2007

The impact of the Coffs Harbour Education Campus on the Coffs Coast regional economy

Don Fuller

Stephen Mason
Southern Cross University

Tim Sutton

Simon J. Wilde
Southern Cross University

The Impact of the Coffs Harbour Education Campus on the Coffs Coast Regional Economy

by

Don Fuller, Tim Sutton, Simon Wilde and Stephen Mason

Centre for Enterprise Development and Research
Southern Cross University
Coffs Harbour Campus

Occasional Paper No. 5

September 2005

The Impact of the Coffs Harbour Education Campus on the Coffs Coast Regional Economy

by

Don Fuller, Tim Sutton, Simon Wilde and Stephen Mason

Centre for Enterprise Development and Research
Southern Cross University
Coffs Harbour Campus

Occasional Paper No. 5

September 2005

Abstract

This paper examines the economic impact of the Coffs Harbour Education Campus (CHEC) on the Coffs Coast region of New South Wales (NSW). CHEC is an educational campus which combines offerings from three partners. These are Southern Cross University, Technical and Further Education (TAFE) NSW and a Senior College for secondary years eleven and twelve. The estimation of CHEC's economic impact on the region is based on the use of a regional input-output matrix which models the industry sectors of the region and the way in which these sectors interact to form the whole regional economy. This approach allows a logical and supportable method of determining the contribution of CHEC's operations to the region's economy. The Coffs Harbour Education Campus is found to be an important economic driver within the region. The CHEC facility offers the Coffs Coast region, and particularly the community's younger members, educational and career-development opportunities which may not otherwise be readily available. However, as this paper demonstrates, CHEC offers more to the region than the opportunity for educational development. It is a significant employer in its own right and, via the economic activity which it generates, a substantial current contributor to the region's household income and value of output.

Introduction

This paper examines the economic impact of the Coffs Harbour Education Campus (CHEC) on the Coffs Coast region of New South Wales (NSW). This region has been defined to consist of the Local Government Areas of Coffs Harbour, Bellingen and Nambucca. CHEC is an educational campus which combines offerings from three partners. These are Southern Cross University, Technical and Further Education (TAFE) NSW and the Senior College. The Senior College includes secondary students studying years 11 and 12. CHEC is situated in the regional city of Coffs Harbour on the NSW Mid-North coast. The estimation of CHEC's economic impact on the region is based on the use of an input-output matrix which models the industry sectors of the region and the way in which these sectors interact to form the whole regional economy. This approach allows a logical and supportable method of determining the contribution of CHEC's operations to the region's economy. The particular input-output model used is embodied in the computer-based model, REMPLAN. This approach is being further developed in a collaborative project involving Southern Cross University and La Trobe University. The impact of CHEC on the region's economy is determined by using the number of employees at CHEC as an input to the model. The model is then able to estimate the impact on value of output, employment, household income and value added within the Coffs Coast region.

This paper commences by discussing the development of CHEC and the importance of the educational institution for regional and community development. The following section explains the methods to be applied in this research. The input-output model is then simulated to estimate the economic impacts of the CHEC campus on the surrounding region in terms of value of output, employment, household income and value added. Finally, the main implications of these findings are discussed within the wider context of how regional universities might best contribute to the economic and human development of their regions.

Coffs Harbour Education Campus and Linkages with the Regional Community

As discussed, Coffs Harbour Education Campus (CHEC) is a partnership between Southern Cross University (SCU), the North Coast Institute of TAFE and the NSW Department of Education and Training, represented by the Coffs Harbour Senior College. Under this partnership, three educational sectors have been brought together on the one site. The educational campus was opened in February, 1995. Both individually and collectively the sectors aim to contribute to the provision of education and training

opportunities. Capital expenditure to date on teaching and learning facilities has been around $55 million and a residential college exists on site which houses 100 students. Around 5000 students enroll annually in programs offered by Southern Cross University, North Coast Institute of TAFE and Coffs Harbour Senior College at the CHEC campus. Four hundred and fifty staff are engaged in the delivery and support of these programs as well as the management and operation of the CHEC facility. This collaboration has led to the establishment of the CHEC English Language Centre and the development of a Technology Park and Innovation Centre in partnership with the Coffs Harbour City Council. The construction and development of this educational centre can be traced to 1985 when a group of citizens gathered in the Coffs Harbour City Council Chambers to assess community support for a tertiary education presence in Coffs Harbour.

