, for the vast majority of cane growing area in Vietnam, sugarcane competes vigorously for land, labour and capital with other crops, particularly rice and cassava. Although our generalised model may not have captured the true picture for all small isolated mill areas, it has captured the reality for at least 90 per cent of cane growing land. Again, where we may have this misrepresented, it is extremely unlikely to change the main findings or policy conclusions.

Costs of the sugar program to the economy

One commentator has asserted that the report does not adequately provide information on sugar's contribution to the economy, and that, the value of eliminating hunger and poverty have not been assessed. Someone else argues that subsidies in other countries justify Vietnam subsidising its sugar production.

It is not clear that the subsidies to small mills are eliminating hunger or poverty in particular regions. Subsidies to one industry come as taxes on other sectors of the economy. A subsidy paid to promote sugar production in one region may reduce poverty marginally there but raise poverty and hunger by reducing opportunities elsewhere in those sectors of the economy that are forced to pay the subsidy. There is no free lunch from transferring a dollar from one person to another. Moreover, of each dollar of subsidy paid, less than 40 per cent of that is returned to the region. Much of it is used up paying for inputs to grow and mill cane. If subsidies are deemed to be desirable on social grounds, it would be more efficient to give the money directly than to force people to use most of that money to buy resources to produce a product inefficiently. Paying a subsidy to an efficient industry would make more sense, but then if it is efficient it presumably would not need a subsidy.

Worse still, the subsidises have lured regions into committing to huge debts to build and operate inefficient mills. Ultimate repayment of that debt may leave regions worse off (and create more hunger and poverty) than if they had not invested in inefficient mill capacity in the first place.

For all the reasons above, paying subsidies because other countries do, will not help a region or country prosper in the long run.

The comments mentioned above also seem to disregard one of the main findings of the report. That is that if small mills close, the negative economic impact on any particular region is likely to be limited. As discussed in the report, this is due to the fact that it is mainly small mills that close, not cane growing regions. Most of the existing cane will end up being crushed in other larger and more efficient mills. And because larger mills have the potential to be efficient, the whole industry has the chance to prosper. That will make the majority of cane farmers better off than now, and indeed, the whole country can be made between \$80m and 120m a year better off than now. That has the potential to really reduce hunger and poverty. With the closure of 6 mills in the North, opportunities will be reduced and this may create some social hardship. But as discussed in the report and above, some form of social safety-net could be arranged to help

these regions, and for the gain of \$100m a year from more efficient policies, this would be a small price to pay.

Comments about the adequacy of the model

A model by definition is a simplification of the real situation. However, to be useful for policy analysis, it must capture the essence of what needs to be studied. We needed a model that would provide us with an objective, consistent framework for investigating how the industry's structure might change were policies to change. We therefore built a fairly detailed representation of the industry that covers all the sorts of variables listed in chart 2.1. It models the inputs used in cane farming by three main regions, by three classes of farms in each region. Three varying types of technology can therefore be accounted for in farming in each region. Farms can use their inputs (resources) to produce cane for milling into sugar or handicraft sugar, chewing cane or other agricultural products. The alternative agricultural products vary by region and help account for the opportunity cost of resources. Farmers choose to produce sugarcane or other products and supply them to various outlets according to recent patterns and changing levels of profitability or subsidies paid. Farmers' preparedness to increase or decrease production is modelled based on recent Vietnamese experience and what we know about behaviour of supply in other countries.

There are (potentially) four classes of mills in each region - large, medium, small and handicraft - producing the various grades of sugars and by-products found in Vietnam. Consumption is defined regionally and varies according to incomes and price of sugar. Consumption also takes place at the household level after it has been through an industrial or processing stage. The Vietnamese market interacts with the world market subject to trade barriers imposed. Over the entire country supply of sugar and demand for sugar must balance subject to flows of imports and exports.

Many comments about what is included and excluded from the model are clearly incorrect. Reading appendix B should help correct these erroneous impressions. The model does reflect difference in production, costs, scale, income and demand by regions, contrary to what is suggested in the comments. Complete competition is not assumed in representing the current situation (as suggested by the comments), although the model is run where this restriction is relaxed. Indeed, one of the main purposes of building the model was to investigate what would happen were this restriction relaxed.

