## **TSAs in Policy Modelling**

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#### **TTRI Collaborative Projects**

- TSA First Steps, English Regions with Welsh Economic Research Unit
- Tourism Indicators, Forecasting and Scenario modelling: the Moffat Model – with VisitScotland
- Tourism policy modelling DCMS
- Policy Modelling, CGE with governments in Brazil, Cyprus, Malta, Canaries

#### **TSAs and Policy Modelling**

- TSA provides a rigorous data framework
  - Importance in evaluating tourism as a demand-side activity
- Modelling approaches
  - Take the TSA further
  - Effects of changes in tourism demand
  - Effects of changes in policy

### What Types of Policy Modelling?

#### o Taxation

- e.g. VAT, APD, tourism-specific taxes
- o Tourism crisis management
  - Responses to specific crises
- Impact of tourism spending
  - 'return' on tourism promotion
- Macroeconomic policy impacts on tourism
  - Fiscal policy, exchange rates, ...

### What is 'modelling' with a TSA?

#### Types of tourism consumption

(Visitor final consumption in cash: net valution)

Table

				Residen	t visitors trav	vellinç	) within the UK			Resident visitors	s travelling ab	road	All resident visitors
			Holiday	Business	VFR		Day	Total	Holiday	Business	VFR	Total	Total tourism
							Visitors	Visitors				Visitors	consumption (d)
	£miN	on	(2.1)	(2.2)	(2.3)		(2.4) (2	2.5)=(2.1)+(2.2)+(2.3)+(2.4)	(2.6)	(2.7)	(2.8)	(2.9)=(2.6)+(2.7)+(2.8)	(2.10)=(2.5)+(2.9)
	A To	urism Products	12,510.8	4,623.1	2,220.3		12,309.7	31,664.0	11,277.3	2,199.7	1,258.0	14,735.0	46,399.0
	A1 C	haracteristic Products	12,131.8	4,415.0	2,160.3		11,520.3	30,227.3	11,277.3	2,199.7	1,258.0	14,735.0	44,962.3
	1 A 0	commodation Services	3,871.1	1,497.3	261.7		0.0	5,630.0	0.0	0.0	0.0	0.0	5,630.0
		1.1 Hotels and lodging services	3,871.1	1,497.3	261.7		0.0	5,630.0	0.0	0.0	0.0	0.0	5,630.0
		1.2 Second homes services on own account	х	х	x						х	x	x
	2 Re	staurant, bar and catering services	4,731.7	1,661.8	897.1						0.0	0.0	14,858.0
	3 Pa	ssenger transport services	2,090.9	1,063.7	629.3			M do t	'nı ır	ictc	1,188.5	12,890.0	17,416.5
		3.1 Railway transport services	311.4	158.4	93.7				.Uui	515	50.1	396.3	1,020.9
	-		1,080.4	549.6	325.2			_			104.1	823.7	2,914.6
			129.4	65.8	38.9			icato (	cnar	nding	228.0	2,110.0	2,369.9
20	זכ	nmodifies /	373.7	190.1	112.5		and	late.	Shei	MIN	806.3	9,560.0	10,412.3
			196.0	99.7	59.0		_				0.0	0.0	698.7
	4 Tra	wel agency and tour operator services 💫	98.4	17.2	4.5		hot	MOON			69.5	1,845.0	2,079.8
	5 Re	creation, cultural and other entertainment se	9 1,339.7	175.0	367.6		NEL	VVCCII			0.0	0.0	4,978.0
	6 T 0	urism connected products	379.1	208.2	60.1					_	0.0	0.0	1,436.6
		6.1 Post & telecoms services	87.3	49.1	11.4		con	nmodi	itiac	· <b>?</b>	0.0	0.0	453.7
		6.2 Financial and Insurance Services	109.4	61.6	14.4		CON		いてつ		0.0	0.0	554.3
		6.3 Rental services	76.7	43.2	10.1						0.0	0.0	244.5
		6.4 Health services	105.7	54.2	24.2		0.0	184.2	0.0	0.0	0.0	0.0	184.2
	B No	n Tourism Products											
		B1 All other products	2,662.0	775.7	630.6		11,028.3	15,096.6	0.0	0.0	0.0	0.0	15,096.6
		Distribution margins (c)	1,854.4	424.4	449.6		8,422.0	11,150.3	0.0	0.0	0.0	0.0	11,150.3
	Tota	domestic Consumption	17,027.2	5,823.2	3,300.5		31,760.0	57,910.8	11,277.3	2,199.7	1,258.0	14,735.0	72,645.8

