



TOURISM AND POVERTY RELIEF

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Abstract: This paper examines the issue of how tourism affects poverty in the context of its effects on an economy as a whole and on particular sectors within it. A framework for analyzing the channels through which tourism influences different households is developed, and a computable general equilibrium model of the Brazilian economy is used to examine the economic impact and distributional impacts of tourism in the country. It is shown that the effects on all income groups are positive. The lowest income households benefit but by less than some higher income groups. Policies that could redistribute greater shares of the revenue to the poor are considered. **Keywords:** poverty relief, income distribution, computable general equilibrium. © 2007 Elsevier Ltd. All rights reserved.

Résumé: Tourisme et réduction de la pauvreté. Cet article examine la question de comment le tourisme affecte la pauvreté dans le contexte de ses effets sur une économie tout entière et sur des secteurs particuliers d'une économie. On développe un cadre théorique pour analyser les voies par lesquelles le tourisme influence des différents ménages, et on utilise un modèle d'équilibre général calculable de l'économie brésilienne pour examiner l'impact économique et les impacts de distribution du tourisme dans le pays. On montre que les effets sur toutes les tranches de revenus sont positifs. Les ménages les plus économiquement faibles bénéficient mais moins que quelques tranches de revenus plus élevés. On considère des politiques qui pourraient redistribuer des parts plus importantes des revenus aux pauvres. **Mots-clés:** réduction de la pauvreté, distribution des revenus, équilibre général calculable. © 2007 Elsevier Ltd. All rights reserved.

INTRODUCTION

It is often assumed that tourism provides a means of relieving poverty. Indeed, international organizations such as World Tourism Organization often link its development with potential for poverty relief. However, apart from studies of specific projects and programs that indicate how this industry can assist poverty relief (for example, [Ashley](#)

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and Roe 2002), there is little economy-wide research evidence to suggest that tourism does reduce poverty nor studies that quantify the interactions between it and poverty. This paper aims to fill part of that gap by providing quantitative measures of the effects of its expansion on the distribution of income between the rich and poor in Brazil.

The reason for examining tourism's role in poverty relief derives from the fact that many developing countries have large or potentially large tourist markets. In many with high levels of poverty, receipts from international tourism are a considerable proportion of GDP and export earnings (Roe, Ashley, Page, and Meyer 2004; Sinclair 1998). If these receipts are so significant, why might they fail to reduce poverty? The answer is that for some countries they may be assisting poor households, but for others providing disproportionate gains for the rich. Therefore, further analysis of the channels through which tourism affects households, and in particular poor households, is necessary.

It is clear that some of the receipts in developing countries have no impact on poverty relief because they are spent on imports or earned by foreign workers or businesses, resulting in high leakages. McCulloch, Winters and Cirera (2001:248) estimate that between 55% and 75% of tourism spending leaks back to developed countries. The leakage of foreign currency, particularly through imports, is long-recognized in the economic impact literature, with reviews by Archer (1996), Fletcher (1989) and Wanhill (1994). Traditional impact studies take account of such leakages but are insufficient on their own to be informative about poverty relief.

The influence of tourism on poverty relief can be examined using a conceptual framework involving three channels—prices, earnings, and government revenue—previously considered in the context of the effects of trade liberalization on poverty (McCulloch, Winters, and Cirera 2001). A computable general equilibrium (CGE) model is used to quantify the effects on income distribution and poverty relief that occur via these channels. CGE modelling has become an accepted approach in tourism modeling (Dwyer, Forsyth, Madden, and Spurr 2004) but differs from CGE models used to examine the subject to date, in that it is extended to incorporate the earnings of different groups of workers within tourism, along with the channels by which changes in earnings, prices, and the government affect the distribution of income among rich and poor households. The model has the advantage of incorporating the entire range of activities undertaken in the economy, thereby permitting analysis of the interrelationships between tourism and other sectors. It is developed, for the case of Brazil, to incorporate data for the earnings received by households with different income levels. Such models perform well relative to other modeling approaches when analyzing poverty impacts (Kraev and Akolgo 2005).

The paper provides a context for the analysis by discussing tourism and poverty relief, as well as literature on impact modeling. The ways in which the industry affects the distribution of income to poor households via the channels of prices, earnings, and the government are examined, and a CGE model is developed to take account of both the impact of tourism expansion and the distributional effects among

rich and poor households. The model differs from fixed-price analyses, such as input-output and social accounting matrix (SAM) multiplier methods, by allowing prices and wages to alter, satisfying resource constraints and by accounting for government budget constraints. An increase in demand tends to have lower macroeconomic effects in CGE models than in fixed price approaches because resources move from other industries into those stimulated by the demand increase, so that some of the gains of fixed price approaches are traded off against losses in other industries (Dwyer et al 2004). This means that while fixed price approaches are able to examine earnings channels through a rather narrow definition of direct and indirect impacts, CGE models can also analyze price and government channels, and include a broader range of earnings channels effects through industries that may decline as a result of tourism expansion. The model is used to examine the effects of tourism on poverty reduction using data for Brazil, indicating related conclusions and policy implications. The modeling framework could be applied to other countries which are concerned to know about distributional effects.

TOURISM IMPACT AND POVERTY RELIEF

Poverty relief has rarely been discussed in the context of the distributional effects of tourism across the economy as a whole. Aspects of poverty can include low incomes, low levels of wealth, a poor environment, little or no education, and vulnerability (McCulloch et al 2001:38). Low income levels are one of the main ways in which poverty is measured, with its absolute often demarcated by the US\$1-per-day line in cross-country comparisons. Wealth is another economic aspect of poverty; households may have incomes above \$1 per day, but be heavily indebted with few assets.

Tourism's potential as a means of achieving poverty reduction is related to the fact that only some of the least developed countries in the world have significant levels of receipts. In the majority of these countries, which are mainly in sub-Saharan Africa, receipts are less than 5% of GDP (World Bank 2005; World Tourism Organization 2005). Notable exceptions are Cambodia (10.4%), Eritrea (11.6%), the Gambia (18.6%), and Mongolia (12.1%). In a larger number of cases, however, receipts are a significant proportion of exports. There are seven countries where the ratio of receipts to exports is over 20% and 20 countries where this ratio is over 10%. While this is as much a result of the low export to GDP ratio in much of sub-Saharan Africa as of the small size of the tourism business, it does indicate that receipts are important as a source of foreign currency earnings in many of these countries.

Differences in the distribution of income can lead to higher poverty headcounts in middle income countries with high levels of inequality than in low income countries with a more equal distribution of income. Brazil, the country considered in more detail in this paper, is in the lower middle income developing countries group with 8.2% of the population living on less than \$1-a-day. This is higher than in

Brazil's southern neighbors Argentina (3.3%) and Uruguay (2.0%), but lower than in other South American countries such as Paraguay (16.4%), Venezuela (14.3%), Peru (18.1%), Bolivia (14.4%), and Ecuador (17.7%). Brazil has a lower level of receipts relative to GDP, at 0.5%, than most other South American countries: Argentina (1.8%), Uruguay (3.6%), Paraguay (1.3%), Peru (1.6%), Bolivia (2.2%), Ecuador (1.5%), and Colombia (1.4%). Only Venezuela (0.4%) has a lower level of receipts as a proportion of GDP, which may be due to Brazil and Venezuela having greater export alternatives through oil production and, in Brazil's case, a more industrialized structure of production. Although the incidence of poverty in Brazil is not particularly high by global standards, in proportional terms, the number of poor is high and the potential for the industry to contribute to poverty relief is higher than in countries which lack the infrastructure required for tourism development.

Literature on Tourism Impact Modeling

Many studies have used input-output models to estimate either the direct and indirect, or the direct, indirect, and induced impact of tourism (Archer 1995,1996; Archer and Fletcher 1996; Fletcher 1989; Wanhill 1994). More recently, it has become clear that tourism spending affects an economy by raising prices and wages and changing the real exchange rate (Dwyer et al 2004). These effects differ from the more traditional input-output model multiplier effects because they take account of resource constraints. This has led some researchers to CGE models that take such effects into account (Adams and Parmenter 1995; Blake 2000; Dwyer, Forsyth, Madden, and Spurr 2000,2003a; Sugiyarto, Blake, and Sinclair 2003; Zhou, Yanagida, Chakravorty, and Sun 1997).

The case of Australia is examined in a pioneering study by Adams and Parmenter (1995), who quantify the effects of tourism on the industrial and regional structures of the economy. Their results show that traditional export sectors can be crowded out by the growth of international tourism. Zhou et al (1997) subsequently point out the advantages of the CGE modeling approach relative to input-output analysis in a study of the impact of a change in tourist expenditure in Hawaii. They show that this analysis may over-estimate the magnitude of the impact, as it fails to take account of inter-sectoral resource reallocation effects. A CGE modeling approach is used by Alavalapati and Abramowicz (2000) to examine tourism impacts in regions that are used for resource extraction. Their results indicate the model's use in simulating the effects of a policy change, such as an environmental tax.

Blake (2000) develops a CGE model of the Spanish economy. He shows that increasing the level of taxation on foreign tourism can result in a rise in welfare in Spain, partly owing to the low levels of tax on domestic tourism. Gooroochurn and Sinclair (2005) find that taxing the industry in Mauritius is more efficient and equitable than

taxing other sectors, and that taxing highly tourism-intensive sectors generates more revenue than taxing all related sectors. Sugiyarto et al (2003) use a CGE modeling approach in the context of trade liberalization measures for the Indonesian economy and show that tourism growth enhances the beneficial effects of trade liberalization. The effects of exogenous shocks such as foot and mouth disease (Blake, Sinclair, and Sugiyarto 2003) and September 11 (Blake and Sinclair 2003) are examined using CGE models of the UK and the US economies, respectively. The results provide useful information for policy-makers who need to manage the impacts of such shocks.

CGE has supplanted input–output modeling in Australia, owing to widespread awareness of its flexibility in approximating real-world conditions, such as price and wage flexibility and inter-sectoral resource mobility (Dwyer et al 2003a,2004). Studies include the effects of inbound tourism under different macroeconomic conditions (Dwyer et al 2000) and the impact of tourism growth—at global, interstate, and intrastate levels—on New South Wales (Dwyer, Forsyth, Spurr, and Ho 2003b). The technique takes account of economic interrelationships between and within different areas, thereby providing more accurate results and demonstrating the advantages of collaborative policy formation among different areas.

However, as yet, virtually no attention has been paid to the contribution that CGE modeling can make in addressing the important issue of the impact of tourism on income distribution and poverty relief. This paper addresses this issue by integrating a CGE model with data for employee remuneration in different economic sectors so as to quantify the distributional effects of tourism receipts which take place via the channels of changes in prices, earnings, and government revenue and expenditure.

Study Methods

The CGE model predicts, through a numerical simulation approach, how changes (shocks) affect the economy, under the assumptions of price adjustment and factor mobility. The analysis takes explicit account of the channels by which tourism expenditure influences income distribution (McCulloch et al 2001). The first channel is prices, by which tourism spending leads to changes in prices for goods that poor households purchase. The second channel is that this spending leads to changes in earnings for employed and self-employed labor and in returns to capital. The third channel is government, by which the expenditure changes government revenues and can thus lead to alteration in government spending, borrowing, or tax rates.

The effects of tourism on these channels depend on the ways in which tourism spending influences the wider economy. Tourists consume a variety of goods and services, some of which are produced by different industries, while others are imported. The effects on earnings and employment in the industries producing goods purchased by tourists are termed the “direct impact”. These industries purchase other

goods and services as part of their production processes and these, in turn, are produced by other industries or imported. Thus, there is a supply chain of industries that produce goods that ultimately satisfy consumption; the effects of tourism on an economy through this supply chain are termed the "indirect effects." As domestic residents earn money from this activity, and part of these extra earnings is spent on domestically produced products, there is a further, third round, of effects termed "induced effects."