Supply and demand is not forced to balance by region, as stated in the comments, but some trade in cane among regions is restricted by prohibitive transport costs, which is realistic and a comment made by many participants to the seminar.

The suggestion that the model is isolated from the world market is clearly wrong – trade and trade barriers are accounted for. The suggestion that supply is due entirely to economic efficiency is not correct. In the first instance it reflects current patterns of supply that subsume the many economic and non-economic influences that have sustained production to this point. Beyond that, changes in production reflect changes in economic efficiency, subsidies and other policy changes.

The suggestion that the elasticity of demand is general and theoretical is not correct. It does represent the situation in Vietnam and takes account of the special features of Vietnamese sugar demand by region, by households, by industry, by grades of sugar and by import and export demand. Things such as including sugar beet production do not appear to be relevant when the countries sugar statistics show no or very little production of this product. It is almost impossible to image that beet could be competitive with cane.

C.2 General comments from seminar participants

- The report is comprehensive, presenting a true picture of the sugar industry
- It is a good reference.
- Not all small mills are inefficient. Some small mills may be appropriate in specific circumstances. Some of them may also potentially become big mills through expansion or merger. Many of them also service social objectives of poverty reduction in remote, high-land areas, which have land and labour favourable for sugarcane but cannot equally grow other crops.
- If small mills are closed, what will the impacts be on poor people?
- Some small mills are now inefficient because they are new and would take some time to operate efficiently; raw material areas for them are also new. After a few years, the raw material areas would be fully developed, making mills more efficient.
- Some level of protection is desirable and appropriate in the Vietnam context. Even Thailand and some sugar export countries all protect local industry, including subsidies (this may explain their high exports).
- It may not be easy for farmers in the centre who are at present selling cane to small mills to shift to selling to medium or other small mills in the region, because the road conditions are poor there.
- How much more competitive can mills become through better cost structures? What cost item can and should mills cut?
- What should be the gradual steps of trade liberalisation for the sugar industry? Particularly in terms of tariff adjustment? What is the best process of tariffication for sugar?
- In general, for the 1 million tonne sugar program to become competitive, what are the roadmaps, measures and sequences that the government and industry should take?

C.3 Specific comments from seminar participants

Mr. Thai:

- The model should be changed to reflect various assumptions (average income in regions, etc.) and the relationship between the sugar industry and others?

Mr. Long:

Sugar development is the right policy for industrialisation and import substitution as Vietnam has potentialities, especially in highland areas where:

- there is no competition from other crops and canes are most suitable with soil conditions;
- the economic development is low; and
- the opportunity costs of land and human resources are very low (10 - 25%).

If not canes, which crops could be developed there to create employment and incomes for local people?

Mr. Tran Binh Dinh

- The recommendation of closing 28 small mills seems not convincing because the report has not suggested any solutions when closing them. In case they are closed, many farmers will not have opportunities to make money.
- Farmers will have more benefits when selling canes to large mills, but what happens if they are too far from the mills?
- In the Centre, if small mills close, farmers may supply canes to medium mills. But, in the North, if small mills close, to whom will farmers sell their canes?

Mr. Luu Duc Hai

- The report has not clarified how labor structures affect productivity and how different kinds of canes affect competition.
- The analyzing of cost price structures and the way to reduce it is not clear.

Mr. Nguyen Van Nam:

- If Scenario 1 is followed, what are the steps? How can bad social impacts of the closure be avoided?
- Circling raw material zones would create losses to farmers (because of the monopoly of mills in purchasing canes). Planning raw material zones is a "should".
- It is not quite right if scale is always claimed as the reason of the inefficiency of small mills. Not all 28 small mills are inefficient. Some small mills operate well and may become larger.
- Vietnam begins with small mills, but in the future, they may become large.
- The report suggested a right orientation but has not mapped out specific steps and methods to avoid shocks for farmers.

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C.3 Specific comments from seminar participants (continued)

Mr. Thang:

- He agrees with the economy of scale, but according to him, one of conditions to obtain it is the relationship between mills and farmers.
- Options of policies.
- More adequate consideration is needed.
- The report mentions the change of crops, which crops will substitute canes?