			Producti	ion accou	nts of to (n	in	dus	stri ㅅ	es						
	Emilian	1 Hotals & accommodati on	2 Second home & caravan ownership (imputed)	3 Restaurants & bars	4 Ralways	5 Other land transport	files 6 Water Thansport	7 Air Transport	8 Other transport services	9 Travel agency and tour operators	10 Recreation services	11 Renting of moveables	Total Tourism Industries	Total Non-tourism	Domestic Output (basic prices)
	A Tourism Products A1 Characteristic Products 1 Accommodation Services 1.1 Hotels and lodging services 1.2 Second homes services on own account	15,151.4 15,151.4 10,250.3 10,250.3 x	<b>950.7</b> 890.7 <b>950.7</b> 8 <b>50.7</b> × 890.7	31,638.7 31,638.7 1,167.0 1,167.0 x	8,800.8 8,800.8 0.0 x	34,210.3 34,210.3 0.0 x	4,684.4 4,684.4 0.0 x	14,049.0 14,049.0 0.0 x	35,517.1 35,517.1 0.0 x	3,540.0 2,054.4 0.0 x	43,219.2 43,219.2 55.4 55.4 X	15,529.0 0.0 0.0 x	207,230.7 190,216.1 12,363.4 11,472.7 890.7	230,430.9 5,618.3 197.0 197.0 0.0	Total 487,711.6 195,834.4 12,560.4 11,669.7 890.7
	2 Restaurant, bar and catering services (excL canteens) 3 Passenger transport services 3.1 Relway transport services 3.2 Other land transport services 3.3 Water bansport services 3.4 Air transport services	3,809.0 0.0	ж 0.0 × × × ×	30,471.8 0.0	8,800.8 8,870.8	<b>34,210.3</b> 34,210.3	<b>4,684.4</b> 4,684.4	<b>14,049.0</b> 14,049.0	35,517.1	0.0	571.3 0.0	0.0	34,852.1 97,261.6 8,800.8 34,210.3 4,684.4 14,049.0	2,237.6 2,183.6 2,183.6 0.0 2,183.6 0.0	38,089.7 99,445.3 8,800.8 36,303.9 4,684.4 14,049.0
Out	tput r	1,092.1	x x x 0.0 x x						35,517.1	2,054 <i>.</i> 4 1,485 <i>.</i> 5	42,592.5	15,529.0	35,517.1 2,054.4 42,684.6 17,014.6 0.0 1,485.6	0.0 0.0 274,862.7 45,288.4 114,410.7	35,517.1 2,054.4 43,684.6 291,877.2 45,288.4 115,896.2
CON	B Non Tourism Products B1 All other products	154.4	x x x	3,322.1	2 1.2	Ho in	ow dus	do stri	es	use	•	529.0	15,529.0 0.0 10,753.6	5,170.8 109,992.8 1,107,231.9	20,899.8 109,992.8 1,117,985.5
	Distribution margins (c) Value of imported goods and services* Total Domestic inclustry Output (basic prices)	782.8 X 15,305.8	x x 890.7	699.2 X 34,960.8	9,0 2.0	in	put	ts t	o p	rod	uce	• • • • • • • • • • • • • • • • • • •	3,325.6 x 217,984.3	214,393.3 x 1,387,712.8	217,718.9 x 1,605,697.1
Inp	out	288.6 1,819.8 88.4 55.5 7.83.8	0.0 5.3 0.3 72.6 6 2	805.7 5,080.4 246.8 154.9 2 1.89.1	0.6 6 1.6 1 2.3 9 5	0U 177.0 38.5 5.058.4	12.8 6.2 1 704 7	UTS	116.2 738.1 12.813.0	5.1 32.0 557.8	184.0 291.1 1 757.0	0.0 129.8 125.4 38.8 1 908.8	1,290.0 24,421.6 1,168.8 1,463.5 33,564.7	1	
	Total Intermediate consumption at purchaser prices	1,435.9 268.0 4,740.0 418.0 6,235.4	32.2 1.5 118,1 -5,4 29,2	4,008.9 748.3 12,233.2 984.7 14,850.3	1,753.9 99.9 6,451.0 25.0 2,174.0	4,899.2 370.3 17,174.0 448.0 11,938.0	506.5 30.7 3,194.0 15.0 1,248.0	2,645.6 269.8 8,551.0 151.0 3,107.0	6,708.9 668.2 23,073.3 564.1 9,160.9	292.0 29.1 1,004.4 34.2 2,148.9	7,344.2 11,488.7 24,988.0 623.0 13,653.0	3,222.0 196.3 6,521.0 227.0 4,992.0	32,929.4 14,180.0 109,048.0 3,484.7 69,538.7		
val	ue added	3,912.3 10,565.8	748.B 772.6	5,892.6 21,727.6	382.0 2,581.0	5,063.0 17,440.0	373.0 1,636.0	2,240.0 5,408.0	4,075.6 13,800.7	352.5 2,535.6	9,086.0 23,362.0	3,789.0 9,008.0	35,914.9 108,936.3	l	