Tourism consumption usually leads to increased output, prices, and wages in the industries that sell products directly to tourists. Increases in wages mean that other businesses pay higher wages in order to retain labor (the same applying to capital and capital earnings). This increases the costs, and thus prices for other products. The overall rise in domestic prices relative to foreign prices is an appreciation of the real exchange rate. This makes it harder for other industries to export, so output falls in other exporting businesses. Those that make products not directly consumed by tourists or directly exported in significant volume experience a mix of effects. Some of them produce goods that are used in the supply chain of tourism and expand when that consumption expands. Others are linked to the supply chain of traditional export goods, and decline. Those not linked to either tourism or other export activities are likely to have a small increase in demand, as domestic income levels, and hence consumption, rise (the induced effect); but also have increased costs because of the competition with tourism sectors for labor and capital. These industries may have small increases or decreases in output. Therefore, poor households are likely to be negatively affected via the price channel; rising prices will reduce real income levels.

It is useful to consider the impacts through the price channel in terms of relative changes. The largest increases in prices that result are, in general, for the types of goods and services that tourists consume. These are products that domestic residents only usually consume if they take a trip (accommodation, passenger transport, tour agency and operation services, recreational services, and souvenir goods). Exceptions include restaurants and purchased food products. Most of the products (obtained on domestic trips, including restaurant meals) are those purchased more by higher income households; the direct effect of the channel will lead only to small increases in prices paid by poor households, through food products. Even in this case, tourists tend to purchase a different set of foods from those consumed by poor households.

The earnings channel includes income earned from employment, self-employment, and capital. Poor households can benefit from the higher wages and increases in production in tourism-related industries. This effect might be moderate, however, if the poor households lack the skills required for employment in these businesses. Larger earnings effects may accrue to middle-income households which have expertise. An offsetting earnings effect comes from the fall in production and wages in traditional export sectors. An adverse aspect of tourism expansion is that if the poor rely heavily on earnings from commodity export

sectors, an increase in tourism demand may lead to an increase in poverty. The earnings channel also involves dynamic effects; the industry does not simply change the relative wages of different factors of production, or types of labor, but can induce households to train, and thereby move out of low-skilled employment.

The third channel by which tourism affects household incomes and poverty is via the government. Its growth increases revenues through taxes and charges specifically levied on tourism such as departure taxes, passenger duties and visa charges, accommodation (hotel bed taxes), and other sources of revenue from attractions (user charges). It also increases revenues from more general taxes on products and on income. As some sectors, particularly export sectors, may experience declines in production, their tax revenues may decline, and if other export sectors have particularly high tax rates, the overall fiscal position of the government may worsen. However, in general, an increase in tax revenues is likely.

Tourism may increase government revenues, but the distribution of the expenditure of this income is uncertain. The increased revenues are likely to be absorbed into the government deficit (or surplus) in the short run. In the longer run, governments make discretionary decisions on how to reallocate this income stream; some reduce other taxes, some use the revenues to pay off foreign debts, while others increase spending. Other governments may use this revenue on poverty relief programs. The empirical section of this paper will consider the effects of different ways in which the government spends its increased revenues, to examine whether significantly different outcomes result from different patterns of spending.

The CGE model that is developed incorporates first three channels by which tourism affects the distribution of income. Consumption and production behavior are modeled using constant elasticity of substitution functions and constant elasticity of transformation functions. The model is calibrated so that it replicates a benchmark equilibrium for the base year, using data from the SAM for the Brazilian economy. The structure of production in each of the sectors in the model is such that for each commodity i , a sector exists that uses factor services (labor and capital) and intermediate inputs to produce domestic output. On the supply side, 54 commodities and 54 sectors are considered. Imports are added to domestic output to produce market supply, an aggregate of which is sold to either the export or the domestic markets and commodities differ between the export and domestic markets. For some commodities, export volumes are a function of prices (when the country is a large producer), and for other commodities domestic prices are equal to the domestic currency value of world prices (when the country is small relative to the total market size).

Factor supplies consist of capital and five types of labor: skilled, semi-skilled, unskilled, self-employed, and employers. In order to account for the substantial degree of heterogeneity in the skills required in different industries, the supply of factors including capital is subject to imperfect transformation among businesses. Thus, labor or capital moves between them only in response to wage changes, and that the

degree of factor movement is determined by the extent to which the relative wage between changes.

On the demand side, the model includes foreign tourism demand, household consumption which includes domestic tourism, demand by firms, and domestic and foreign investment. Tourism demand is modeled using a constant elasticity of demand function, whereby the country faces a downward-sloping demand curve for its exports, where foreign consumption is related to the average price paid by international tourists and the exchange rate. This consumption involves purchases of different commodities, with a Cobb-Douglas function determining how tourists substitute among commodities. This means that the share of tourism expenditure on purchases of each commodity is constant.

The manner in which changes in the rest of the economy affect tourism can be traced through the effects of these changes on prices and, hence, on the overall price that tourists pay. The way in which a change affects the economy is by raising demand for the individual commodities that tourists consume. This then, through the rest of the model, leads to changes in prices and further effects on the total price paid, tourism consumption in total, and the demand for individual commodities.

Each household has earnings from factor payments, (net) transfers from abroad, profits from firms, social security payments, and other transfers from the government. Each pays income tax, so that disposable income is equal to income minus the tax rate for that household. Income is allocated to tourism and other consumptions and savings. The consumption types are Cobb-Douglas functions of individual inputs. Firms receive income from factor services (capital), payments (earnings) from abroad, transfers from firms, government, and households as represented in the social accounting matrix. Some types of spending by firms are fixed in real quantities (so that when prices change the nominal value of spending changes); others are a fixed proportion of remaining funds, and yet others by firms are proportional to their remaining funds.

Domestic investment is undertaken using inputs of different commodities in a Cobb-Douglas nest and is equal to the amount of savings by different households, firms, and foreign investment. The latter consists of an inflow of currency and purchase of domestic capital and is determined by a constant elasticity relationship between foreign investment and the rate of return on capital. The government collects tax revenues, purchases public goods, makes transfer payments to households, pays interest on foreign debt, and makes a contribution to the social security account. Government consumption is fixed, and any net surplus is transferred to households through transfers. The exchange rate adjusts to ensure that there is a balance of payments, which can also be viewed as the market clearing condition in the foreign exchange market.

In order to assess how a simulation affects households, an appropriate measurement of welfare is used. The generally accepted measure is termed the equivalent variation EV_h . This, because firms re-investing

some profits, and also so that closure rules can be changed to allow foreign debt repayment, is augmented to include benefits to each household accruing from enterprise and government saving. A further new development of the analysis involves augmenting the EV_h calculation to include these effects by calculating a compensated equivalent variation measure EV_h^* :

$$EV_h^* = EV_h + \varphi_h^E \Delta S_F + \varphi_h^G \Delta F$$

where φ_h^E is the proportion of enterprise savings S_F that provide utility or future earnings to household h ($\sum_h \varphi_h^E = 1$) and is set according to levels of savings in the SAM. The term φ_h^G is the share of government debt repayments (ΔF) that provide utility to household h ($\sum_h \varphi_h^G = 1$). If future debt would have to be paid by income tax payments, φ_h^G would be set equal to each household's share in income tax payments. Total equivalent variation, showing the net benefits of a simulation to the economy as a whole, is a linear sum of EV_h^* .

Modeling the Distributional Impact of Tourism in Brazil

Brazil is an interesting country for gaining a better understanding of whether tourism favors the poor. Although it experienced one of the highest average growth rates during the last century, it remains thoroughly rooted in the developing world. The poor have limited—and at times no—access to government services such as health, education, and sanitation, and limited participation in the formal labor market. Consequently, they are generally not covered by labor legislation or by most social protection schemes. Poverty is widespread in urban and rural areas, reaching the highest levels in rural parts of the north-east region. Various forms of deprivation, growth of *favelas* (shanty towns), urban violence, street children, and disease have been common in large and in medium-sized and small cities all over the country. The social problems and the limited effectiveness of government policies in tackling the problems have caused considerable concern and a call for urgent policies to promote growth and create jobs. In 2002, more than half of the laborforce was employed in the informal sector, unemployment was about 12%, and the real average wage had lost 15% of its purchasing power compared with 1997.

The Brazilian government sees tourism as a major potential source of job creation and reduction of economic disparities, and long term policies to improve the industry in the country have been established (Ministério do Turismo 2003). The number of tourist arrivals increased from 1.1 million in 1990 to 4.1 million in 2003. The government expects that about 1.2 million jobs will be created in tourism businesses in four years, should the growth trend continue. Although this industry comprises a significant share of Brazil's GDP, 4.3% in 2002 (Arbache, Teles, da Silva, and Cury 2004), it is unclear whether and how it will fulfill expectations in terms of job creation and poverty reduction. It is apparent that the benefits from its development are

concentrated in specific areas of the country, such as Rio de Janeiro, Bahia, and the Pantanal, while some of the poorer areas in the north-east are less advantaged. When data become available, further research could investigate the distribution of the returns from tourism within a spatial context.

In contrast to the economy as a whole, the distribution of the income generated in tourism is highly biased in favor of labor, particularly the self-employed (Figure 1). Only 13% of the income accrues to capital, while the share is about 55% in the economy as a whole. Lower rather than higher income households tend to derive a larger proportion of their proceeds from tourism. These two pieces of evidence suggest that the industry can play an important role in poverty reduction in Brazil.

The CGE model in Brazil is calibrated using a SAM that shows the payments that take place among the different industries, products, factors, households, firms, the government, and the rest of the world. SAM was constructed (Arbache et al 2004) for the specific purpose of developing a CGE model to examine tourism and distributional effects. It contains data for 54 industries, six factors of production, and four household groups and is unique in several aspects. First, it is the only input-output database constructed for a developing country with an emphasis on showing the relationships between tourism-related sectors (including, for instance, separate accounts for accommodation, recreational services, travel agents, and twelve categories of transport services). Such relationships have previously been considered only in developed countries. Second, it is unique in showing the

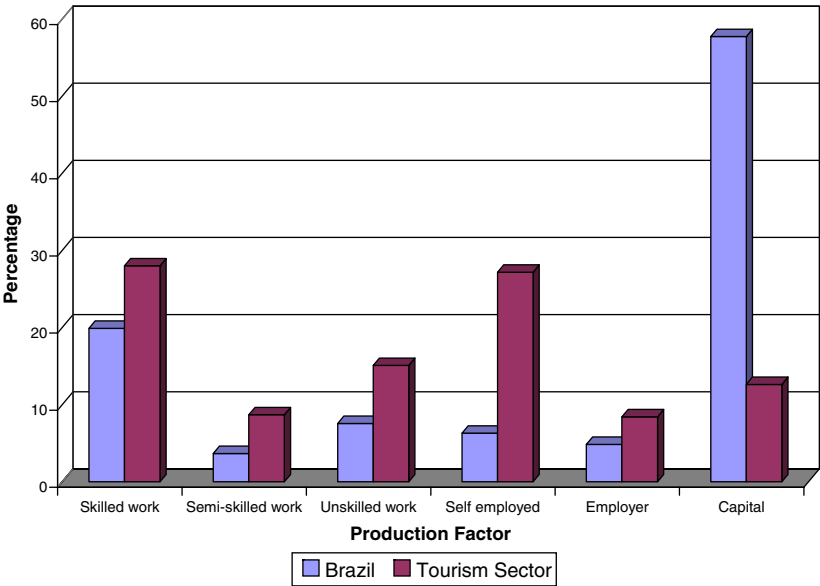


Figure 1. Income Distribution by Production Factor(2002 data)

relationships between tourism sectors, different types of labor, and different households. The data show how much of each type of labor is employed in each, and how much each household earns from each type of labor. This allows one to trace production effects through to their impacts on different household groups. Third, the database is a complete SAM that includes tourism and related businesses together with household accounts. Although Tourism Satellite Accounts were not available, the SAM that was constructed provides measures of the different types activities using the most recent data available in Brazil, in line with the satellite account methodology.