Three major challenges faced the citizens of Coffs Harbour in this endeavour. The first was to entice a University or College of Advanced Education to agree to establish an annexe or campus in Coffs Harbour. The second was to gain approval from the New South Wales (NSW) government to establish such a campus in Coffs Harbour. The third main challenge was to find a suitable site which would allow for future expansion. Following discussions, it was agreed to exchange land owned by the Coffs Ex-Services Club for Council Land adjacent to the Club in the City of Coffs Harbour. A Memorandum of Understanding between Southern Cross University, NSW TAFE and the NSW Department of Education was signed in March 1994.

CHEC has seen the co-location of a University and a TAFE. The Further Education sector plays a well developed role in meeting regional needs in Australia with Technical and Further Education institutions (TAFEs). According to Klich (1999), there are real differences in terms of purpose and operation between these two sectors. First, public funding per full-time equivalent student for TAFE is, on average, greater in absolute terms than that provided for university education. Second, the existence of separate regulatory and funding arrangements for the two sectors means that the best co-ordinated use may not be made of resources available for post-secondary education in Australia. However, as students increasingly blur sectoral boundaries by actively individualising learning pathways, linkages between the vocational education and training sector and higher education sector have improved significantly since the 1990s. Inter-institutional collaboration and co-operative arrangements have produced improvements in credit transfer and the recognition of prior learning. The development of co-located and new shared campus arrangements, such as at Coffs Harbour and Ourimbah in New South Wales are examples of such increased collaboration. In addition, the Royal Melbourne Institute of Technology and Charles Darwin University have operated for many years in partnership with a TAFE division.

Close links with community have been an ongoing priority for the CHEC campus, with close connections established from the outset with the Coffs Harbour and District Chamber of Commerce and Industry, Coffs Harbour City Council, private sector tourism operators, government and semi-government bodies and the Coffs Harbour Future Development Corporation (CHEC Annual Reports 1994, 1995, 1996). Within a global environment, regional success has been characterised by agglomeration economies, economies of scope, and networks of small firms and supportive institutions. Central to successful innovation are structures and modes of interaction between knowledge producers, disseminators and users (Goddard 1999). Universities play a central role in these arrangements.

Educational institutions can claim a significant economic impact in their region through direct and indirect employment generation and staff and student expenditure (OECD 1999). This paper is concerned to estimate these direct and indirect economic impacts for the Coffs Coast region of northern New South Wales. In addition, in relation to employment changes within the region, educational employment is likely to be increasing, whilst other sectors such as agriculture, are decreasing. It is also the case that the impact of educational institutions goes beyond such 'measurable' economic impacts to include dynamic effects associated with enhancing the stock of skills and knowledge within the region. It is however, beyond the scope of this paper to attempt to quantify the impacts of such influences. Examples include technology transfer to industry, recruiting students from outside the region and placing them with local businesses, programmes of continuing and professional development, locally embedding global businesses with internationally benchmarked training programs and research links and providing a gateway to the global knowledge base for local small to medium sized enterprises.

A number of regional institutions are attempting to move toward a more strategic, systematic and pervasive engagement with their region, for mutual benefit. For example, a university or educational sector may take on community leadership responsibilities that embrace the region's strategic economic direction as part of its own strategic priorities. In this sense, the university and the community pursue a whole of institution/whole of community partnership approach for their respective economic futures. Garlick (1999) found that while there was an increasing will on the part of universities to connect better with their regions, there were a number of impediments, such as government policy, university management and community levels.

No consistent or concerted effort could be found by Garlick that could be characterised as a whole of institution or whole of community approach. Recommendations to government included changes to the formula criteria on which operating grants to

universities were based and changes to specific purpose and grant programs targeted to universities to assist them build linkages with their communities to enhance economic competitiveness. Regional communities were encouraged to better articulate the economic and developmental objectives to better engage universities. Universities were urged to provide a clearer point of entry for the regional community into the university and to encourage, strengthen and reward staff involvement in regional initiatives and to develop a long term strategy in co-operation with regional leaders to pursue a learning region approach to building regional economic competitiveness.

Regional Input – Output Methodology

As pointed out by West and Gamage (2001), input-output is a tool often used for estimating the impacts of an economic activity on a regional economy. An important attraction of the input-output modeling approach is that it is capable of providing a detailed picture of the structure of an economy at a particular point in time. This is achieved by disaggregating the productive activities in the economy into industry sectors and documenting all the transactions (purchases and sales) that occurred during the time period (usually one year) between these sectors. The input-output model may be regarded as a set of regional accounts which provides the basis for a detailed analysis of inter-sectoral relationships within a regional economy.