Press and search

#### Table 5 Production accounts of tourism industries and other industries (net valuation)

					Tourism Indus	ties								
		2 Second home 8										1		
Emilian	1 Hotals &	2 Second India a						8 Other	9 Trovol ocency					Domestic
21100.00	accommodati	ownership	3 Restaurants		5 Other land	6 Water	7 Alt	transport	and tour	10 Recreation	11 Renting of	Total Tourism		Output (basic
	on	(imputed)	& bars	4 Raiways	transport	Transport	Transport	services	operators	services	moveables	Industries	Total Non-tourism	prices)
														Tota
A Tourism Products	15,151.4	890.7	31,638.7	8,800.8	34,210.3	4,684.4	14,049.0	35,517.1	3,540.0	43,219.2	15,529.0	207,230.	290,490.9	487,711.
A1 Characteristic Products	15,151.4	890.7	31,638.7	8,800.8	34,210.3	4,684.4	14,049.0	35,517.1	2,054.4	43,219.2	0.0	190,216.1	5,618.3	195,834.
1 Accommodation Services	10,250.3	890.7	1,167.0	0.0	0.0	0.0	0.0	0.0	0 0.0	55 <i>A</i>	0.0	12,363.4	4 197.0	12,560.
1.1 Hotals and lodging services	10,250.3	X 1000 7	1,167.0							55,4		11,472.3	197.0	11,669.
1.2 Second nomes services on own account		850.7		1 *	× *	*	*	· *	· ×		×	390.1	0.0	2000.
2 Resources (exc) cancers) 3 Passencer transport services	3,809.0		30,471.8	8 800 8	34,210.3	4 6 9 4 4	14 049 0	35 517 1		5/1.3		94,852	2 1.83.6	38,089.
3.1 Rollway transport services	0.0	0.0		8 800 8	54,21005	4,004.4	14,042.0	33,517.1	" <sup>~~</sup>	•.•	0.0	8,800,8	1,100.0	B 800
3.2 Other land transport services		Â		0,000.0	34,210,3							34,210.3	2.183.6	36,393.
3.3 Water transport services		×				4.684.4						4,684,	0.0	4,684,
3.4 Air transport services		×					14,849.8					14,049.0	0.0	14,049.0
3.5 Ancillary transport services		×						35,517.1	1			35,517.1	0.8	35,517.
4 Travel agency and tour operator services (a)		x							2,054.4			2,054.4	4 0.0	2,054
5 Recreation, cultural and other entertainment services (b)	1,092.1	x								42,592.5		43,684.6	s 0.0	43,684.
6 Tourism connected products		0.0							1,485.6	1	15,529.0	17,014.0	3 274,862.7	291,877.
6.1 Post & telecoms services		×										0.0	45,288.4	45,288
6.2 Financial and Insurance Services		×							1,485.6	1	45 555 5	1,485.0	114,410.7	115,896.3
6.3 Kental services		×									15,529.0	15,529.0	5,170.8	20,650.
6.4 Health services		×										0.0	100,992.8	109,992.
B Non Tourism Products														
B1 All other products	154.4	x	3,322.1	231.2	412.7	145.6	0.0	1,356.9	۵۵ م	5,130.8	0.0	10,753.0	1,107,231.9	1,117,985.
Distance mandes (a)	700.0					45.0				4.740.0				017 740
Visiue of imported monts and services"	184.8	×	60/0.2	88.0		15.0	0.0	0.0	0.0	1,740.8	0.0	3,325.	214,393.3	217,7183
entre of important goods and services	Î î				_	_		_	_				ĩ î	
Total Domestic industry Output (basic prices)	15.305.8		111 /		fac	tor		ark	ote			217.984.3	1.387.712.8	1,605,697.
(net of distribution margins)			ννι		Iac	U		ain	くして					
Inputs to the production process														
1 Agriculture & Extraction	288.6		ha		<b>~ ~</b>							1,290.0	0	
2 Manufacturing in food processing	1,819.8		$\mathbf{O}\mathbf{O}$		anc	] (		L AL				24,421.6	3	
3 Energy & Water	88.4											1,168.8	3	
4 Construction	55.5				<b>_</b>							1,463.5	2	
5 Hotels, Transport & communication services	783.8	on	ora	TO.	/							33,594.1	2	
t pushess pervices 7 Centre sty. Social and personal sociales	1,435.9											32,929.		
Total Intermediate consumption at michaser prices	4 740 0	1181	1 102302	6 6 451 0	1/1/4/		0.551.0	2011/32			6.521.0	109.0480		
Toxes lass subsidies on production	418.0	-54	0.94.7	25.0	448.0	15.0	151.0	564.1	34.2	623.0	210	3,484.1	·	
Compensation of employees	6,235.4	29.2	14,850.3	2,1/4.0	11,938.0	1,248.0	3,107.0	9,160.9	2,148.9	13,653.0	4,00	69,536.7	7	
Gross Operating surplus (inc mixed income)	3,912.3	748.B	5,892.6	382.0	5,063.0	373.0	2,240.0	4,075.6	352.5	9,086.0	3,789.0	35,914.9	2	
Total Gross Value Addod at basic prices	10,565.8	772.6	21,7 27.6	2,581.0	17,440.0	1,636.0	5,408.0	13,800.7	2,535.6	23,362.0	9,008.0	108,936.3	3	
I '													1	

#### **Increased total** tourism demand for Domestic Tourism consumption by products and ca (Visitor final consumption in cash: net v

All resident visitors

Resident visitors traveiling abroad

Table 2

Resident visitors travelling within the UK

	Holiday	Business	VFR	Day	Total Visitors	Hollday	Business	VFR	Total Visitors	Total tourism consumption (d)
⊊millon	(21)	(2.2)	(2.3)	(2.4)	(2.5=(2.1)+(2.2)+(2.3)+(2.4)	(2.6)	(2.7)	(2.8)	(2.9)=(2.6)+(2.7)+(2.8)	(210)=(2.5+(2.9)
A Tourism Products	12,510.8	4,623.1	2,220.3	12,309.7	31,664.0	11.277.3	2.199.7	1.258.0	14,735.0	46,399.0
A1 Characteristic Products	12,131.8	4,415.0	2.160.3	11,520.3	30.227.3	11.277.3	2.199.7	1.258.0	14.735.0	44,962.3
1 Accommodation Services	3.871.1	1,497.3	261.7	0.0	5,630.0	0.0	0.0	0.0	0.0	5,630.0
1.1 Hotels and lodging services	3,871.1	1,497.3	261.7	0.0	5,630.0	0.0	0.0	0.0	0.0	5,630.0
1.2 Second homes services on own account	x	x	x	х	x	x				x
2 Restaurant, bar and catering service					14,858.0	0.0	0.0	0.0	0.0	14,858.0
3 Passenger transport services					4,526 5	9,758.6	1,942.9	1,188.5	12,890.0	17,416.5
3.1 Railway transport services	crea	sea	der	nand	62.6	264.3	81.9	50.1	396.3	1,020.9
3.2 Other land transport services	0.04				2,0,0.9	549.4	170.2	104.1	823.7	2,914.6
3.3 Water transport services					57 3	1,509.3	372.7	228.0	2,110.0	2,369.9
3.4 Air transport services	r cor	nmc	σιτ	les	37 <u>2</u> .3	7,435.6	1,010.1	000.0	8,000.0	10,412.3
3.5 Ancillary transport services					£ <u>-</u> 6.7	0.0	0.0	0.0	0.0	698.7
4 Travel agency and tour operator services (a)	98.4	17.2	4.5	114.7	234.8	1,518.7	256.8	69.5	1,845.0	2,079.8
5 Recreation, cultural and other entertainment se	1,339.7	175.0	367.6	3,095.7	,978	0.0	0.0	0.0	0.0	4,978.0
6 Tourism connected products	379.1	208.2	60.1	789.3	1,43 .6	0.0	0.0	0.0	0.0	1,436.6
6.1 Post & felecoms services	87.3	49.1	11.4	305.8	4,3.7	0.0	0.0	0.0	0.0	453.7
6.2 Financial and Insurance Services	109.4	61.6	14.4	368.9	54.3	0.0	0.0	0.0	0.0	554.3
6.3 Rental services	76.7	43.2	10.1	114.7	244.5	0.0	0.0	0.0	0.0	244.5
6.4 Health services	105.7	54.2	24.2	0.0	184 _	0.0	0.0	0.0	0.0	184.2
B Non Tourism Products										
B1 All other products	2,662.0	775.7	630.6	11,028.3	15,0 6	0.0	0.0	0.0	0.0	15,096.6
Distribution mergins (c)	1 954 4	424.4	440.6	9 412 0	44 450 0					11 150 3
Distribution margins (c)	1,054.4	424.4	449.6	8,422.0	11,150.5	0.0	0.0	0.0	0.0	11,150.3
Total domestic Consumption	17,027.2	5,823.2	3,300.5	31,760.0	57,910.8	11,277.3	2,199.7	1,258.0	14,735.0	72,645.8