The information included in SAM enables identification of the impacts of tourism expansion on different household groups, different components of the laborforce, and income inequality. Its construction method for other developing countries would be useful in providing comparative evidence and in assisting policy formation. While there is no official national definition of a poverty line in Brazil, SAM is constructed so that the lowest income household with earnings of less than \$34 per capita per month corresponds to a poverty line that has been widely used in official and academic circles, largely because it corresponds to the means-test in Brazil's main cash assistance program (Ferreira, Leite, and Litchfield 2006).

Table 1. Indicators of the Tourism Industry in the Brazilian Economy, 2002

Indicator	Brazil (\$bn)	Tourism (\$bn)	Tourism as a Share of Total (%)
GDP	477.65	26.56	5.56
Remuneration			
Skilled labor	66.60	2.88	4.33
Semi skilled labor	12.27	0.89	7.29
Unskilled labor	25.31	1.55	6.13
Self employed labor	21.10	2.80	13.25
Employers' labor	16.22	0.87	5.34
Capital	193.19	1.30	0.67
Indirect Taxes	55.28	2.94	5.32
Foreign currency revenue	67.22	2.66	3.96
Consumption			
Lowest income households	20.95	1.03	4.9
Low income households	53.00	1.78	3.4
Medium income households	53.03	2.77	5.2
High income households	121.19	13.76	11.3
Earnings			
Lowest income households	17.79	1.48	8.3
Low income households	48.97	3.49	7.1
Medium income households	35.48	2.13	6.0
High income households	62.92	3.19	5.1

Source: Arbache et al (2004).

Some summary measures from SAM and for an input-output analysis of tourism demand in the former are provided in [Table 1](#). Measures for Brazil as a whole are given in the first column. Most of the capital is obtained from domestic sources as, even in good years, annual net foreign direct investment accounts for no more than 0.5% of GDP and most foreign savings have been short-term portfolio capital. The direct and indirect impacts of tourism are in the second column and the ratio of the industry to the whole economy is in the third column. The direct and indirect size of tourism is \$26.56 billion, and accounts for just over 5.5% of total GDP generated in the economy.

Remuneration shows the value of earnings under six categories. Three are labor employment categories distinguished by the level of qualification: skilled (11 or more years of schooling), semi-skilled (7–10 years) and unskilled (less than 7 years). Together, these three employed categories account for 74% of all labor earnings in the economy. The other three are self-employed labor, employers, and capital earnings. For the Brazilian economy as a whole, capital earnings and earnings by qualified labor are the two most significant forms of earnings. Tourism exhibits higher earnings ratios in self-employed labor (13.25%), semi-qualified labor (7.29%) and non-qualified labor (6.13%) and a notably low earnings ratio for capital (0.67%). The ratio of capital to labor earnings is 1.37 for the economy as a whole, and just 0.12 for tourism. The industry contributes \$2.94 billion in indirect tax revenues, 5.32% of the national total, which is a similar ratio to the GDP ratio—indicating that indirect taxes are on the whole levied at a lower rate on tourism than on the rest of the Brazilian economy.

It is interesting to note that tourism also plays an important role in the distribution of Brazil's income. The evidence is that its consumption (for example, domestic tourism) is mainly concentrated upon the wealthiest sections of society (the high-income households spend \$13.69 billion per year on domestic trips), more than twice the value of tourism consumption of all other households combined. On the other hand, the remuneration of households through the industry is increasingly concentrated, in relative terms, towards the lowest- and low-income households which together receive \$4.96 billion, almost half of all household earnings from tourism (\$10.27 billion). These data suggest a distribution of income from the richest, through consumption, to the poorest, through remuneration. It is notable that the largest inter-household flows are from high- to low-income households, but not to the lowest income ones.

Twelve of the 54 commodities in SAM are classified as being tourism-related, and both foreign and domestic tourism are classified as being expenditure on these 12 commodities. [Table 2](#) shows the shares of foreign, domestic, and total tourism expenditure as a percentage of total commodity demand, as well as showing how both foreign and domestic tourism spending is shared across these commodities. Notably, foreign expenditure is much more heavily weighted towards hotels and other temporary lodging, while domestic is more weighted towards regular airline transportation and recreation, cultural and sports services.

Table 2. Tourism Related Commodities(percentages)

Industry	Foreign Tourism		Domestic Tourism		Total
	Share of total demand for product	Share of foreign tourism expenditure	Share of total demand for product	Share of domestic tourism expenditure	Share of total demand for product
Scheduled land transport	6	16	53	14	59
Other land transport	6	1	53	1	59
Transport to tourism attractions	4	0	62	0	66
Scheduled airline transport	0	0	65	15	65
Other airline transport	0	0	65	1	65
Travel agencies	11	6	6	0	17
Support activities to land transport	12	2	22	0	34
Support Activities to air transport	12	2	22	0	34
Accommodation	26	37	56	9	81
Restaurants	8	35	77	38	85
Recreation and sport services	0	1	71	20	72
Car rental and other transport	3	0	35	0	38
		100		100	

Tourism's share of commodity demand ranges from 17% (for travel agencies, of which outbound demand is not included here) to 85% (for restaurants and other food service enterprises).

Study Results

The key issues examined in the model are the economic impacts and distributional effects of tourism expenditure. All the simulations reported here involve a 10% increase in demand by foreign tourists in Brazil, which leads to a variety of effects in the economy. These include rises in the prices that tourists pay for goods and services which lead to a fall in demand that counteracts part of the original 10% increase. Wages in Brazil are also sensitive to changes in demand; average unemployment has been around 10% over the last five years, and real wages have fluctuated in accordance with economic conditions during this period. The tourism-demand expansion also leads to changes in production in all industries, changes in employment, earnings, household incomes, prices, and all other variables in the model. [Table 3](#) shows the effects that the tourism demand shock has on some of the key variables: tourism consumption, prices and expenditure, equivalent

Table 3. Main Results for Tourism and Welfare

Simulation	1	2	3	4
Closure rule: additional government income is transferred in proportion to...	Original transfer receipts	Levels of income tax	Levels of income	Only to the poorest household
Percentage change in tourism consumption	8.484	8.484	8.484	8.484
Percentage change in tourism price	0.697	0.697	0.697	0.696
Percentage change in tourism expenditure	9.239	9.239	9.239	9.240
Change in tourism expenditure (R\$bn)	0.680	0.679	0.680	0.680
Equivalent Variation (\$bn)	0.106	0.106	0.106	0.104
equivalent variation as a percentage of original income	0.025	0.025	0.025	0.025
Compensated equivalent variation (\$bn)				
Lowest income household	0.018	0.018	0.020	0.037
Low income household	0.038	0.036	0.038	0.033
Medium income household	0.010	0.011	0.008	0.004
High income household	0.040	0.041	0.040	0.030
Percentage change in Highest:Lowest real income	-0.035	-0.034	-0.039	-0.092
Household equivalent variation as percentage of total equivalent variation				
Lowest income household ^a	17	17	19	35
Low income household ^a	36	34	36	32
Medium income household ^a	9	10	7	4
High income household ^a	38	39	38	29

^a Percentages.

variation for Brazil as a whole, compensated equivalent variation for the four household groups, and the ratio of real income in the highest-income to the lowest-income households.

The results from four simulations are included in Table 3. The differences among these simulations are in the way that the government allocates the additional tax revenues received directly and indirectly from the tourism expansion (net of falls in revenue from other activities). In each of these simulations, additional government income is transferred to households, either through increases in transfer payments or through reductions in direct tax levels. In simulation 1, additional revenue is transferred to households in proportion to their original receipts of government transfers. In simulation 2, it is transferred according to households' levels of tax payments (for example,

reducing income taxes). In simulation 3, revenues are transferred in proportion to income levels, while in simulation 4 all additional revenues are transferred to the poorest household group.

The tourism and the macroeconomic results are very similar for the four simulations. The 10% rise in foreign demand leads to increases in prices of, on average, around 0.7%, which reduces the growth in tourism consumption to around 8.5%. Expenditure increases by around 9.2%. In each simulation, the resulting rise in tourism expenditure is around \$0.23 billion. The welfare benefit to Brazil of this additional expenditure is around \$0.106 billion, implying that the country benefits by \$45 for every \$100 of additional tourism spending (that is, there is a multiplier of 0.45).

There are considerable variations in the redistributive effects of the different simulations, however. Simulation 1, by transferring additional government revenues to households in proportion to their original receipts of transfer income, essentially maintains the current system of government payments but at a higher level.

Simulation 2, by transferring revenues in proportion to income tax payments is equivalent to the government choosing to spend the gains from tourism expansion on tax cuts. These two simulations have similar effects on the compensated equivalent variation of the lowest-income household (\$0.018bn) and on the ratio of income levels for the highest- and lowest-income household, which falls by 0.035%, so that the level of income inequality by this measure is reduced, and the lowest income household is catching up with the highest.

Simulation 3, by transferring revenues to households in proportion to their income levels has somewhat different effects on the distributional effects of tourism expansion. The welfare gain for the lowest income household is slightly higher, at \$0.020 billion, with a greater reduction in income inequality (0.039%). The reason for the effect of this simulation being larger is that the lowest income household has a much higher share of income (8.5%) than either income tax payments (0.2%) or government transfers (0.5%).

In simulation 4, all additional government revenues are transferred to the lowest income household. In this case, the distributional impacts are significantly different from the other three scenarios, although the macroeconomic impacts are very similar, with a slightly lower welfare gain for Brazil as a whole (\$0.104 billion compared to \$0.106 billion). By allocating transfers to the lowest income household, the benefit of tourism expansion to this group is doubled, and the poorest household gains around \$1 for every \$7 of additional foreign tourism spending in Brazil.

The impact of tourism expansion on different sectors of the economy is similar in all four simulations. Many factors determine how a sector is affected by expansion, but the main factors are sectors whose products/services are consumed by tourists expand; sectors supplying goods used in the first group of sectors also expand, but typically by smaller percentages; sectors that produce export goods contract; and sectors producing goods used in export sectors also contract, but by smaller percentages. A set of smaller effects can alter the relative sizes

Table 4. Percentage Change in Real Wages

Simulation	1	2	3	4
Closure rule: additional government income is transferred in proportion to...	Original transfer receipts	Levels of income tax	Levels of income	Just to the poorest household
Unskilled labor	0.008	0.008	0.008	0.008
Semi skilled labor	0.013	0.013	0.013	0.012
Skilled labor	0.001	0.001	0.001	0.000
Self employed labor	0.018	0.018	0.018	0.017
Employers' labor	0.074	0.074	0.074	0.073
Capital	-0.033	-0.033	-0.033	-0.032

of some sector output changes, but generally have smaller importance, such as the composition of consumption. In the simulations, the high-income and the low-income households have most of the welfare and income gains, so products that are consumed more intensively by them than the other households have a larger increase in demand.

The largest industry expansions occur in those sectors that sell a larger proportion of their output to foreign tourists, such as accommodation, travel agency, and transportation sectors. The sectors that contract the most are related to export activities, but the relatively diverse structure of Brazilian exports means that the contractionary effects are spread widely across many sectors.

Table 4 shows the percentage change in real wages accruing to each factor of production. Clearly, from this table, the wage changes are robust to changes in the way that the government transfers additional income. Employers' labor has the highest increase in real wage following the tourism expansion, followed by self-employed and semi-skilled labor. The effects on unskilled and skilled labor wages are small. Returns to capital fall notably, by around 0.03%, which reflects the low capital to labor ratios in most tourism-related businesses in Brazil.