The classical input-output model is described by the following matrix equation:

$$\textbf{\textit{X}} = \textbf{\textit{AX}} + \textbf{\textit{Y}} \qquad (1)$$

Where $\textbf{\textit{X}}$ is the vector of sectoral gross outputs, $\textbf{\textit{A}}$ is the matrix of regional intermediate input or regional purchase coefficients, and $\textbf{\textit{Y}}$ is a vector of total final demands by sector. The coefficients a_{ij} of $\textbf{\textit{A}}$ are defined as the amount purchased by sector j from sector i per unit of output of sector j. Equation (1) states that gross output of each industry equals intermediate demand sales ($\textbf{\textit{AX}}$) to other industries for further processing plus final demand sales ($\textbf{\textit{Y}}$) of end products to consumers, including households, government, and for export. By rearranging and converting to differences, this equation can be rewritten as

$$\varDelta\textbf{\textit{X}} = (\textbf{\textit{I}} - \textbf{\textit{A}})^{-1}\,\varDelta\textbf{\textit{Y}} \qquad (2)$$

Which allows us to calculate the change in industry production levels $\varDelta\textbf{\textit{X}}$ in response to the change in industry final demands $\varDelta\textbf{\textit{Y}}$. $\varDelta\textbf{\textit{Y}}$ can incorporate any element of final demand expenditure. The input-output structure is divided into four main quadrants. A simplified example can be seen in Figure 1 (Australian Bureau of Statistics 1993).

Figure 1. Structure of Australian Input-Output Tables

From \ To	Column prefix	Intermediate Uses — Agriculture, etc	Intermediate Uses — Mining	Intermediate Uses — Manufacturing, etc	Intermediate Uses — Construction	Intermediate Uses — Services	Intermediate uses (sub-total)	Final Uses Q1 — Final consumption expenditure — household	Final Uses Q2 — Final consumption expenditure — government	Final Uses Q3 — Gross fixed capital formation — private	Final Uses Q4 — Gross fixed capital formation — public enterprises	Final Uses Q5 — Gross fixed capital formation — general government	Final Uses Q6 — Changes in inventories	Final Uses Q7 — Exports of goods and services	Final Uses (sub-total)	Total supply (grand total)
	Column prefix	0101-0400	1100-1500	2101-3701	4101-4102	4501-9601		Q1	Q2	Q3	Q4	Q5	Q6	Q7		
Agriculture	0101-0400															
Mining	1100-1500															
Manufacturing, etc.	2101-3701	QUADRANT 1 INTERMEDIATE USE						QUADRANT 2 FINAL USE								
Construction	4101-4102															
Services	4501-9601															
Intermediate uses (sub-total)																
Compensation of employees	P1															
Gross operating surplus and mixed income	P2	QUADRANT 3 PRIMARY INPUTS TO PRODUCTION						QUADRANT 4 PRIMARY INPUTS TO FINAL USE								
Taxes on products (net)	P3															
Other taxes on production (net)	P4															
Imports	P5															
Australian production																

Intermediate uses / *Intermediate inputs* / *Primary inputs*

The shaded areas correspond to aggregates shown in the Gross Domestic Product Account.

⬚ corresponds to aggregates shown as the components of gross domestic product, income approach.

⬚ corresponds to aggregates shown as the components of gross domestic product, expenditure approach.

Source: Australian Bureau of Statistics (2001)

Quadrant 1, the Intermediate Usage quadrant is made up of transactions between firms in the local region. Quadrant 2, the Final Demand quadrant records sales of locally produced goods and services within the region (in the form of consumption and investment by households, government and firms) and to people outside the region (exports). The primary inputs quadrant represents payment to households (wages and salaries), firms (gross operating surplus), governments (taxes on goods and services) and to producers outside the region (imports). These sectors provide primary inputs (labour and capital) to such final demand. Quadrant 4 (primary inputs to final demand) presents information on taxes paid by final users, flows of secondhand goods to and from final buyers and imports which are subsequently exported.

In any economy, the addition of new (exogenous) output or employment for a particular sector will lead to an increase in the gross product for that economy. The total increase in the gross product of the economy will be greater than the exogenous output due to the effect of "economic multipliers". Thus, if the manufacturing sector finds additional demand of, say, $200, it will require inputs from other sectors in order to produce that $200 of output. Those sectors will in turn require inputs from other sectors, and "multiplier" rounds will occur. Through the use of input-output matrices, a series of coefficients can be determined. These coefficients allow the modelling of impacts to the economy. Such impacts can be measured not only in terms of the direct impact (the new output) on the sector which is expanding, but the total impact on all sectors and therefore the total impact on gross product for the region.