Notes

#### Increased demand by foreign holiday tourism

# Increased demand → increased supply

Table 5 Production accounts of tourism industries and other (net valuation)

					Tourism Indus	tias								
Emilion	1 Hotals &	2 Second home & caravan						8 Other	9 Travel agency					Domestic
	accommodati	ownership (Imputed)	3 Restaurants	/ Bahram	5 Other land	6 Water	7 Air Troomat	transport	and tour	10 Recreation	11 Renting of	Total Tourism	Total Neg to stem	Output (basic
	on	(mputed)	a para	4 Haiways	ransport	Inareport	Inanaport	Services	opersitors	Services	movestores	Industries	Total Non-coursm	Total
A Tourism Products A1 Characteristic Products	15,151.4	890.7 890.7	31,638.7	8,800.8	34,210.3	4,684.4	14,049.0 14 049 0	35,517.1	3,540.0	43,219.2	15,529.0	207,230.7	280,480.9	487,711.6
1 Accommodation Services	10,250,3	890.7	1,167,0	0.0	0.0	0.0	0.0	0.0	1,0.44	55.4	0.0	12,363,4	197.0	12,560,4
1.1 Hotels and lodging services	10.255		1 107 0	0.0	0.0		0.0			55 A		11 472 7	107.0	11,669.7
1.2 Second homes services on own account		890.7	×	х	×	х	x	×	t X	×	X	890.7	0.0	890.7
2 Restaurant, bar and catering services (excL canteens) 3 Reserver transport services	,809.0 0.0	x 0.0	30,471.8	8.800.8	34,210.3	4 694 4	14.049.0	35.517.1		571.3 0.0	0.0	34,8521 97,261,6	3,237.6 2,183.6	38,089.7
3.1 Reliver transport services				8.800.8		-1,			<b>1</b> "			8,800.8	0.0	B.800.8
3.2 Other land transport services		x			34,210.3							34,210.3	2,183.6	36,393.9
3.3 Water transport services		x	1			4,684.4						4,684.4	0.0	4,684.4
3.4 Air transport services		×					14,049.0					14,049.0	0.0	14,049.0
3.5 Ancillary transport services		×	1					35,517.1	1			35,517.1	0.0	35,517.1
4 Travel agency and tour operator services (a)		х							2,054.4			2,054.4	0.0	2,054.4
5 Recreation, cultural and other entertainment services (b)	,002.1								4.495.0	42,592.5	45 530 0	43,684.6	0.0	43,684.6
E 1 Past & toloroms services		0.0							1,405.0	1	15,529.0	17,014.0	45 288.4	45 288 4
6.2 Einsteisi and Insutance Services		x							1,485,6			1,485,6	114,410,7	115,896,2
6.3 Rental services		x							.,		15,529.0	15,529.0	5,170.8	20,699.8
6.4 Health services		×									-	0.0	109,992.8	109,992.8
B Non Tourism Products													I	
B1 All other products	154.4	х	3,322.1	231.2	412.7	145.6	0.0	1,356.9	0.0	5,130.8	0.0	10,753.6	1,107,231.9	1,117,985.9
Distribution margins (c)	782.B	x	699.2	88.0		15.0	0.0	0.0	0.0	1,740.8	0.0	3,325.6	214,393.3	217,718.9
Value of imported goods and services"	×	x	x	×	×	×	x	×	( X	×	x	,	x x	)
Total Domestic Industry Output (basic prices)	15,305.8	890.7	34,960.8	9,032.0	34,623.0	4,830.0	14,049.0	36,874.0	3,540.0	48,350.0	15,529.0	217,984.3	1,387,712.8	1,605,697.1
(net of distribution margins)			1	1	1	1		I		•				
inputs to the production process								-						
1 Agriculture & Extraction	2.88.6		hore	220		CII	nn		×	53.6	0.0	1,290.0		
2 Manufacturing in food processing 2 Exercise & Waters	1,819.8			zas		30		I Y -	7	3,869.4	1,129.8	24,421.6		
a Coosts stion	66.6									204.0	125.4	1,100.0		
<ul> <li>Got as default</li> <li>Hotols: Transport &amp; communication services</li> </ul>	783.8	1.0	-				$\sim$	£		1 757 0	1908.8	1,465.5 53.604.7		
6 Business Services	1,435.9		ICLE	23	ea	us	ео			7.344.2	3,222.0	32,929.4		
7 Community, Social and personal services	268.0							-		11,488.7	196.3	14,180.0		
Total Intermediate consumption at purchaser prices	4,740.0									24,988.0	6,521.0	109,048.0		
Taxes less subsidies on production	418.0	In	nı.	<b>TS</b>						623.0	227.0	3,484.7	1	
Compensation of employees	6,235.4									13,653.0	4,992.0	69,536.7		
Gross Operating surplus (inc mixed income)	3,912.3	773.6		3 604 0	17,400.0	1 625 0	5,000.0	13,000 7	d 9696.0	9,086.0	3,789.0	35,914.9		
rotal Gross value Acideo at casic prices	10,565.8	772.6	21,727.6	2,581.0	17,440.0	1,636.0	5,466.0	13,800.7	2,535.6	23,362.0	9,008.0	108,936.3	1	