Table 5 shows how the composition of real earnings changes due to a 10% increase in foreign tourism demand, by household. Column 1 shows the direct earnings effects, which are the earnings by household in the sector from which foreign tourists are purchasing goods and services. This is calculated as the sum across factors of production of the proportion of that factor's earnings that accrue to household h , ($\alpha_{h,f}$) multiplied by, for each sector, 10% of tourism demand ($D_i \times 0.1$) multiplied by the proportion of earnings by factor f in sector i sales ($\alpha_{f,i}$): $DE_h = \sum_f \alpha_{f,h} \sum_i \alpha_{f,i} D_i \times 0.1$.

These effects show that direct earnings are spread across all households, with the low-income group earning more (\$25million) than others. The direct plus indirect effects of tourism expansion are calculated in a similar manner to the direct effects, except that 10% of direct sales ($D_i \times 0.1$) are replaced by the direct plus indirect sales resulting from a 10% increase in foreign tourism (S_i): $DE_h = \sum_f \alpha_{f,h} \sum_i \alpha_{f,i} S_i$. S_i is then calculated using an input output model $S = (I - A)^{-1}(D \times 0.1)$. The

Table 5. Distribution of Earnings by Household(\$ million)

Household	1 Direct effect	2 Direct plus indirect effects	3	4	5 Total effects, simulation 1	6
	earnings	earnings	earnings	prices	government	firms
Lowest income household	11	15	12	1	0	5
Low income household	25	35	25	4	5	0
Medium income household	14	22	3	1	6	4
High income household	18	39	7	-6	11	29

results in column 2 show that the indirect earnings effects are highly significant for the high-income household, which earns more through the indirect than through the direct effects.

The CGE model results (from Table 3) are decomposed into earnings, prices, and government channels as well as the effects of increased firm investment (columns 3 to 6 in Table 5). The results show that the total earnings effects (column 3) are often lower than the direct plus indirect earnings effects; and that for the medium- and high-income households, the total earnings effects are small. Other export sectors are much more intensive in their use of factors of production—capital and skilled labor—that are owned by the richer household groups, than are tourism businesses. Therefore, the greatest burdens of the crowding out activities fall on the medium- and high-income households. The price channel (column 4) is shown to have a moderate effect, increasing the real income of the poorest household groups but reducing the real income of the richest group. The government channel (column 5), in this simulation, acts to increase the incomes of all households except the poorest as they receive very low levels of transfers. The firms effect (column 6) comes through the fact that establishments invest more in response to the tourism shock, and the additional holding of capital (with future earnings potential) is allocated to households in proportion to their ownership of firms.

CONCLUSION

This paper has provided an economy-wide analysis of the distributional effects of tourism expansion, providing a means of answering the question of whether and how this industry can contribute to poverty relief. A computable general equilibrium modeling approach was developed to include earnings by different categories of workers in tourism and households with different levels of income, as well as the channels by which the industry affects the distribution of income

between rich and poor households. The channels by which the distributional effects occur are changes in prices, earnings, and the government.

The model was calculated using a dataset that is unique in the context of developing countries, in that it includes detailed data for earnings by different types of labor and capital in different sectors of the economy. The results show that, when taking all the negative or offsetting effects into account, as well as the positive effects of industry expansion, there is a welfare gain to Brazil of \$0.45 for every \$1 unit of additional spending. The results also show that tourism benefits the lowest-income sections of the Brazilian population and has the potential to reduce income inequality.

The lowest-income households are not, however, the main beneficiaries, as households with low (but not the lowest) income benefit more from the earnings and price channel effects of tourism expansion. High- and medium-income households, followed by the low-income group, benefit most from the government channel effects, with the exception of the case when government directs the revenue from tourism expansion specifically towards the lowest income group. The latter type of revenue distribution could double the benefits for the lowest-income households, giving them around one-third of all the benefits. The implication is that policies directed specifically towards benefiting the lowest-income group are required if the poorest are to achieve the greatest gains.

The results from this study have shown that care needs to be taken when generalizing poverty relief results. In the case of Brazil, there is a strong reinforcement effect whereby the industries that reduce their output following a tourism demand increase are export ones that employ factors of production from the richer households. Therefore, the structure of earnings in non-tourism export sectors plays a significant role in determining the net poverty effects of tourism. This type of earnings structure may not apply in other countries. Hence, it would be important to apply the model to tourism expansion in other countries, in order to investigate the effects that would occur under different types of earnings structures.

Further research using this model would also be of interest. One of the limitations of using representative household groups (the four types in this model) is that there is significant heterogeneity among them. For this reason, more detailed household modeling would be desirable, using a microsimulation approach to the household impacts, in which data on individual households are intrinsic to the model. **A**

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Professor Thea Sinclair died following a tragic and untimely accident in September 2006. She had previously published widely on a variety of issues relating to tourism, and from an early

stage in her career had particular interests in the economic impacts of tourism in developing countries. This article, written prior to her death, is dedicated to her memory.

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O POTENCIAL CRIADOR DE EMPREGO E RENDA DO TURISMO NO BRASIL *

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O objetivo deste artigo é dimensionar o turismo no Brasil e examinar, em particular, seu potencial gerador de emprego e renda, a partir da estimação da matriz de insumo-produto do turismo para o ano de 2006. Essa matriz permitiu analisar as articulações entre o turismo e o restante da economia. Estimaram-se os efeitos para frente e para trás da produção turística sobre os demais setores. Em seguida, foram analisados os impactos do desenvolvimento do turismo sobre a renda e o emprego, comparando-os com o potencial gerador de renda e emprego médios da economia brasileira.

1 INTRODUÇÃO

A Organização Mundial de Turismo (OMT) define turistas como aqueles que viajam e permanecem fora dos seus domicílios por período não superior a um ano de duração. Outras definições afirmam que o turista deve ficar mais de 24 horas no lugar que visita para ser assim considerado. Em termos econômicos e partindo dessas definições, o turismo é visto como a atividade que traz gastos para quem está fora de casa por no mínimo 24 horas e no máximo um ano, envolvendo despesas em diferentes atividades nas áreas de transporte, alimentação, hospedagem e lazer. Implica, por isso, grande interface entre vários setores da economia, sendo importante entender bem a articulação entre eles, tanto no que se refere à sua complementaridade quanto aos impactos econômicos que seu desenvolvimento provoca.

A matriz de insumo-produto e o modelo a ela relativo de Leontief (1951) são excelentes ferramentas de análise nesse sentido, permitindo visualizar as articulações entre o turismo e o restante da economia, estimar os impactos do

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turismo como demandante e ofertante de insumos para a economia brasileira como um todo, bem como avaliar os efeitos do crescimento do setor sobre a renda e o emprego gerados.

Existem vários estudos usando a matriz de insumo-produto para analisar o turismo em diferentes países. Em particular, podemos citar o trabalho de Wien (1989) sobre Vorarlber, na Áustria, e de Archer (1995) para as Bermudas. Mais recentemente temos os trabalhos de Oosterhaven e Fan (2006), analisando o impacto do turismo internacional na economia chinesa; o de Surugiu, Frent e Surugiu (2009) sobre o turismo na Romênia; o de Blake (2008), avaliando o impacto do turismo sobre a distribuição de renda da África Oriental; o de Mitchell e Ashley (2010) sobre turismo como um instrumento para a redução da pobreza; além do livro recentemente editado por Matias, Nijkamp e Neto (2007) que apresentam métodos e aplicações na análise do turismo, com especial destaque para o instrumental de insumo-produto.

Wien (1989) destaca que a melhor maneira de analisar o impacto econômico do turismo é usando matrizes regionais de insumo-produto, e faz isso para calcular os efeitos do turismo na geração de valor adicionado, de receitas de impostos e na criação de empregos. Archer (1995) usa o instrumental de insumo-produto para comparar a contribuição relativa do turismo nas exportações, na geração de renda e emprego, e na renda do setor público, com a dos principais setores exportadores das Bermudas.

Para o Brasil, o trabalho de Casimiro Filho (2002)¹ é referência no assunto. Depois dele, o Centro de Excelência em Turismo (CET) da Universidade de Brasília (UnB) calculou a matriz de insumo-produto e de contabilidade social com dados de 2002, conforme Arbache *et al.* (2008).

No trabalho pioneiro de Casimiro Filho (2002), o autor descreve o turismo no Brasil e mensura os impactos da demanda final sobre o produto, o emprego e a renda, destacando os setores que formam o turismo. No presente artigo, o objetivo também é estimar o potencial gerador de emprego e renda do turismo. O artigo usa, porém, dados de 2006, do Instituto Brasileiro de Geografia e Estatística (IBGE), enquanto Casimiro Filho utiliza dados de 1999, e Arbache *et. al* (2008) usam dados de 2002. Além de a análise feita aqui ser bastante mais atualizada, os dados de 2006 embutem pela primeira vez a mudança grande que houve no turismo brasileiro, relacionada com os estímulos que o setor recebeu a partir da criação do Ministério do Turismo (MTur), em 2003.

1. Ver também Casimiro Filho e Guilhoto (2003).

Finalmente, os dados de 2006 do IBGE incorporam as mudanças ocorridas no sistema de contas nacionais em 2007² e são bastante mais desagregados do que na época dos trabalhos de Casimiro Filho e Arbache *et al.* De fato, os cálculos anteriores do IBGE contemplavam 54 setores e na nova metodologia o número de setores vai para 85. Essa desagregação, no caso do turismo, é particularmente importante porque as atividades características do turismo atendem tanto a turistas quanto a residentes. Assim, quanto mais desagregados são os setores, maior é a precisão dos setores que, de fato, atendem a turistas.

Os resultados encontrados na literatura sobre os reais benefícios do turismo variam muito de país para país. Assim, enquanto para a África Oriental as indústrias relacionadas com o turismo beneficiam pouco a população mais pobre, não se constituindo em uma atividade indicada para alívio da pobreza (BLAKE, 2008), no caso do Brasil, Blake *et al.* (2008), simulando um aumento de 10% na demanda internacional por turismo no Brasil, encontram um impacto positivo importante na redução da pobreza e da desigualdade. Várias são as razões para tais diferenças, relacionadas à importância do turismo na economia do país, assim como com a qualidade do emprego que o setor pode oferecer relativamente ao que é propiciado, por exemplo, por outros setores, cuja produção concorre com a do turismo em termos de geração de emprego e renda.

Blake (2008) percebe que, no caso da África Oriental, a parcela da renda recebida do turismo pela população mais pobre é menor do que aquela proveniente de exportações de mercadorias, razão pela qual o turismo não se mostra uma boa solução para o alívio da pobreza. O autor observa, porém, que isso pode estar relacionado ao fato de os empregos nos setores turísticos pagarem mais do que os ligados com as exportações de mercadorias. Porém, caso haja um deslocamento da mão de obra para o setor de turismo, poderia haver uma melhora do nível de remuneração dos empregados e da população como um todo.

Oosterhaven e Fan (2006) observam, no caso da China, que o impacto do turismo internacional é consideravelmente menor sobre o emprego e a renda do que sobre o Produto Nacional Bruto (PNB), estimulando, sobretudo, atividades de alto valor adicionado nos modernos setores de serviços. Embora tenha pequeno impacto sobre a economia, a intensidade com que o turismo internacional gera valor agregado testemunha seu potencial para a economia chinesa.

Takasago e Mollo (2008), por sua vez, mostram que é possível aumentar a renda dos mais pobres no Brasil, mas isso não ocorre em qualquer circunstância.

2. No decorrer do ano de 2007, o IBGE divulgou os resultados para os sistemas de contas nacionais (SCN), os quais sofreram alterações metodológicas e de base com relação aos resultados que vinham sendo divulgados até o ano de 2006. Entre as mudanças ocorridas deve ser destacada a alteração do ano base do cálculo das Contas Nacionais, que passou de 1985 para 2000. Esse fato teve como consequência principal a alteração da importância relativa dos setores na economia nacional. Estas alterações afetam diretamente as matrizes de insumo-produto, que foram estimadas e que são a base para o cálculo da importância do turismo para a economia nacional.