Some care needs to be taken in the use of input-output data and it is important the underlying assumptions are kept clearly in mind. The main assumptions are (i) Fixed production coefficients, which imply constant returns to scale. That is to say, if the output of sector j doubled, it would be necessary to double all of its inputs with no evidence of scale economies (see for example Pinge 2000) (ii) It is also assumed that regional economic performance matches national average performance. (iii) Input proportions are assumed to remain the same with no change in technology. As long as the model is kept up to date this latter concern should not pose a threat to its effectiveness, except as a tool for long-term forecasting. (iv) Fourthly, it is assumed that each industry sector produces a fixed set of products that are not produced by any other sector. While it is possible to have some overlap between sectors, e.g. liquor sold in hotels (the Retail sector) and in cafes (the Accommodation, Cafes and Restaurants sector). Such an assumption should not inhibit the validity of the model to any great extent. (v) Finally it is assumed that there are no supply constraints and that the intermediate and household sectors will be able to service any increases in final demand. This assumption can

weaken the predictive capacity of the model in cases where increases in overall demand could bring about factor shortages and raise prices in the short term.

Input-output tables can be directly related to the main summary account (referred to as the "domestic production account") in the national (and regional) income and expenditure accounts. The income side of the production account shows the amount of income generated in the economy accruing to labour (in the form of wages, salaries and supplements) and to capital (as profits or, in national accounting terms, "gross operating surplus"), as shown in the rows of Quadrant 3 of the input- output table in Figure 1. The expenditure side of the account shows the value of goods and services entering into the various categories of final demand, as shown in the columns of Quadrant 2 in Figure 1. The input-output tables provide a much more detailed disaggregation of the domestic production account than is available in the national income and expenditure accounts. The latter only supply details of the end results of economic activity, whereas the input-output tables provide a means of tracing flows of goods and services step by step through the production process.

There are three main approaches to construction *regional* input-output models (Pinge 2004). The first approach is to survey all firms in the region to obtain details of the source of supply of all inputs as well as the destination of outputs. This is often referred to as the *bottom up* approach. While such an approach is often considered robust it is very expensive in terms of the resources and time necessary for data assembly. A less expensive and more timely approach is to adapt the data available from national tables produced by the Australian Bureau of Statistics in a manner likely to be more representative of the particular region under study. This *top down* approach, as it is known, uses available regional Census data such as employment by industry group, to adjust national data to form a regional input-output table. A third approach is the *hybrid* method that commences with the top down disaggregation of the national model and is supplemented by selective surveys for key sectors within the region. This is the method followed within the REMPLAN model. Such an approach is more economical and timely than surveying all firms within a region. Research relating to the accuracy of these three main approaches have indicated that results from the top down approach were very close to that provided by a bottom up approach. The hybrid method produced results even closer to that of the full survey approach and was seen to be superior in terms of cost and timeliness (Pinge 2000).

Simulating the Model

In order to simulate the model it was assumed that the CHEC facility would be shut down and all employment involved with the education campus terminated. It was further assumed that the proportion of full-time and part-time staff were similar to national proportions within the Education sector. Following discussion with administrative managers at the CHEC campus it was determined that the number of academic, administrative and facilities staff in all three sectors (Senior College, TAFE, and SCU), was 450. The number of employees, when entered into REMPLAN, provides an estimate of the direct impact on output of the education sector resulting from such employees. The model then determines the total linked and induced impacts of this initial employment on the regional economy according to the value of regional output, regional employment, household income and value added within the region. In simulating the model it was necessary to further assume that demand currently met by CHEC would not move to other institutions within the region, following the closure of the facility. While this assumption was regarded as robust for the University and TAFE sectors within CHEC, demand currently met by the Senior College of CHEC, could be expected to shift to other secondary schools within the region. In addition, the exclusion of the economic impact of out-of-region students from the analysis is likely to result in an under-estimation of the total economic impacts of CHEC upon the regional economy.