Press and enable

Table 5	
Production accounts of tourism industries and other industries	
(net valuation)	

					Tourism Indust	ries								
		2 Second home 8												
Fmillion	1 Hotels &	caravan						8 Other	9 Travel agency					Domestic
2.1104.000	accommodati	ownership	3 Restaurants		5 Other land	6 Water	7 Alt	transport	and tour	10 Recreation	11 Renting of	Total Tourism		Output (basic
	on	(imputed)	& bars	4 Ralways	transport	Transport	Transport	services	operators	services	moveables	Industries	Total Non-tourism	prices)
														Total
A Tourism Products	15,151.4	890.7	31,638.7	8,800.8	34,210.3	4,684.4	14,049.0	35,517.1	3,540.0	43,219.2	15,529.0	207,230.7	280,480.9	487,711.6
A1 Charactaristic Products	15,151.4	890.7	31,638.7	8,800.8	34,210.3	4,684.4	14,049.0	35,517.1	2,054.4	43,219.2	0.0	190,216.1	5,618.3	195,834.4
Accommodation services	10,250.3	840.7	1,167.0	0.0	0.0	0.0	0.0			55.4	0.0	12,363.4	197.0	12,560.4
1.1 Hotels and loging services 1.3 Second borrise services an own assount	10,250.3	X 800.7	1,16r.u			~				55,4		11,472.7	197.0	11,669.7
1.2 Second nomes services on own account	2.000.0	890.7	~ ~ ~ ~	*	*	*	×	×	×		×	24.0524	0.0	20.000.7
2 Restaurant, bar and catering services (exc), canteens) 2 Reservoor imperent sendoor	3,809.0		30,4/1.8		24 24 0 2	4 684 4	14 040 0	35 517 1		5/1.3		34,8521	2,237.6	38,089.7
3.1 Dollars transformer	0.0	0.0		8,000.0	54,210.5	4,004.4	14,0450	35,517.1		0.0	0.0	9 000 0	2,102.0	2 P POD P
3.2 Other land transport services		ŝ		0,000.0	34,210,3	I						34,210,3	2 183 6	36,303,9
3.3 Water transport services					54,210.0	4 684 4						4 684 4	2,100.0	4 694 4
3.4 Air transport services		x				4,004.4	14.049.0					14.049.0	0.0	14.049.0
3.5 Ancillary transport services	1	x						35.517.1				35,517.1	0.0	35.517.1
4 Travel agency and tour operator services (a)	1	x							2,054.4			2,054.4	0.0	2.054.4
5 Recreation, cultural and other entertainment services (b)	4,002,4	-		I		1	1		4	42,592.5		43,684.6	0.0	43,684.6
6 Tourism connected products									1,485.6		15,529.0	17.014.6	274,862.7	291,877.2
6.1 Post & telecoms services		~~ ~		~			-		.,			0.0	45,288.4	45,288.4
6.2 Financial and Insutance Services	Pri	се а			an				1,485.6			1,485.6	114,410.7	115,896.2
6.3 Rental services				77		··· · J					15,529.0	15,529.0	5,170.8	20,699.8
6.4 Health services				-								0.0	109,992.8	109,992.8
	adi	licti	$\mathbf{m}$	ntc	•									
B Non Tourism Products	au	นวเ		1113										
B1 All other products	-							19	0.0	5,130.8	0.0	10,753.6	1,107,231.9	1,117,985.5
Distribution margins (c)								١.0	0.0	1.740.8	0.0	3.325.6	214.393.3	217.718.9
Value of imported goods and services"								x	x	x	x	x	x	x
	( de	ma	na	_ <	ะเมก	nn								
Total Domestic Industry Output (basic prices)	(ac				<b>M</b> P	ניץ		r.0	3,540.0	48,250.0	15,529.0	217,984.3	1,387,712.8	1,605,697.1
(net of distribution margins)					<b>—</b>									
Inputs to the production process	0.00.0			40.0					10	F.D. 0		4 3 9 9 9		
1 Agneurum & Extraction	288.6	0.0	805.7	10.6	0.5	33.6	0.4	4 000 0	4.0	53.5	0.0	1,290.0		
2 Manutaduring in tood processing 3 Economi & Minter	1,819.8	5.3	5,080.4	651.6	6,640.0	12.0	2,372.6	1,938.0	54.4	3,869.4	1,129.8	24,421.6		
a Coorde value	66.4	0.3	240.0	142.3	177.0	12.0	10.3	790.4	0.1	104.0	125.4	1,100.0		
<ul> <li>Constitution</li> <li>Listeix Transmet I concerning the sections</li> </ul>	703.0		3 4 65 4	3 743 3	5 05 0 4	4 204 2	3 4 74 0	12 842 0	EE7 0	4 757 0	1 000 0	22 604		
5 Piotais, mansporta communication services 5 Piusinose Services	1 4 35 0	9.2	2,108.1	1,753.0	4 889 2	1,704.7 E00 E	2,174.0	6 708 0	302.0	7.944.2	3 222 0	33,594.	Í I	
7 Commission Sector Continues	269.0	1.5	749.3	00.0	370.3	39.7	2,040.0	668.2	20.1	11 498 7	400.0	44400.0		
Total Intermediate consumption at purchaser prices	4,740.0	118.1	13,233,2	6,451.0	17,174.0	3,194.0	8,551.0	23.07.3.3	1.004 4	24,988.0				
Taxas lass subsidias on production	418.0	-54	984.7	25.0	448.0	15.0	151.0	564.1	34.2	623.0	L 1.	acture	dina .	coct
Compensation of employees	6,235.4	29.2	14,850.3	2,174.0	11,938.0	1,248.0	3,107.0	9,160.9	2,148.9	13,653.0		ICIU	an u i	<b>U</b> 21
Gross Operating surplus (inc mixed income)	3,912.3	748.8	5,892.6	382.0	5.063.0	373.0	2,240.0	4.075.6	352.5	9,086.0				
Total Gross Value Added at basic prices	10,565.8	772.6	21,7 27.6	2,581.0	17,440.0	1,636.0	5,408.0	13,800.7	2,535.6	23,362.0				
· ·							-	-			L ()	ιτηθ	eco	nom\
			-								_ `			