Depende de como os aumentos da demanda são obtidos. Mais particularmente, só aumenta a renda dos mais pobres quando a arrecadação e, consequentemente, os gastos do governo não caem, ou quando os ganhos ou as perdas de arrecadação provenientes do aumento da demanda turística são transferidos no sentido de beneficiar as classes de renda mais baixas.

Além de uma desagregação maior dos dados usados para a elaboração deste artigo, diferentemente dos trabalhos anteriores, procurou-se ainda melhorar a apreensão dos impactos dos serviços característicos do turismo, separando a parcela da demanda deles que serve a residentes daquela que atende a turistas. A forma de definir o turismo difere muito em vários trabalhos, e isso se deve, em particular, ao modo de coletar os dados e à disponibilidade dos mesmos que varia muito de país para país. No trabalho de Surugiu, Frent e Surugiu (2009), por exemplo, o turismo é definido apenas como constituído dos setores de hotéis, restaurantes e agências de viagens. Partindo do princípio de que turistas fazem gastos com todos os tipos de mercadorias, estimulando assim a economia de um país, neste trabalho o turismo foi definido de forma mais ampla, incluindo os setores de transporte, alimentação, hospedagem, viagens e cultura e lazer, que são mais característicos como gastos dos visitantes. Contamos, assim, com dados do lado da oferta desses setores. Como, porém, não temos ainda a Conta Satélite do Turismo, em particular os dados de despesas dos turistas nacionais ou internacionais, procuramos separar os gastos dos turistas e dos residentes a partir de pesquisa sobre o emprego no turismo, realizada pelo Ipea em 2006.³

Este artigo está organizado da seguinte forma: o tratamento dos dados é apresentado na seção 2, enquanto a metodologia utilizada no trabalho é exposta na seção 3. Os impactos do desenvolvimento do turismo sobre a produção, a renda, o emprego e o valor adicionado são analisados na seção 4. Na seção 5 discute-se a importância do complexo turístico como um todo sobre a geração do PIB e das ocupações, enquanto na seção 6 apresentam-se os comentários finais.

2 TRATAMENTO DOS DADOS

A pesquisa Emprego no Turismo, do Ipea, foi realizada em 2006 e calculou a parte do emprego formal nas diferentes atividades que atendem turistas e residentes, separando a parcela correspondente ao atendimento a turistas. Colheu dados do Cadastro Geral de Empregados e Desempregados (CAGED), de trabalho formal nos diferentes setores e encontrou os seguintes percentuais da mão de obra empregada no atendimento a turistas: alojamento, 73,06%; alimentação, 11,92%; transporte, 53,32%; auxiliares de transporte, 19,71%; agências de viagem, 85,70%;

3. Para uma análise detalhada da pesquisa mencionada, ver o artigo de Coelho (2008).

aluguel de transporte, 35,71%; cultura e lazer, 6,69%. No total do emprego nos diferentes setores, 26,19% se referem à prestação de serviço a turistas e não a residentes. Esses foram os percentuais setoriais usados no presente artigo para calcular os serviços turísticos no Brasil, com exceção do setor de transportes.

No caso dos transportes, não foi usado o coeficiente encontrado pelo estudo acima, porque, em primeiro lugar, ele é um item que pode ser bastante desagregado nos dados do IBGE, de forma a excluir setores, como o de transporte de carga, que não se referem ao atendimento a turistas. Em segundo lugar, após a desagregação e a exclusão dos subsetores que só atendem a residentes, obtivemos uma participação do setor de transporte em geral, de 55%, já muito próximo do percentual de 53,32% encontrado pelo Ipea.

A matriz insumo-produto para o ano de 2006 foi construída a partir dos dados preliminares das Contas Nacionais do Brasil, de acordo com a metodologia proposta por Guilhoto; Sesso Filho (2005), que apresenta as informações em um enfoque de produto por setor, a preços básicos, permitindo que cada produto seja produzido por mais de um setor e que cada setor produza mais de um produto, ou seja, existe uma matriz de produção e outra de uso dos insumos. A dimensão da matriz de produção é de 81 setores por 134 produtos e a matriz de uso, de 134 produtos por 81 setores.

Na construção da matriz insumo-produto para o turismo foram utilizados dois métodos. O primeiro consiste em compatibilizar as tabelas de recursos e usos e o segundo faz a agregação de alguns setores (que têm pouca relação com o turismo) e a desagregação de outros setores (que podem ser considerados de maior projeção turística).

Inicialmente fez-se a compatibilização das tabelas de recursos e usos. Conforme Guilhoto, Sesso Filho (2005), parte-se, primeiramente, das tabelas de recursos e de usos de 2006 divulgadas pelo IBGE. A tabela de usos possui valores a preços de mercado, que devem ser transformados a preços básicos. Os valores dos recursos são obtidos da tabela de produção e estão, portanto, a preços básicos. Os dados de usos e serviços, porém, estão expressos a preços ao consumidor, que incluem também os valores das importações, dos impostos indiretos líquidos e das margens de comércio e transporte. Nesse sentido, para se obter a matriz de usos a preços básicos da oferta nacional, torna-se necessário subtrair dos preços de mercado os valores referentes às margens de comércio (MGC) e de transporte (MGT), Imposto Sobre Circulação de Mercadorias e Serviços (ICMS), Impostos Sobre Produtos Industrializados (IPI) e Impostos Sobre Serviços (ISS), Outros Impostos Indiretos Líquidos (OIIL), Importação de Bens e Serviços (IMP) e Impostos de Importação (IIMP) de cada produto para cada setor de atividade.

O IBGE disponibiliza o total de impostos e margens embutido nos valores dos produtos da matriz de usos de bens e serviços. O problema central da estimativa da matriz de recursos e usos é distribuir os valores totais de impostos e margens na matriz.

O método para a distribuição dos valores totais entre os diversos setores de atividades da economia consiste em estimar uma matriz de coeficientes a ser multiplicada pelos valores totais. A estimativa dos coeficientes é dada por:

$$\alpha_{ij} = \frac{Z_{ij}}{\sum_{j=1}^n Z_{ij}} \quad (1)$$

Na equação (1) Z_{ij} é o valor do produto i que é vendido para o setor ou demanda final j , a preços de mercado e $\sum_{j=1}^n Z_{ij}$ representa o valor total do produto i vendido para todos os setores da economia e para a demanda final, onde n é o número de setores da economia.

Os valores totais das margens e impostos distribuídos internamente entre as atividades e a demanda final são multiplicados pelos coeficientes encontrados na equação (1). Esses coeficientes são utilizados para se distribuir MGC, MGT, ICMS, IPI/ISS e OIIL.

A presença das exportações na demanda final e total implica um tratamento diferenciado para o cálculo dos coeficientes de distribuição da IMP e dos IIMPs. Como esses valores não podem ser alocados para as exportações, as demandas finais e totais têm seu valor diminuído da demanda externa. Feito esse ajuste, os novos coeficientes para a distribuição de IMP e IIMP são calculados de maneira similar ao caso anterior dado pela equação (1).

O turismo é definido pela OMT como o conjunto de serviços que atendem ao turista. No Brasil, com base nos dados do IBGE que estão disponíveis, foram destacados 20 serviços que formam o turismo. O gráfico 1 adiante nos mostra a composição do valor adicionado do turismo, destacando a participação de cada um desses serviços turísticos.

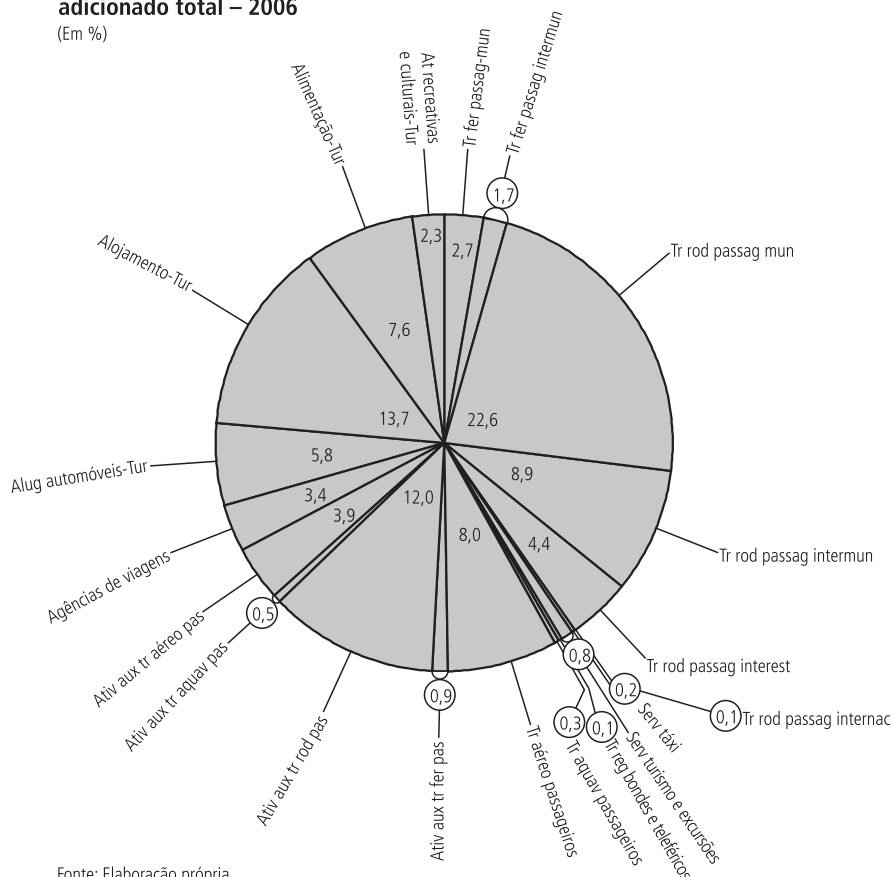
A maior participação desses setores no turismo é a do transporte rodoviário municipal de passageiros (22,6%), seguida do setor de alojamentos (13,7%), do setor auxiliar de transporte rodoviário de passageiros (12,0%), do transporte rodoviário de passageiros intermunicipal (8,9%), do transporte aéreo (8,0%) e da alimentação (7,6%). A parcela do turismo destinada ao lazer propriamente dito (atividades recreativas e culturais) que define preferencialmente a atividade,

segundo a OMT, é bastante menor, respondendo por apenas 2,3% do total. Isso mostra a elevada complementaridade das atividades que constituem o turismo, do ponto de vista econômico. Os atrativos de cultura e lazer, grandes objetos do turismo e responsáveis por ele, têm, porém, como veremos adiante, importante papel gerador de renda, emprego e de valor adicionado, espalhando benefícios por diferentes setores e atividades, mostrando que o impacto sobre a economia como um todo pode ser muito maior.

GRÁFICO 1

Atividades que constituem o turismo no Brasil: participação no valor adicionado total – 2006

(Em %)



Fonte: Elaboração própria.

3 REFERENCIAL METODOLÓGICO

O modelo de insumo-produto de Leontief (1951) fornece a descrição dos fluxos de produtos entre os setores de uma economia para um dado ano, ilustrando a relação entre produtores e consumidores e a inter-relação entre os setores demandando e oferecendo insumos. Os fluxos intersetoriais são determinados tanto por

fatores econômicos como tecnológicos e podem ser descritos como um sistema de equações simultâneas (MILLER; BLAIR, 2009).

Em termos matriciais, o fluxo intersetorial em uma economia pode ser representado por:

$$AX + Y = X \quad (2)$$

em que A é a matriz de coeficientes diretos de insumo, de ordem $(n \times n)$ e X e Y são vetores colunas de ordem $(n \times 1)$, com valores, respectivamente, da produção total e da demanda final de cada setor.