Tables 1 to 4 present the economic impact analysis resulting from the CHEC on the regional economy. The tables show columns for Final Demand, the Industrial Effect (demand in the Intermediate Quadrant after the impact), the Consumption Effect (demand in the Final Demand Quadrant after the impact), and the total effect according to (1) Value of Regional Output (2) Regional Employment (3) Regional Household Incomes and (4) Regional Value Added. The tables also show type 1 and type 2 multipliers. These represent the multiplier which is applied to Final Demand in order to obtain the Industrial and the Consumption Effects, respectively.

Table 1.

ECONOMIC IMPACT ANALYSIS – COFFS HARBOUR EDUCATION CAMPUS **OUTPUT** **Coffs Coast Region** FILL IN EXPECTED ANNUAL CHANGES IN FINAL DEMAND COLUMN				
SECTOR	**Final Demand $m**	**Industrial Effect**	**Consumpn Effect**	**Total**
Agriculture, Forest, Fishing	-	0.05	1.06	1.11
Mining	-	0.00	0.03	0.03
Manufacturing	-	0.77	4.48	5.25
Electricity, Gas, Water	-	0.34	1.40	1.74
Construction	-	0.01	0.08	0.09
Wholesale Trade	-	0.22	1.82	2.04
Retail Trade	-	0.16	8.66	8.82
Accomm, Cafes, Restaurants	-	0.16	3.22	3.38
Transport, Storage	-	0.20	1.29	1.49
Communication Services	-	0.24	1.23	1.47
Finance, Insurance	-	0.26	2.77	3.03
Property, Business Services	-	0.62	3.67	4.29
Govt Admin & Defence	-	0.17	0.32	0.50
Education	29.05	0.16	1.10	30.31
Health & Community Serv	-	0.02	1.77	1.79
Cultural & Recreational Serv	-	0.10	1.92	2.02
Personal & Other Services	-	0.05	1.78	1.84
TOTALS	**29.05**	**3.55**	**36.61**	**69.21**
Output Multipliers		**Type 1** **1.12**		**Type 2** **2.38**

Table 1 shows that the impact of CHEC on the total value of output of the region is estimated at $69M. Total output as a result of CHEC represents 1.8 per cent of the region's total output. The major industry sectors benefiting from the CHEC campus within the regional economy are Education ($30.3M), Retail ($8.8M), and Manufacturing ($5.3M). Substantial value of output impacts were also experienced by the sectors, Property and Business Services and Accommodation, Cafes and Restaurants. It is noteworthy that the Education sector has a larger type 2 output multiplier than most other sectors, resulting in a larger total impact on the regional economy from a given change in the sector's employment or output.

Table 2.

ECONOMIC IMPACT ANALYSIS – COFFS HARBOUR EDUCATION CAMPUS **EMPLOYMENT** Job numbers **Coffs Coast Region**				
SECTOR	**Final Demand**	**Industrial Effect**	**Consumpn Effect**	**Total**
Agriculture, Forest, Fishing	-	0.4	8.2	8.5
Mining	-	0.0	0.1	0.1
Manufacturing	-	2.9	16.9	19.8
Electricity, Gas, Water	-	0.6	2.6	3.2
Construction	-	0.1	0.5	0.5
Wholesale Trade	-	1.4	11.7	13.1
Retail Trade	-	1.8	102.2	104.1
Accomm, Cafes, Restaurants	-	1.5	30.3	31.8
Transport, Storage	-	1.0	6.1	7.0
Communication Services	-	0.9	4.6	5.5
Finance, Insurance	-	1.1	11.2	12.3
Property, Business Services	-	2.9	16.8	19.7
Govt Admin & Defence	-	1.2	2.3	3.5
Education	450.0	2.5	17.0	469.5
Health & Community Serv	-	0.3	27.6	27.9
Cultural & Recreational Serv	-	0.8	15.3	16.1
Personal & Other Services	-	0.6	19.9	20.5
TOTALS	**450.0**	**19.9**	**293.3**	**763.2**
Employment Multipliers		**Type 1** **1.04**		**Type 2** **1.70**

Table 2 presents data on the impact of closing the CHEC campus, on employment within the regional economy. The Table shows that while the direct employment of 450 staff is, in itself, a significant contributor to the regional economy, when the effect of multipliers is taken into account, the total number of regional jobs linked to the location of CHEC is estimated at 763. This figure represents approximately 2.7 per cent of the region's jobs and demonstrates that a significant proportion of the employment in the region is linked to CHEC's operations. The multiplier impact on the Retail sector in terms of employment is relatively large, but perhaps not surprising given that the Retail sector is the largest contributor to employment in the region. The number of jobs attributable to CHEC within the Accommodation/Cafes/Restaurants sector is 32. Whilst this figure represents only 1 per cent of total jobs in this sector, it provides an important stimulus to an industry sector characterised by a high degree of seasonality.