		Tab	le 5			
Production	accounts	of tourism	industries	and of	ther industr	ies
		(net val	uation)			

					Tourism lock is	Flor								
					TO A ISH HIGHS	1 N 2								
		2 Second home &												-
£miliion	1 Hotals &	caravan	a Destaurante		5 Others land	C Mileter	744	a Other	9 Travel agency	40 Description	11 Dealers of	Total Taxatan		Domestic Cute & Guerrie
	accommodati	ownersnip	a reastaurants	4 Debusor	5 Other land	6 Water	Tar	transport	and tour	10 Recreation	11 Hearing or	TOSA TOURSHI	Takel block in stern	Curpus (Dasie
	on	(mputed)	A Data	4 Raiways	ransport	narsport	Inareport	Services	operators	SWIVICHS	movesables	Industries	Total Non-tour am	Total
A Tourism Products	15 151 4	890.7	31 6 39. 7	8 800 8	34,210.3	4 684 4	14 049 0	35 517 1	3540.0	43 21 0 2	15 529 0	207 230 7	290.490.0	487 711 6
A1 Characteristic Products	15,151.4	890.7	31,638,7	8,800,8	34,210.3	4,654,4	14,049,0	35,517,1	2,054.4	43,219,2	15,529.0	190,216,1	5 618 3	105,894.4
1 Accommodation Services	10 250 3	890.7	1 167 0	0.0	0.0	0.0	0.0	0.0	0.0	55.4	0.0	12 363 4	197.0	12 560 4
1 1 Hotels and Indatra services	10,250,3	0.0.7	1 167 0	0.0	0.0	0.0	0.0			55.4	0.0	11 472 7	197.0	11,669,7
1.2 Second homes services on own account	10,200.0	890.7	1,103.0	×	×	×	×	×	×	x	×	890.7	0.0	890.7
2 Restaurant, bar and catering services (exc), canteens)	3,809,0	x	30.471.8		1 <sup>°</sup>	~	ĩ		~	571.3	n î	34,8521	3,237.6	38 080 7
3 Passenger transport services	0.0	0.0	0.0	8.800.8	34,210,3	4,684,4	14.049.0	35.517.1	۵.0	0.0	0.0	97,261,6	2,183.6	99,445.3
3.1 Reliver transport services		×		8,800,8		.,						8,800,8	0.0	B.800.8
3.2 Other land transport services		×		-,	34,210.3							34,210.3	2,183.6	36,393,9
3.3 Water transport services		×				4.684.4						4,684,4	0.0	4 684 4
3.4 Air transport services		x				.,	14,049.0					14,049.0	0.0	14,049.0
3.5 Ancillary transport services		x						35.517.1				35.517.1	0.0	35,517,1
4 Travel access and tour operator services (a)		x							2,054,4			2,054.4	0.0	2,054.4
5 Recreation, cultural and other entertainment services (b)	1 002 1	-	1		I					42,592,5		43,684,6	0.0	43,684,6
8 Tourism connected products									1,485,6		15.529.0	17.014.6	274,862,7	291,877.2
6.1 Post & telecoms services							_		.,			0.0	45,288.4	45,288.4
6.2 Financial and Insurance Services	VVA	ide a	101	USI	me		S		1,485.6			1,485.6	114,410.7	115,896.2
6.3 Rental services		9~ .					<b>U</b>				15,529.0	15,529.0	5,170.8	20,699.8
6.4 Health services		-	-									0.0	109,992.8	109,992.8
B Non Tourism Products						_								
B1 All other products	(de	ma	nd	= <	sun	nh	/)	19	0.0	5,130.8	0.0	10,753.6	1,107,231.9	1,117,985.5
Distribution manders (c)	(40			_		<b>M</b>				4 740.0		3 335 6	244 202 2	217 740 0
Visiue of imported poorts and services"	×	×	×				×	10	0.0	1,740.8	0.0	3,325.6	214,395.3	217,718.9
value of imported goods and services	Ŷ	^	Î	^	Î	Ŷ	î	Ŷ	Ŷ	Ŷ	Ŷ	Ŷ	î	
Total Domestic Industry Output (basic prices)	15,305.8	890.7	34,960.8	9,032.0	34,623.0	4,830.0	14,049.0	36,874.0	3,540.0	48,350.0	15,529.0	217,984.3	1,387,712.8	1,605,697.1
(net of distribution margins)														
inputs to the production process														
1 Agriculture & Extraction	288.6	0.0	B05.7	10.6	0.5	33.6	0.4	92.9	4.0	53.6	0.0	1,290.0		
2 Manufacturing in food processing	1,819.8	5.3	5,080.4	681.6	6,640.0	B00.4	2,372.6	1,938.0	B4.4	3,869.4	1,129.8	24,421.6		
3 Energy & Water	88.4	0.3	246.8	142.3	177.0	12.8	70.3	116.2	5.1	184.0	125.4	1,168.8		
4 Construction	55.5	72.6	154.9	20.5	38.5	6.2	17.5	736.1	32.0	291.1	38.6	1,463.5		
5 Hotels, Transport & communication services	783.B	6.2	2,188.1	3,742.2	5,058.4	1,704.7	3,174.8	12,813.0	557.8	1,757.0	1,808.8	33,594.7		
6 Business Services	1,435.9	32.2	4,008.9	1,753.9	4,889.2	596.5	2,645.6	6,708.9	292.0	7,344.2	3,222.0	32,929.4		
7 Community, Social and personal services	268.0	1.5	748.3	99.9	370.3	39.7	269.8	668.2	29.1	11,488.7	196.3	14,1 B0.0		
foral intermediate consumption at purchaser prices	4,740.0	118.1	13,233.2	6,451.0	17,174.0	3,194.0	8,551.0	23,073.3	1,004.4	24,988.0	6,521.0	109,048.0		
Taxes less subsidias on production	418	-5.4	984.7	25.0	448.0	15.0	151.0	564.1	34.2	623.0	227.0	3,48		
Compensation of employees	6,235	29.2	14,850.3	2,174.0	11,938.0	1,248.0	3,107.0	9,160.9	2,148.9	13,663.0	4,992.0	00,53	Í	
Gross Operating surplus (inclinical Income)	3,912.3	748.8	5,892.6	382.0	5,063.0	373.0	2,240.0	4,075.6	352.5	9,088.0	3,789.0	35,914.9	1	
rotal Gross value Added at basic prices	10,565.8	772.6	21,727.6	2,581.0	17,440.0	1,636.0	5,468.0	15,800.7	2,535.6	23,362.0				