Tratando-se a demanda final como exógena ao sistema, tem-se:

$$Y = BX \quad (3)$$

$$B = (I - A)^{-1} \quad (4)$$

em que B é a matriz de coeficientes diretos e indiretos ou matriz inversa de Leontief, de ordem $(n \times n)$, na qual o elemento b_{ij} deve ser interpretado como a produção total do setor i que é necessária para produzir uma unidade de demanda final do setor j .

Para se calcular o efeito induzido é necessário endogenizar o consumo e a renda das famílias no modelo de insumo-produto; desta forma, em vez de utilizar a matriz A descrita acima, teríamos:

$$\bar{A} = \begin{bmatrix} A & H_c \\ H_r & 0 \end{bmatrix} \quad (5)$$

onde \bar{A} é a nova matriz de coeficientes técnicos $((n + 1) \times (n + 1))$ contendo a renda (H_r) e o consumo (H_c) das famílias.

Da mesma forma, teríamos que os novos vetores de produção total \bar{X} $((n+1) \times 1)$ e de demanda final Y $((n + 1) \times 1)$ seriam representados, respectivamente, por:

$$\bar{X} = \begin{bmatrix} X \\ X_{n+1} \end{bmatrix} \quad (6)$$

$$\bar{Y} = \begin{bmatrix} Y^* \\ Y^*_{n+1} \end{bmatrix} \quad (7)$$

onde os novos componentes estão relacionados à endogenização do consumo e da renda das famílias.

Desta forma, o sistema de Leontief seria representado como:

$$\bar{Y} = \bar{B}X \quad (8)$$

$$\bar{B} = (I - \bar{A})^{-1} \quad (9)$$

Podemos, além disso, considerar um vetor W ($n \times 1$) em que os elementos w_j podem ser os coeficientes de emprego, ou de importações, impostos, salários, valor adicionado, entre outros, que são obtidos dividindo-se, para cada setor, o valor utilizado destas variáveis na produção total pela produção total do setor correspondente, isto é:

$$w_j = \frac{e_j}{x_j} \quad (10)$$

Assim, podemos calcular o potencial gerador de cada uma dessas variáveis. Suponhamos que w_j seja, por exemplo, emprego. Temos então que:

w_j é o coeficiente de emprego do setor j ;

e_j é o pessoal ocupado do setor j ;

x_j é a produção no setor j .

Utilizando-se a derivação elaborada acima, podemos calcular o gerador do emprego. Assim temos:

$$E_j = \sum_{i=1}^n b_{ij} w_i \quad (11)$$

em que E_j é o gerador de emprego que estima o quanto é gerado de maneira direta, indireta e induzida de emprego para cada unidade monetária produzida para a demanda final do j -ésimo setor.

Da mesma forma podemos calcular todos os demais geradores de salário, remuneração de trabalhador autônomo, valor adicionado etc.

3.1 Índices de ligações

A partir do modelo de Leontief, definido acima, e seguindo-se Rasmussen (1956) e Hirschman (1958), consegue-se calcular também os índices de ligação para trás – quando o setor demanda dos demais insumos necessários à sua própria produção –, e para frente – quando oferece insumos para os demais setores da economia.

Desse modo, definindo-se B como a matriz inversa de Leontief, b_{ij} como sendo um elemento da matriz inversa de Leontief, B^* como sendo a média de todos os elementos de B ; e $B_{.j}$ como sendo a soma de uma coluna típica de B , tem-se, então, os índices de ligações para trás a seguir:

$$U_j = [B_{.j} / n] / B^* \quad (13)$$

Definindo-se F como sendo a matriz de coeficientes da linha obtida a partir da matriz de consumo intermediário da economia, G como sendo a matriz de Ghosh obtida pela fórmula $G = (I - F)^{-1}$ (ver MILLER; BLAIR, 2009), G^* como sendo a média de todos os elementos de G , e G_{i^*} como sendo a soma de uma linha típica de G , tem-se, então, os seguintes índices de ligações para frente:

$$U_i = [G_{i^*} / n] G^* \quad (14)$$

Os índices de ligação de Hirschman (1958) e Rasmussen (1956) mensuram o efeito de encadeamento de um determinado setor com o restante da economia. O índice puro de ligação apresentado a seguir é semelhante ao índice de Hirschman e Rasmussen, entretanto existe a diferença de que leva em conta o valor da produção respectiva a cada setor. Nos índices puros de ligação, os valores monetários das interações inter e intrasetoriais são considerados, como também o é a relevância do setor do ponto de vista do volume absoluto de produção. Os setores indicados como os mais importantes dentro da economia por esse método são, em geral, aqueles que unem grande interação e expressiva produção.

Em linhas gerais, os índices de ligação de Hirschman e Rasmussen avaliam, principalmente, os coeficientes técnicos de produção, preocupando-se com o quanto a tecnologia adotada por cada setor é dependente ou fornecedora de insumos. Os índices puros de ligação, por sua vez, avaliam adicionalmente a importância dos volumes fornecidos ou demandados.

Seguindo Guilhoto, Sonis e Hewings (2005), o índice puro de ligação permite isolar determinado setor j do restante da economia, de forma a definir o efeito das ligações totais desse setor na economia. Em outras palavras, o índice puro de ligações indica a diferença entre a produção total na economia e a produção na economia se o setor j não comprasse insumos do resto da economia nem vendesse sua produção para o restante desta.

Para isso, torna-se necessário decompor a matriz de coeficientes técnicos de produção (A), da seguinte forma:

$$A = \begin{bmatrix} A_{jj} & A_{jr} \\ A_{rj} & A_{rr} \end{bmatrix} = \begin{bmatrix} A_{jj} & A_{jr} \\ A_{rj} & 0 \end{bmatrix} + \begin{bmatrix} 0 & 0 \\ 0 & A_{rr} \end{bmatrix} = A_j + A_r \quad (15)$$

em que A_{jj} é a matriz de insumos diretos do setor j ; A_{jr} é a matriz de insumos diretos que o setor j adquire do resto da economia; A_{rj} é a matriz de insumos diretos que o resto da economia adquire do setor j ; A_{rr} é a matriz de insumos diretos do resto da economia; A_j refere-se ao setor j isolado do resto da economia; e A_r representa o restante da economia.

A partir da expressão (15) pode-se chegar à expressão (16) abaixo:

$$B = (I - A)^{-1} = \begin{pmatrix} B_{jj} & B_{jr} \\ B_{rj} & B_{rr} \end{pmatrix} = \begin{pmatrix} \Delta_{jj} & 0 \\ 0 & \Delta_{rr} \end{pmatrix} \begin{pmatrix} \Delta_j & 0 \\ 0 & \Delta_r \end{pmatrix} \begin{pmatrix} I & A_{jr}\Delta_r \\ A_{rj}\Delta_j & I \end{pmatrix} \quad (16)$$

onde:

$$\Delta_j = (I - A_{jj})^{-1}$$

$$\Delta_r = (I - A_{rr})^{-1}$$

$$\Delta_{jj} = (I - \Delta_j A_{jr} \Delta_r A_{rj})^{-1}$$

$$\Delta_{rr} = (I - \Delta_j A_{rj} \Delta_r A_{jr})^{-1}$$

A partir da expressão (16) acima, Guilhoto, Sonis e Hewings (2005) derivam os índices puros de ligações para trás (*PBL*) e para frente (*PFL*), que são dados pelas fórmulas (17) e (18) abaixo:

$$PBL = \Delta_r \Delta_{\eta} \Delta_j Y_j \quad (17)$$

$$PFL = \Delta_j A_{jr} \Delta_r Y_r \quad (18)$$

Outra vantagem dos índices puros em relação aos de Hirschman-Rasmussen é que, caso se deseje saber qual é o índice puro do total de ligações (*PTL*) de cada setor na economia, é possível somar o *PBL* com o *PFL*, dado que estes índices são expressos em valores correntes.

$$PTL = PBL + PFL \quad (19)$$

Quando se pretende fazer uma análise comparativa dos índices puros com os de ligações de Hirschman-Rasmussen pode-se proceder a uma normalização dos índices puros. Essa normalização é feita dividindo-se o valor da produção em cada setor pelo valor médio da economia.

O índice puro de ligação para trás normalizado é definido como

$$PBLN_i = PBL_i / \left(\sum_{i=1}^n PBL_i / n \right) \quad (20)$$

O índice puro de ligações para frente normalizado é

$$PFLN_i = PFL_i / \left(\sum_{i=1}^n PFL_i / n \right) \quad (21)$$

Já o índice puro total normalizado das ligações de cada setor é dado por:

$$PTLN_i = PTL_i / \left(\sum_{i=1}^n PTL_i / n \right) \quad (22)$$

3.2 O PIB do complexo turístico

Seguindo a metodologia proposta e detalhada em Guilhoto *et al.* (2007) e utilizada na mensuração da importância do agronegócio para a economia brasileira, é possível derivar a metodologia a seguir, utilizada para a mensuração do PIB do complexo turístico da economia brasileira.

O complexo turístico pode ser dividido em três agregados: I - fornecedores de insumos e produtos; II - complexo turístico; e III - atividades de serviços ligadas com os itens (I) e (II).

O PIB é obtido pela soma do valor adicionado a preços básicos aos impostos indiretos líquidos resultando na seguinte expressão:

$$PIB = VA_{PB} + IIL \quad (23)$$

onde:

PIB = Produto Interno Bruto;

VA_{PB} = valor adicionado a preços básicos;

IIL = impostos indiretos líquidos.

Para o cálculo do PIB do Agregado I (fornecedores de produtos e serviços) são utilizadas as informações disponíveis nas tabelas de insumo-produto referentes aos valores dos insumos adquiridos pelos setores do complexo turístico, cuja relação pode ser vista na tabela 3. As colunas com os valores dos insumos são multiplicadas pelos respectivos coeficientes do PIB ($CPIB_i$).

Para obter os coeficientes do PIB divide-se o PIB setorial pela produção do setor (X_i), ou seja:

$$CPIB_i = PIB_i / X_i \quad (24)$$

Para cada setor k pertencente ao complexo turístico, o coeficiente do PIB é multiplicado pelo valor do insumo do setor i adquirido por este setor. Para se evitar dupla contagem, os setores pertencentes ao complexo turístico têm o seu valor considerado no Agregado II, ou seja, os seus insumos não são considerados no agregado I. Desta forma temos que o PIB do Agregado I para o setor k do complexo do turismo é dado por:

$$PIB_k^I = \sum_{i=1}^{n, i \neq k} z_{ik} \cdot CPIB_i \quad (25)$$

onde:

PIB_k^I = Produto Interno Bruto do Agregado I do setor k turístico;

n = número de setores na matriz de insumo-produto;

z_{ik} = valor total do insumo do setor i destinado ao setor k do turismo;

$CPIB_i$ = coeficiente do PIB do setor i .

Para o Agregado II, o PIB do setor k do turismo é dado por:

$$PIB_k^{II} = PIB_k \quad (26)$$

onde PIB_k^{II} = Produto Interno Bruto do Agregado II do setor k turístico,

O Agregado III compreende os setores de transportes, comércio e serviços (exceto os setores do complexo turístico). O tratamento dado para este conjunto de setores é determinar a participação da demanda final do setor k do complexo turístico na demanda final global (coeficiente) e multiplicar este coeficiente pelo total do valor agregado dos serviços, excluídos os setores do turismo, ou seja:

$$AS = PIBTrans + PIBC + PIBS \quad (27)$$

$$PIB_k^{III} = AS \cdot \frac{DF_k}{DFG} \quad (28)$$

onde:

AS = Agregado de serviços;

$PIBTrans$ = PIB dos setores de transporte não ligados ao turismo;

$PIBC$ = PIB do setor de comércio;

$PIBS$ = PIB do setor de serviços não ligado ao turismo;

PIB_k^{III} = PIB do Agregado III do setor k turístico;

DF_k = demanda final do setor turístico k ;

DFG = demanda final global da economia.