Table 3.

ECONOMIC IMPACT ANALYSIS – COFFS HARBOUR EDUCATION CAMPUS				
HOUSEHOLD INCOME $m				
Coffs Coast Region				
SECTOR	**Final Demand**	**Industrial Effect**	**Consumpn Effect**	**Total**
Agriculture, Forest, Fishing	-	0.01	0.17	0.17
Mining	-	0.00	0.00	0.00
Manufacturing	-	0.13	0.76	0.89
Electricity, Gas, Water	-	0.04	0.16	0.20
Construction	-	0.00	0.02	0.02
Wholesale Trade	-	0.06	0.52	0.58
Retail Trade	-	0.05	2.90	2.95
Accomm, Cafes, Restaurants	-	0.04	0.76	0.80
Transport, Storage	-	0.05	0.31	0.36
Communication Services	-	0.06	0.30	0.36
Finance, Insurance	-	0.07	0.79	0.86
Property, Business Services	-	0.16	0.97	1.13
Govt Admin & Defence	-	0.08	0.15	0.24
Education	21.73	0.12	0.82	22.67
Health & Community Serv	-	0.01	1.13	1.14
Cultural & Recreational Serv	-	0.03	0.49	0.52
Personal & Other Services	-	0.02	0.68	0.70
TOTALS	**21.73**	**0.94**	**10.91**	**33.58**
Income Multipliers		**Type 1** **1.04**		**Type 2** **1.55**

Households are a key sector of the economy. This sector comprises the regional population, which consume the output of the production and services organised by the trading enterprises sector. Production results in incomes being paid in the form of wages and profits to the owners of the factors of production. In the case of labour, the productive factors are owned directly by persons (Harcourt, Karmel and Wallace 1968). Other factors may be legally owned by private enterprises, but, as these are legal entities, all income flowing from privately owned trading enterprises can be regarded as accruing to individuals and households. The Education sector is relatively labour intensive compared with some other industry sectors. As such, the sector makes a strong contribution to household income and consumption activity in the region. Accordingly, at $33.6M, household income effect, as a result of CHEC, accounts for 3 per cent of total household income for the region. This is a significant proportion for one organisation within the region. Major sectoral impacts occurred in Education ($22.7M), Retail ($3.0M), Health and Community Services ($1.1M) and Property and Business Services ($1.1M).

Table 4.

ECONOMIC IMPACT ANALYSIS – COFFS HARBOUR EDUCATION CAMPUS **VALUE ADDED $m** Coffs Coast Region				
SECTOR	**Final Demand**	**Industrial Effect**	**Consumpn Effect**	**Total**
Agriculture, Forest, Fishing	-	0.03	0.57	0.60
Mining	-	0.00	0.01	0.02
Manufacturing	-	0.24	1.38	1.62
Electricity, Gas, Water	-	0.17	0.71	0.88
Construction	-	0.01	0.04	0.04
Wholesale Trade	-	0.09	0.69	0.78
Retail Trade	-	0.08	4.58	4.66
Accomm, Cafes, Restaurants	-	0.07	1.34	1.40
Transport, Storage	-	0.09	0.60	0.69
Communication Services	-	0.14	0.72	0.86
Finance, Insurance	-	0.16	1.67	1.82
Property, Business Services	-	0.29	1.71	2.00
Govt Admin & Defence	-	0.09	0.17	0.25
Education	24.90	0.14	0.94	25.97
Health & Community Serv	-	0.02	1.39	1.41
Cultural & Recreational Serv	-	0.05	0.96	1.01
Personal & Other Services	-	0.03	1.00	1.03
TOTALS	**24.90**	**1.68**	**18.48**	**45.06**
Value Added Multipliers		**Type 1** **1.07**		**Type 2** **1.81**

The value of the annual output of an enterprise is the sum of its annual sales to other enterprises together with the change over the year in the value of its stocks of finished or semi-finished goods. This change represents the enterprise's investment expenditure upon stocks which may be positive or negative. The value of the annual inputs used up in the production of the annual output is the sum of annual purchases from other enterprises and the change over the year in the value of the stock of inputs. Annual value added of enterprises within the region is therefore equal to sales of output during the year plus net additions to stocks less the purchase of intermediate goods during the year. By analogy with the value added of a trading enterprise, the value added of the government sector is defined as the value of collective goods and services provided *less* the value of goods purchased from trading enterprises. These are regarded as intermediate goods from the viewpoint of the government. For financial enterprises, the output may be defined in terms of the value of the services they provide. All production within a regional economy occurs in these three sectors. It is valued at market prices, directly in the case of trading enterprises, and indirectly in the case of the other two sectors. The sum of the value added of these three sectors within the region is

equivalent to Gross Regional Product. The component of value added within the Coffs Coast region attributable to CHEC is estimated at $45M, or 2.4 per cent of the region's total value added. The main value added impacts were experienced in the Education sector ($26.0M), Retail ($4.7M) and Property and Business Services ($ 2.0M).