Need and see to

Including rest of the economy

#### Table 5 Production accounts of tourism industries and other industries (net valuation)

					Tourism Indus	tias								
		2 Second home &												
Emilian	1 Hotals &	caravan						8 Other	9 Travel agency	,				Domestic
210000	accommodati	ownership	3 Restaurants		5 Other land	6 Water	7 Air	transport	and tour	10 Recreation	11 Renting of	Total Tourism		Output (basic
	on	(imputed)	& bors	4 Ralways	transport	Transport	Transport	services	operators	services	moveables	Industries	Total Non-tourism	prices)
														Total
A Tourism Products	15,151.4	890.7	31,638.7	8,800.8	34,210.3	4,684.4	14,049.0	35,517.1	3,540.0	43,219.2	15,529.0	207,230.7	280,480.9	487,711.6
A1 Characteristic Products	15,151.4	890.7	31,638.7	8,800.8	34,210.3	4,684.4	14,049.0	35,517.1	2,054.4	43,219.2	0.0	190,216.1	5,618.3	195,834.4
Accommodation Services	10,250.3	890.7	1,167.0	0.0	0.0	0.0	0.0	0.0	a 0	55,4	0.0	12,363.4	197.0	12,560.4
1.1 Hotels and boging services 1.2 Second betwee services on own present	10.3661.3	800.7	1 187.0			~	~					800.7	142.0	11,669.7
2 Portaurant, bar and catering services (more carteria)		890.7		^	· ^	^	^	^	· ^	1	^	890.3	0.0	29 090 7
3 Passenger transport services	0.0	0.0	0.0	8,800,8	34,210.3	4,684,4	14.049.0	35,517,1	0.0	0.0	0.0	97,261,6	2,183.6	99,445.3
3.1 Reliway transport services				8,800,8		.,						8,800.8	0.0	B.800.8
3.2 Other land transport services		,			34,210.3							34,210.3	2,183.6	36,393.9
3.3 Water transport services		×				4,684.4						4,684.4	0.0	4,684.4
3.4 Air transport services		×					14,049.0					14,049.0	0.0	14,049.0
3.5 Ancillary transport services		×						35,517.1				35,517.1	0.0	35,517.1
4 Travel agency and tour operator services (a)		2							2,054.4			2,054.4	0.0	2,054.4
5 Recreation, cultural and other entertainment services (b)	,052.1	3								42,592.5		43,684.6	0.0	43,684.6
E 1 Past & tolonoms services									1,-100.00	1		0.0	45 289.4	45 298 4
6.2 Einsteilal and Insurance Services									1 485 6			1 485 6	114 410 7	115,896,2
6.3 Rental services									1,-1442.54		15.529.0	15.529.0	5.170.8	20.699.8
6.4 Health services		,										0.0	109,992.8	109,992.8
														-
B Non Tourism Products														
B1 All other products	54.4									-,				1,117,985.5
District when manders (a)						45.0				4.740.0		0.005.0	244,202,2	017 744 0
Value of imported mosts and services"		~ ~ ~	600.2	88.0		15.0	0.0	0.0	0.0	1,740.8	0.0	3,325.6	214,395.3	217,718.9
entre of important goods and an entre	^		1 ^	1 <sup>^</sup>	1 ^	- î	î	^	1 ^	1 î	î	^	1 1	î
Total Domestic Industry Output (basic prices)	1.08	890.7	34,960,8	9.032.0	34.623.0	4.830.0	14.049.0	36.874.0	3,540.0	48,350.0	15.529.0	217.984.3	1.387.712.8	1.605.697.1
(net of distribution margins)						.,							.,,.	
inputs to the production process													· · · · ·	
1 Agriculture & Extraction	18.6		Iria		24		+ + レ		uah		0.0	1,290.0		
2 Manufacturing in food processing	, 11.B			es	au	us	ιι		uun	IOU	129.8	24,421.6		
3 Energy & Water	8.4	_									125.4	1,168.8		
4 Construction	5.5						_				38.6	1,463.5		
5 Hotels, Transport & communication services	18.8	T 1	ne (	ecc	าทก	m	/				808.8	33,594.7		
t pushes bervices 7 Centre stu: Seciel and second secure	1 3 3										100.0	32,929.4		
Total Intermediate consumption at purchaser prices	1740.0	118.1	13,233,2	6.451.0	17.174.0	3,194.0	8,551.0	23.073.2	1.004.4	4.988.0	8.521.0	109.048.0		
Texes less subsidies on production	418	-5.4	984.7	25.0	448.0	15.0	151.0	564.1	34.2	623.0	227.0	3.48 7		
Compensation of employees	6,235	29.2	14,850.3	2,174.0	11,938.0	1,248.0	3,107.0	9,160.9	2,148.5	13,653.0	4,092.0	69,53		
Gross Operating surplus (inc mixed income)	3,912.3	748.6	5,892.6	382.0	5,063.0	373.0	2,240.0	4,075.6	352.6	9,086.0	3,789.0	35,914.9		
Total Gross Value Added at basic prices	10,565.8	772.6	21,7 27.6	2,581.0	17,440.0	1,636.0	5,408.0	13,800.7	2,535.6	23,262.0				
			1	1	1						•			