O PIB do setor k do turismo é dado desta forma por:

$$PIB_k^T = PIB_k^I + PIB_k^{II} + PIB_k^{III} \quad (29)$$

Enquanto o PIB do complexo turístico para cada um dos seus agregados e como um todo é dado pela soma dos PIBs de cada um dos setores que pertencem a este complexo, ou seja:

$$PIBT^I = \sum_{k=1}^t PIB_k^I \quad (30)$$

$$PIBT^{II} = \sum_{k=1}^t PIB_k^{II} \quad (31)$$

$$PIBT^{III} = \sum_{k=1}^t PIB_k^{III} \quad (32)$$

$$PIBT = PIB^I + PIB^{II} + PIB^{III} \quad (33)$$

Pode-se mensurar o pessoal ocupado na produção dos bens e serviços utilizados na cadeia produtiva que inclui os setores turísticos como o elo final. Procedimento similar ao cálculo do PIB pode ser aplicado utilizando-se o coeficiente de pessoal ocupado em vez do coeficiente do PIB, sendo este obtido pela divisão do pessoal ocupado no setor i (PO_i) pela produção total deste setor, ou seja:

$$CPO_i = PO_i / X_i \quad (34)$$

4 OS SETORES TURÍSTICOS NA ECONOMIA BRASILEIRA

Utilizando-se da metodologia apresentada na seção 2, esta seção faz uma análise da importância relativa dos setores turísticos dentro da economia brasileira em termos da sua participação na economia, das suas ligações com os outros setores e da sua capacidade de geração de renda e emprego.

4.1 O turismo e a sua relação com o resto da economia

A tabela 1 mostra de uma forma resumida a matriz de insumo-produto agregada em oito grandes setores, a saber: agropecuária, extrativa mineral, indústria de transformação, serviços industriais de utilidade pública, construção civil, comércio, serviços turísticos e serviços não turísticos, de forma a ser possível analisar a relação entre o turismo e os vários setores econômicos, bem como uma primeira estimativa da contribuição do setor para a economia brasileira em termos de produção e renda.

Nas primeiras oito linhas e oito colunas, vemos as relações que os setores estabelecem entre si no processo produtivo. A leitura de cada setor pelas linhas mostra quanto cada setor produz de insumo para os demais. As colunas indicam quanto cada setor utiliza de insumo dos demais, para produzir. Assim, na linha dos serviços que constituem o turismo vemos que o setor fornece insumos produtivos principalmente para o setor de serviços (R\$ 9.406 milhões), enquanto a coluna do turismo mostra que ele depende principalmente, para produzir, de insumos provenientes da indústria de transformação (R\$ 20.926 milhões), e em menor medida do setor de serviços (R\$ 10.628 milhões). A demanda final brasileira mostra que o turismo é, sobretudo, importante como um item de consumo das famílias.

A tabela 2 adiante compara algumas variáveis no turismo e na economia brasileira. Observe-se que o turismo se destaca, em particular, nas variáveis onde apresenta uma participação maior do que a sua contribuição para o PIB. Assim, o destaque maior é o peso do fator trabalho na produção do serviço turístico, em particular dos trabalhadores autônomos. Esse se destaca quando comparado à participação do trabalho na economia brasileira, o que é visto como uma vantagem do turismo para reduzir o desemprego no Brasil. De forma a melhor analisar e avaliar esse potencial, porém, é preciso analisar as ligações entre as várias atividades que formam o setor turismo e a economia brasileira como um todo e o potencial gerador de emprego e renda de cada serviço turístico, comparando-o com o potencial médio brasileiro.

As relações entre o turismo e os demais setores da economia podem ser mais bem avaliadas, conforme já mencionado, por meio dos indicadores de ligação para trás (decorrentes de demanda pelo turismo de insumos provenientes de outros setores) e para frente (decorrentes da oferta ou do fornecimento de insumos do setor turismo para outros setores da economia). Isso aparece na tabela 3 adiante, que descreve os índices de ligação de cada setor que constitui o turismo com o restante da economia brasileira.

Analisando a tabela 3, vemos que para o turismo os índices de ligações para trás apresentam valores maiores do que os índices de ligações para frente, ou seja, consome muitos insumos provenientes de outros setores, embora forneça menos insumos para os demais processos produtivos. Esse é um resultado comum deste tipo de atividade, dado que a maior parte do valor da produção deste conjunto de setores se destina ao atendimento da demanda final, fato também observado por Oosterhaven e Fan (2006), referindo-se à China e mencionado também nos trabalhos anteriores de Archer (1995), sobre as Bermudas, e de Archer e Fletcher, (1996), sobre Seychelles. O mesmo se observa para a África Oriental no trabalho já citado de Blake (2006).

TABELA 1
Matriz de insumo-produto do turismo resumida¹ – 2006
(Em R\$ milhões)

	Agropecuária	Extra- mineral	Indústria de trans- formação	S.I.U.P.	Construção civil	Comércio	Serviços turísticos	Serviços não turísticos	Consumo interme- diário (C)	Consumo das famílias tações	Resto da demanda final	Demanda final (D)	Valor da produção (C + D)
Agropecuária	16.111	21	108.503	4	47	23	312	3.173	128.196	39.966	19.531	69.747	197.943
Extra- mineral	902	5.179	75.655	4.291	1.463	29	19	183	87.723	1.646	33.457	37.376	125.099
Indústria de transformação	41.344	14.329	436.660	7.901	50.551	17.857	20.926	120.421	709.989	364.658	193.826	680.504	1.390.493
S.I.U.P.	1.230	3.302	33.546	26.912	409	6.161	1.595	24.854	98.009	44.124	18	44.170	142.179
Construção civil	2	1.535	1.732	12	3.546	234	36	20.697	27.793	225	932	153.371	181.164
Comércio	8.048	2.561	69.355	1.590	9.120	8.504	5.408	35.499	140.085	131.054	30.343	191.989	332.074
Serviços turísticos	142	359	3.443	125	369	1.040	825	9.406	15.710	74.124	4.595	78.946	94.656
Serviços não turísticos	6.679	28.772	128.358	12.904	8.184	51.388	10.628	299.616	546.528	555.744	37.412	1.110.950	1.657.478
Importações	6.381	5.404	111.902	3.897	5.114	6.313	2.810	30.189	172.009	60.421	0	99.670	271.679
Impostos sobre insumos	5.874	4.773	67.302	8.129	6.075	6.917	4.764	56.477	160.310	124.071	20.342	174.753	335.063
Consumo Intermediário (A)	86.714	66.235	1.036.456	65.765	84.877	98.466	47.323	600.516	2.086.352	1.396.034	340.457	904.985	4.727.828
Remunerações	47.003	11.773	177.957	16.183	29.210	107.853	26.977	552.435	969.391				
Rendimento misto bruto	47.984	277	15.784	0	22.784	42.378	7.463	76.249	212.919				
Excedente operacional bruto (EOB)	15.089	46.074	150.766	59.557	43.967	78.883	12.428	418.547	825.311				
Impostos líquidos sobre a produção	1.153	740	9.530	674	326	4.494	464	9.732	27.113				
Valor adicionado Bruto (B)	111.229	58.864	354.037	76.414	96.287	233.608	47.333	1.056.962	2.034.734				
Valor da produção (A + B)	197.943	125.099	1.390.493	142.179	181.164	332.074	94.656	1.657.478	4.121.086				
Pessoal ocupado	18.400.802	271.077	11.643.049	380.027	5.932.767	15.480.735	3.106.243	38.032.263	93.246.963				

Fonte: Elaboração própria.
Nota: ¹Pessoal ocupado encontra-se medido em número de pessoas.

TABELA 2

O turismo e a economia brasileira – 2006

(Em R\$ milhões)

Indicadores macroeconômicos	Economia do Brasil (A)	Turismo (B)	B/A (%)
Valor bruto da produção	4.727.828	94.656	2,00
Valor adicionado	2.034.734	47.333	2,33
Demanda total	2.288.106	78.946	3,45
Salários de trabalhadores	969.391	26.977	2,78
Remunerações de autônomos	212.919	7.463	3,51
Remunerações de trabalhadores e autônomos	1.182.310	34.440	2,91
Excedente operacional bruto (capital)	825.311	12.428	1,51

Fonte: Elaboração própria.

TABELA 3

Índices de ligações de Hirschman-Rasmussen (H-R) e puro dos serviços turísticos do Brasil – 2006

Setores do turismo	Índice H-R		Índice puro		
	Trás	Frente	Trás	Frente	Total
Transporte ferroviário de passageiros municipal	0,826	0,762	0,039	0,020	0,030
Transporte ferroviário de passageiros intermunicipal	0,843	0,748	0,027	0,012	0,020
Transporte rodoviário de passageiros municipal	0,995	0,751	0,725	0,212	0,469
Transporte rodoviário de passageiros intermunicipal	0,855	0,745	0,152	0,062	0,107
Transporte rodoviário de passageiros interestadual	0,892	0,747	0,089	0,033	0,061
Transporte rodoviário de passageiros internacional	0,988	0,749	0,002	0,001	0,001
Serviços de táxi	0,811	0,693	0,003	0,001	0,002
Serviços de turismo e excursões	0,789	0,695	0,011	0,004	0,007
Transporte regular em bondes e teleféricos	0,638	0,691	0,000	0,000	0,000
Transporte aquaviário de passageiros	1,050	0,742	0,013	0,003	0,008
Transporte aéreo de passageiros	1,289	0,678	1,242	0,117	0,680
Ativ. aux. transp. ferroviário de passageiros	0,625	0,870	0,002	0,008	0,005
Ativ. aux. transp. rodoviário de passageiros	0,671	0,882	0,051	0,116	0,084
Ativ. aux. transp. aquaviário de passageiros	0,640	0,884	0,002	0,005	0,003
Ativ. aux. transp. aéreo de passageiros	1,001	0,966	0,092	0,080	0,086
Agências e organizadoras de viagens	1,003	1,115	0,060	0,099	0,079
Aluguel de automóveis e de outros meios de transporte terrestre	0,648	0,661	0,026	0,016	0,021
Alojamento	0,970	0,588	0,525	0,018	0,272
Alimentação	1,112	0,587	0,432	0,009	0,221
Atividades recreativas e culturais	0,755	0,651	0,027	0,008	0,017
Média da economia	1,000	1,000	1,000	1,000	1,000

Fonte: Elaboração própria.

Em termos de índices puros, entre os serviços turísticos que mais geram efeitos para trás encontra-se o setor aéreo, seguido do setor de transporte rodoviário municipal de passageiros. Este último serviço, além disso, é o que mais ligação para frente apresenta, ou seja, é o serviço, entre os turísticos, que mais é utilizado como fornecedor de insumo pela economia como um todo. No caso do índice de Hirschman-Rasmussen merecem destaques os setores de transporte aéreo de passageiros, alimentação, transporte aquaviário de passageiros, atividades auxiliares de transporte aéreo de passageiros e agências e organizadores de viagens. Neste último caso, este setor também apresenta índices de ligação para frente maiores do que um, sendo dessa forma o único setor dos serviços turísticos que apresenta os dois valores maiores do que um.

4.2 O potencial gerador de emprego e renda do turismo

Os dados contidos na tabela 1 permitem visualizar o valor adicionado pelo setor do turismo (R\$ 47.333 milhões), assim como enseja compará-lo com os demais setores da economia. Vemos, por exemplo, que o setor tem um potencial de geração de remuneração maior do que a indústria extrativa mineral e do que os serviços industriais de utilidade pública, e é praticamente equivalente ao da construção civil, e emprega muito, quando observamos que a massa de pessoas ocupadas se aproxima da ocupada pela construção civil, reconhecida como portadora de bom potencial de emprego. Esses potenciais podem ser mais bem avaliados nas tabelas 4 e 5 a seguir, onde se calcula o poder gerador de produção, emprego, renda e valor adicionado dos serviços que formam o turismo. Esses são indicadores que descrevem melhor a importância econômica do turismo.