Summary of results

The Coffs Harbour Education Campus provides a substantial stimulus to the Coffs Coast regional economy. The contribution of CHEC to the region's value of output, after multipliers, is estimated at $69.2M. This equates to 1.8 per cent of the region's total value of output. The economic activity generated in the region by CHEC's operations is an important driver of employment in the region. Taking into account both the direct and flow-on impacts of CHEC's operations, it is estimated that a total of 763 jobs are generated. This represents 2.7 per cent of the region's total jobs. As well as the economic activity which CHEC generates in the Education sector, and the flow-on effects of that activity, CHEC attracts students to move to the region. These out-of-region students consume not only the educational services of CHEC but other non-Education sector goods and services. If the effect of out-of-region students is included in the analysis, the overall contribution of CHEC to the region's economy is likely to be even more substantial. The CHEC facility offers the Coffs Coast region, and particularly the community's younger members, educational and career-development opportunities which may not otherwise be readily available. However, as this paper demonstrates, CHEC offers more to the region than the opportunity or potential for educational development. It is a significant employer in its own right and, via the economic activity which it generates, a substantial current contributor to the region's economy and employment.

Conclusions

The research and teaching activities of publicly funded universities have come under increased pressure from governments and communities. There is now an increased concern to harness the activities of universities to the economic and social priorities within their regions and to the processes of regional development. Such development is influenced concurrently, by the forces of 'globalisation' and 'localisation'. The nature of the local business environment is very important to the establishment of competitive advantage within international markets. At the local and regional level, the availability of knowledge and skills is vital for regional development and a regionally engaged university becomes a key locational asset to enhance both domestic and internationally competitive industries within a region (OECD 1999).

There is now a general recognition that regions are the best platform for nations to generate economic advantages in the global economy. This recognition has stimulated policy debate as to how best to enhance the capability and competitiveness of regional communities so that they can provide an effective and supportive milieu for sustainable development to occur. A number of writers have focused on enhancing regional economic competitiveness by facilitating increased business connectivity and linkages between businesses and institutions within the region (Porter 1990; Curran and Blackburn 1994; Kanter 1995; Beer, Maude and Pritchard 2003). In addition, the importance of continuous improvement and knowledge enhancement in the form of diffusing research and development, skill development and retention and lifelong learning throughout the region, suggest a key role for educational institutions in these processes within regions.

There are a number of challenges facing regional universities and educational campuses such as the Coffs Harbour Education Campus. Perhaps the most important challenge is to be able to attract a sufficient number of domestic students from the region, as well as international students, to enable the Campus to achieve the necessary economies of scale in order to be able to compete with other providers of flexible and distance education. Such a challenge has important implications for both the revenue and the cost of delivery per student for those involved in the delivery of regional education services. It is likely that regional educational sectors such as CHEC will face intense competition from the larger established, metropolitan universities and increasingly from private and international providers (Klich 1999), particularly in the distance and international student markets. Such markets have been seen as essential to bolster the students available from the surrounding region.

In the face of such intense competition it could be argued that regional education providers should concentrate on attracting students from within their regions as a major priority. Regional educational providers such as CHEC should be well placed to recruit students from surrounding areas who will benefit substantially from not having to meet the added living costs associated with attending a university for example, located within a metropolitan area. However, it is not apparent that some regional universities have chosen to capitalise sufficiently on such regional markets and organise available resources to serve such markets. Rather, it appears that substantial resources have been directed in some cases to the international student market. However, it is likely that countries such as China and those within the South Eastern Asian region will increasingly develop the capacity to deliver educational programs through facilities and personnel available from within their own borders. An over concentration on international student markets at the expense of domestic students from within surrounding regions may therefore prove highly risky in the medium to longer term, particularly if such international student markets are seen as core business rather than a strategy for diversification. It is not clear that the substantial costs often involved in negotiation and marketing designed to attract sufficient numbers of international students, has resulted in outcomes indicating an acceptable return on such outlays.