Need and see to

Including rest of the economy

#### **Types of Policy Impacts**

#### o Macroeconomic

- GDP, economic welfare, employment
- Industry-level
  - Output, GVA, employment, prices, competition, profits, input demands
- By type of tourist
  - Spending, prices paid, volume, commodity demand

#### Example

- Tourism Crisis Management Responding to September 11
   Annals of Tourism Research, 30(4):813-832.
- CGE Model of the U.S.
- Uses the U.S. provisional TSA
- Modelled:
  - The effects of changes in tourism demand post-September 11<sup>th</sup>
  - Federal government policies
  - Alternative policies

## Annual Growth Rates of Passenger Enplanements in the US



# Effects of Reductions in Tourism Demand following September 11

			Effects of
	Effects of	Effects of	reduced
	September 11,	reduced	demand for
	without policy	demand by non-	domestic air
	responses	residents	travel and
			tourism
Total change in tourist spending (\$bn)	-50.69	-15.89	-40.88
Constant dollar GDP (\$bn change from base)	-27.27	-10.54	-17.97
Net effect on government budget (\$bn change	7 77	2 60	4.04
from base)	-1.21	-2.00	-4.94
Constant dollar factor adjustment (\$bn)	30.93	12.88	21.44
Relative factor adjustment (%)	0.75	0.32	0.49
Constant dollar employment (\$bn)	-13.57	-5.96	-7.85
FTE Employment ('000)	-383	-155	-248
FTE Jobs lost ('000)	559	198	414
FTE Jobs lost in airlines ('000)	203	42	160
FTE Jobs lost in hotels and other accommodation establishments ('000)	174	42	146

# Effects of September 11 without and with ATSSSA and ATSA Measures

	Effects of	Effects of
	September 11,	September 11,
	without ATSSSA	including ATSSSA
	and ATSA policy	and ATSA policy
	responses	responses
Total change in tourist spending (\$bn)	-50.68	-37.47
Constant dollar GDP (\$bn change from base)	-27.27	-9.34
Net effect on government budget (\$bn change	7 77	11 1/
from base)	-1.21	-11.14
Constant dollar factor adjustment (\$bn)	30.93	17.42
Relative factor adjustment (%)	0.75	0.49
Constant dollar employment (\$bn)	-13.57	-3.65
FTE Employment ('000)	-383	-144
FTE Jobs lost ('000)	559	335
FTE Jobs lost in airlines ('000)	203	93
FTE Jobs lost in hotels and other accommodation establishments ('000)	174	141

#### Fall in Constant-Dollar Factor Employment by Industry (\$bn change from base)

	Effects of	Effects of
	September 11,	September 11,
	without ATSSSA	including ATSSSA
	and ATSA policy	and ATSA policy
	responses	responses
Hotels	-7.3	-5.9
Air transportation	-11.0	-5.0
Eating and drinking places	-1.9	-1.2
Food and kindred products	-1.2	-0.9
Arrangement of passenger transportation	-1.5	-0.7
Construction	-1.1	-0.6
Other accommodation establishments	-0.7	-0.6
Fitness, sport and recreation clubs	-0.7	-0.6
Drugs and cleaning preparations	-0.4	-0.3
Theatres and entertainers	-0.3	-0.2

#### Policy Alternatives...

- What policy alternatives were/could have been implemented?
  - Private businesses lobbied for
    - o tax credits on all domestic travel,
    - employment tax credits in all tourism sectors

#### Federal government later announced

- General tax cuts (costing \$62bn in 2002)
- Extra military and security spending (\$27bn)

#### Assessment of alternatives

- The CGE model is used to assess these alternatives
  - Tax rates on production, consumption, employment, profits and income; plus additional military spending
  - A marginal fall in revenue (\$1m) on each instrument

#### **Production subsidies**

	GDP (\$m)	Net budget effect (\$m)	Factor adjustment saved (\$m)	Total jobs saved	Airline jobs saved	Accommodation jobs saved	
per \$1m production subsidy to:							
Airlines	3.1	-0.02	1.6	27.8	20.7	0.1	
Hotels	2.0	-0.4	0.6	11.9	-0.1	12.4	
Other accommodation	1.8	-0.1	1.6	23.7	-1.5	24.2	
Eating & drinking places	0.7	-0.8	0.7	22.8	0.2	-1.0	
Other entertainment industries	-0.1	-1.1	-0.2	0.6	-0.2	-4.0	
Airlines, hotels and other accommodation	2.5	-0.2	1.1	20.2	10.2	6.5	

 Airline subsidies perform 'better' in terms of GDP and factor adjustment

#### **Consumption tax breaks**

	GDP (\$m)	Net budget effect (\$m)	Factor adjustment saved (\$m)	Total jobs saved	Airline jobs saved	Accommodation jobs saved	
Per \$1m consumption subsidy on:							
Business air travel trips	2.7	-0.3	0.5	7.8	1.3	0.4	
All business trips	2.4	-0.3	0.4	6.7	0.8	0.3	
Non-resident trips	2.0	-0.04	1.1	19.4	5.1	4.9	
All air trips	1.6	-0.4	0.7	12.5	4.7	2.1	
Domestic air trips	1.4	-0.6	0.5	9.0	4.5	0.7	
All tourism trips	1.3	-0.6	0.4	7.7	2.2	1.6	
All domestic tourism	1.1	-0.7	0.2	4.8	1.5	0.8	
Resident air travel trips	0.3	-0.9	0.5	10.2	7.4	1.0	
All resident trips	0.2	-0.9	0.1	3.7	1.9	1.0	

#### Tax breaks to "all domestic tourism" perform fairly poorly

#### Findings

- Without offsetting policies, these shocks would have led to a fall in GDP of \$30bn.
  - With the offsetting policies, hotels have been left worse off.

• Poorly targeted responses perform poorly.

 Well targeted policies can contribute to welfare and can be identified by policy modelling