Mr. Hao:

- The report should be more objective when mentioning subsidies. Subsidies are also available in Europe.
- As far as small mills are concerned, the report should discriminate which mills are efficient and which are not. The tendency is starting with small mills and developing them into large ones.

Mr. Le Viet Thai (Central Institute of Economic Research and Management)

- Predictions for the sugar industry and recommendations on policies have not met expectations of readers.
- The chart describing the elasticity of demand in the report is general and theoretical. It does not reflect the special features of food markets in general and sugar markets in particular (in fact, it is not a straight line). This could be explained simply as follows: *when an individual reaches a high level of sugar consumption, he/ she will not need more sugar despite its price is reduced by times*. This is noteworthy when 60% of refined sugar and raw sugar are consumed by households.
- Regarding the chart describing the elasticity of supply, in principles, it will reflect some part of the fact if decisions of investment are considered purely on aspect of economic efficiency. In fact, for many years, projects funded by the State Budget (or related to the State Budget) were also considered on other aspects (social issues, employment, etc.). Such projects occupy the most part of investments in the sugar industry.
- Some assumptions of the model such as complete competition, unchanged income, balance between supply and demand in each region, etc. do not reflect accurately the real situation of Vietnamese sugar markets. This may bring unsuitable results of the model.
- Other substitute products (e.g. sugar processed from sugar beet) should be considered in the model.
- Comparing demands for sugar in Vietnam and other countries:
- It is not clear whether the level of consumption in other countries is exclusive of the amount exported and used for industrial production? This is important for building up a strategy for developing the sugar industry.
- Methods of analysis and approach:
- Readers easily feel that the Vietnamese market is studied in isolation from the world market.
- Related industries should be studied more on some aspects, i.e. their prospects and potential expansions in domestic and foreign markets. In such way, the report will have more bases to predict the potential competitiveness of Vietnamese sugar.
- Recommendations on policies:
- Regarding the objectives of the sugar program, the report should analyze the viewpoint when working out objectives of the sugar program (page 19). The objective of one million tons of sugar by the year 2000 is determined to *"...meet sufficiently demands of Vietnamese people and domestic processing industries..."* stemmed from the viewpoint of "self-supply", separating Vietnamese market from the world market. This is not suitable in the integration tendency.

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C.3 Specific comments from seminar participants (continued)

- The possibility of establishing an Association of Sugar Producers should be analyzed more clearly. In fact, most of members of such an association shall be sugar mills (not farmers). This may result in a cooperation amongst sugar mills through the association to fix prices for purchasing canes when the world price of sugar decreases.
- When building up policies, economic objectives should be separated from social objectives. For examples, "floor price" is usually regarded as social measure. However, in fact, this measure never helps to meet objectives because subsidies shall flow to bigger (and usually richer) producers. In this case, subsidies on demographic basis would possibly more effective.

Mr. Nguyen Dinh Long (Institute of Agro-economy)

- Some analysis focuses on financial evaluation more than economic efficiency. For examples, the report mentions opportunity costs of land (10%) and human resource (27%). However, these costs should be considered in other social relationships, e.g. in many regions, there is very little competition from other crops and the land there is usually in bad conditions or people in those regions (mostly poor regions) lack of employment. Therefore, opportunity costs of those factors are very low (in many cases, they are even zero). In short, the convincibility of the report in terms of opportunity costs of land and human resource is not of high level.
- Regarding scale of mills, the report has not specified which scale is suitable. It explained the inefficiency of small scale, but it should specify how small is not suitable, not all 28 small mills are burden of the national economy.

Mr. Tran Dinh Dinh (Vice General Director of the Bank of Agriculture and Rural Development)

- The report does not provide adequately information about the contribution of the sugar sector to Vietnamese economy and society. It just mentioned the cost of subsidies for the sugar industry, not the cost of hunger elimination and poverty reduction for people in cane growing regions. What will happen with social security if hundreds of people suffer from hunger and poverty due to the closure of a series of sugar mills?

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