In addition, there has often been a reluctance to move resources from the administrative centre where student demand has been static or declining to more rapidly expanding population centres. Regional universities need to be far more flexible in their ability to mobilise key resources to serve areas of increasing demand than has been the case to this point in time. Course structures in some cases do not appear to be designed as a result of regional requirements but rather based on entrenched interests that exist at the central administrative location of the educational institution. Such resources include infrastructure but also the teaching resources able to deliver high quality educational outcomes in a manner competitive with the metropolitan universities. Unless this is done, it is likely that local students will continue to move to metropolitan centres for tertiary education rather than risk a 'second grade' educational experience at a regional campus. Regional universities therefore need to be more externally focused into their regions. To this end, it could be argued regional universities should concentrate on developing high quality educational outcomes within areas clearly in demand within their regions as a first step to establishing a core foundation to their business. Such a strategy would also have enhanced the ability of regional institutions to establish important research linkages with businesses and other organisations within the region thereby adding economic value to the presence of the educational sector within the region.

References

Australian Bureau of Statistics 2001, *Australian National Accounts: Input-Output Tables,* Cat. No. 5209.0, Canberra.

Beer, A., Maude, A., Pritchard, B., 2003, *Developing Australia's Regions: theory and practice*, UNSW Press, Sydney.

Coffs Harbour Education Campus *Annual Reports* 1994-2004.

Curran, J. and Blackburn, R. 1994, *Small Firms and Local Economic Networks*, London: Paul Curran Publishing.

Garlick, S. 1999, "The Role of Universities In The Economic Development Of Regional Communities – Changing Relationships in Australia", in Klich, Z. ed *Universities and Regional Engagement*, SCU Press, Lismore, pp. 47-72.

Goddard, J. 1999, "Universities and Regional Development: An Overview", in Klich, Z. ed *Universities and Regional Engagement*, SCU Press, Lismore, pp. 33-46.

Harcourt, G.C., Karmel, P.H., and Wallace, R.H. 1968, *Economic Activity*, Cambridge University Press.

Kanter, R.M. 1995, *World Class: Thriving Locally in the Global Economy*, New York: Simon and Schuster.

Klich, Z, 1999, "Universities and Regional Engagement: An Australian Perspective", in Klich, Z. ed *Universities and Regional Engagement*, SCU Press, Lismore, pp. 17-46.

Organisation for Economic Co-operation and Development 1999, *The Response of Higher Education Institutions to Regional Needs*, OECD, Paris.

Pinge, I. 2000, "Bringing It All Together – Regional Economic Modelling as a Tool for Empowerment and Effective Decision Making", Unpublished Conference Paper, Future of Australia's Country Towns, La Trobe University, Bendigo.

Porter, M. 1990, *The Competitive Advantage of Nations*, London, Macmillan.

West, G. and Gamage, A., 2001, "Macro Effects of Tourism in Victoria, Australia: A Nonlinear Input-Output Approach", *Journal of Travel Research*, 40, August, pp. 101-109.

From \ To		Intermediate Demand					Intermediate usage (sub-total)	Final Demand							Final demand (sub-total)	Total supply (grand total)
		Agriculture, etc.	Mining	Manufacturing, etc.	Construction	Services		Final consumption expenditure — private	Final consumption expenditure — government	Gross fixed capital expenditure — private	Gross fixed capital expenditure — government	Increase in stocks	Exports of goods and services			
Intermediate inputs	Agriculture, etc															
	Mining			QUADRANT 1						QUADRANT 2						
	Manufacturing, etc			INTERMEDIATE USAGE						FINAL DEMAND						
	Construction															
	Services															
	Intermediate inputs (sub-total)															
Primary inputs	Wages, salaries and supplements															
	Gross operating surplus			QUADRANT 3						QUADRANT 4 (a)						
	Commodity taxes net			PRIMARY INPUTS TO PRODUCTION						PRIMARY INPUTS TO FINAL DEMAND						
	Indirect taxes n.e.c (net)															
	Sales by final buyers															
	Imports															
	Australian production															

The shaded areas correspond to aggregates shown in the domestic production account

▨ corresponds to aggregates shown as the components of 'gross domestic product' at market prices

▨ corresponds to aggregates shown as the components of 'expenditure on gross domestic product'

(a)   this quadrant contains some cells which are, by definition, zero