A tabela 4 mostra, por exemplo, o impacto que o aumento de uma unidade de produção turística tem sobre a produção de outros setores. A geração de produção pode ser de forma direta, quando ocorre no próprio setor, ao responder, por exemplo, a um aumento de demanda, mas pode ocorrer de forma indireta, ao afetar outros setores que precisam crescer para atender à maior demanda dos serviços turísticos, e pode ser de forma induzida. Neste último caso, a produção da economia como um todo precisa aumentar para atender ao aumento de consumo que surge do crescimento de renda e emprego com os aumentos de produção direta e indireta.

A tabela 4 mostra que os setores que mais geram produção, quando somados os efeitos diretos, indiretos e induzidos, são os setores de alimentação, transporte aéreo de passageiros e de atividades auxiliares do transporte aéreo de passageiros. O maior poder gerador de produção mostra que esses setores, quando em crescimento, podem funcionar como bons promotores de outros, mas mostra também que, em ocasião de crise ou problema nas suas produções, ou substituição de suas produções por produção externa, podem proporcionar problemas e reduções de

produção muito maiores do que os dos seus próprios setores para a economia brasileira como um todo.

TABELA 4

Brasil: poder gerador de produção dos serviços turísticos – 2006

Setores do turismo	Geração de produção				Direto + Indireto
	Direto	Indireto	Induzido	Total	
Transporte ferroviário de passageiros municipal	1.000	501	2.036	3.537	1.501
Transporte ferroviário de passageiros intermunicipal	1.000	533	2.027	3.560	1.533
Transporte rodoviário de passageiros municipal	1.000	808	1.891	3.699	1.808
Transporte rodoviário de passageiros intermunicipal	1.000	554	1.846	3.400	1.554
Transporte rodoviário de passageiros interestadual	1.000	622	1.810	3.431	1.622
Transporte rodoviário de passageiros internacional	1.000	796	1.726	3.522	1.796
Serviços de táxi	1.000	474	1.849	3.323	1.474
Serviços de turismo e excursões	1.000	434	1.868	3.302	1.434
Transporte regular em bondes e teleféricos	1.000	159	2.040	3.199	1.159
Transporte aquaviário de passageiros	1.000	908	1.656	3.564	1.908
Transporte aéreo de passageiros	1.000	1.342	1.417	3.760	2.342
Ativ. aux. transp. ferroviário de passageiros	1.000	135	1.892	3.028	1.135
Ativ. aux. transp. rodoviário de passageiros	1.000	220	1.876	3.096	1.220
Ativ. aux. transp. aquaviário de passageiros	1.000	163	2.212	3.374	1.163
Ativ. aux. transp. aéreo de passageiros	1.000	819	1.929	3.748	1.819
Agências e organizadoras de viagens	1.000	823	1.839	3.663	1.823
Aluguel de automóveis e de outros meios de transporte terrestre	1.000	177	1.279	2.456	1.177
Alojamento	1.000	762	1.857	3.619	1.762
Alimentação	1.000	1.021	1.758	3.779	2.021
Atividades recreativas e culturais	1.000	372	2.208	3.580	1.372
Média da economia	1.000	817	1.634	3.451	1.817

Fonte: Elaboração própria.

Na geração de empregos, conforme é possível observar na tabela 5, destacam-se os setores de atividades recreativas e culturais, de alimentação e de alojamento, nesta ordem, quando contemplados os efeitos geradores de empregos diretos, ou seja, no próprio setor; indiretos, em outros setores que fornecem insumos; e induzidos, em terceiros setores cuja produção precisa aumentar para atender ao maior consumo proveniente dos empregos diretos e indiretos criados. O setor de atividades recreativas e culturais, observe-se, tem um potencial gerador de empregos mais de duas vezes maior do que o da média da economia brasileira.

Quanto à geração de renda, analisamos separadamente as remunerações de trabalhadores assalariados, agregando depois a elas os trabalhadores autônomos ou por conta própria, porque é sabido que eles têm participação importante no turismo, conforme destacado em vários trabalhos sobre o assunto (BLAKE *et al.*, 2008; ANDRADE *et al.*, 2008).

TABELA 5

Brasil: poder de geração de empregos dos serviços turísticos (número de pessoas) devido a um aumento de R\$ 1 milhão na sua demanda final – 2006

Setores do turismo	Geração de emprego				Direto + Indireto
	Direto	Indireto	Induzido	Total	
Transporte ferroviário de passageiros municipal	15	7	50	72	23
Transporte ferroviário de passageiros intermunicipal	18	7	50	74	24
Transporte rodoviário de passageiros municipal	46	11	46	104	58
Transporte rodoviário de passageiros intermunicipal	34	8	45	87	42
Transporte rodoviário de passageiros interestadual	37	9	44	90	45
Transporte rodoviário de passageiros internacional	27	11	42	80	38
Serviços de táxi	40	6	45	92	46
Serviços de turismo e excursões	37	6	46	89	43
Transporte regular em bondes e teleféricos	19	2	50	71	21
Transporte aquaviário de passageiros	8	12	40	61	20
Transporte aéreo de passageiros	3	18	35	56	21
Ativ. aux. transp. ferroviário de passageiros	24	2	46	72	26
Ativ. aux. transp. rodoviário de passageiros	27	3	46	76	30
Ativ. aux. transp. aquaviário de passageiros	26	2	54	82	28
Ativ. aux. transp. aéreo de passageiros	37	11	47	95	48
Agências e organizadoras de viagens	42	12	45	99	54
Aluguel de automóveis e de outros meios de transporte terrestre	16	4	31	51	20
Alojamento	39	21	45	105	60
Alimentação	47	28	43	118	75
Atividades recreativas e culturais	155	7	54	217	163
Média da economia	23	14	40	77	37

Fonte: Elaboração própria.

Quando apenas as remunerações dos trabalhadores assalariados são contempladas, como na tabela 6, observa-se que se destacam os setores de atividades auxiliares do transporte aquaviário de passageiros, em primeiro lugar, em termos de potencial gerador de rendimentos totais, ou seja, diretos (no próprio setor), indiretos (em outros setores) e induzidos (pelos aumentos de renda diretos e indiretos, que aumentam o consumo e, por isso, induzem outros aumentos de empregos e rendas para atendê-lo). Também os setores de transporte ferroviário municipal e intermunicipal de passageiros e de atividades auxiliares do transporte aéreo de passageiros apresentam destaque na geração de salários.

Quando, porém, são acrescentados os trabalhadores autônomos ou por conta própria, como na tabela 7, destacam-se com maior potencial de geração de renda os setores de atividades recreativas e culturais e de atividades auxiliares do transporte aquaviário de passageiros.

TABELA 6

Brasil: potencial gerador de renda dos serviços turísticos. Remunerações de trabalhadores assalariados – 2006

Setores do turismo	Geração de remuneração de trabalhadores				Direto + Indireto
	Direto	Indireto	Induzido	Total	
Transporte ferroviário de passageiros municipal	474	79	403	956	554
Transporte ferroviário de passageiros intermunicipal	487	75	401	963	563
Transporte rodoviário de passageiros municipal	424	121	374	920	546
Transporte rodoviário de passageiros intermunicipal	330	83	365	778	413
Transporte rodoviário de passageiros interestadual	314	93	358	765	407
Transporte rodoviário de passageiros internacional	281	119	341	741	400
Serviços de táxi	318	69	366	752	387
Serviços de turismo e excursões	323	65	369	757	387
Transporte regular em bondes e teleféricos	408	24	403	836	432
Transporte aquaviário de passageiros	244	137	327	709	382
Transporte aéreo de passageiros	140	199	280	619	339
Ativ. aux. transp. ferroviário de passageiros	278	20	374	672	298
Ativ. aux. transp. rodoviário de passageiros	284	32	371	686	315
Ativ. aux. transp. aquaviário de passageiros	557	24	437	1.018	581
Ativ. aux. transp. aéreo de passageiros	464	119	381	963	582
Agências e organizadoras de viagens	375	131	364	870	506
Aluguel de automóveis e de outros meios de transporte terrestre	132	36	253	420	167
Alojamento	239	147	367	753	385
Alimentação	168	167	347	683	336
Atividades recreativas e culturais	257	74	436	768	332
Média da economia	226	139	323	688	365

Fonte: Elaboração própria.

Quando incluímos os trabalhadores por conta própria ou autônomos no total das remunerações, o potencial gerador de renda mostra-se ainda maior, uma vez que em quase todos os serviços turísticos o potencial gerador é superior ao da média da economia brasileira, que aparece ao final de cada quadro. As exceções são os serviços de aluguel de automóvel e de transporte aéreo de passageiros, cujo potencial gerador de renda é inferior à média da economia.

Quanto à contribuição dos diversos setores para a geração de valor adicionado, destacam-se, na tabela 8, os auxiliares de transporte aéreo de passageiros e as atividades recreativas e culturais, nessa ordem.

Os indicadores acima de potencial gerador de emprego e renda são importantes ao definir políticas públicas prioritárias, uma vez que, como sabemos, recursos escassos, se pulverizados, tendem a comprometer os resultados das medidas de estímulo implementadas. Observa-se, por exemplo, nesses dados, um setor que se destaca não apenas como gerador de emprego, mas também de renda e valor

adicionado, que é o de atividades recreativas e culturais, assim como os setores de alimentação e auxiliares de transporte aéreo se destacam como excelentes geradores de produção e de valor adicionado, devendo ser encarados com cuidado ao planejar políticas de estímulo ao emprego, à renda e à produção. A importância, por exemplo, do setor de atividades recreativas e culturais, tanto na geração de emprego como de renda, indica a importância de estimular o desenvolvimento do turismo de lazer no Brasil, inclusive ampliando a duração das viagens de negócios. Observe-se que a participação das atividades recreativas e culturais é ainda muito pequena no turismo, conforme o gráfico 1, mas apesar disso apresentou excelente potencial gerador de emprego e renda. Isso nos dá ideia dos ganhos em termos de renda e emprego que pode fornecer, tendo em vista as possibilidades amplas que ainda apresenta para seu crescimento.

TABELA 7

Brasil: potencial gerador de renda dos serviços turísticos. Remunerações de trabalhadores assalariados e autônomos – 2006

Setores do turismo	Geração de remuneração de trabalhadores e autônomos				Direto + Indireto
	Direto	Indireto	Induzido	Total	
Transporte ferroviário de passageiros municipal	548	104	526	1.179	652
Transporte ferroviário de passageiros intermunicipal	555	98	524	1.176	652
Transporte rodoviário de passageiros municipal	453	156	489	1.098	609
Transporte rodoviário de passageiros intermunicipal	446	108	477	1.032	554
Transporte rodoviário de passageiros interestadual	421	121	468	1.010	542
Transporte rodoviário de passageiros internacional	362	154	446	962	516
Serviços de táxi	455	91	478	1.024	546
Serviços de turismo e excursões	467	85	483	1.035	552
Transporte regular em bondes e teleféricos	580	35	527	1.142	615
Transporte aquaviário de passageiros	314	176	428	919	491
Transporte aéreo de passageiros	156	254	366	776	410
Ativ. aux. transp. ferroviário de passageiros	501	29	489	1.019	530
Ativ. aux. transp. rodoviário de passageiros	487	45	485	1.017	532
Ativ. aux. transp. aquaviário de passageiros	675	35	572	1.282	710
Ativ. aux. transp. aéreo de passageiros	478	153	499	1.130	631
Agências e organizadoras de viagens	414	167	475	1.057	581
Aluguel de automóveis e de outros meios de transporte terrestre	141	47	331	519	188
Alojamento	375	197	480	1.052	572
Alimentação	297	237	454	989	534
Atividades recreativas e culturais	636	95	571	1.302	731
Média da economia	291	177	422	891	469

Fonte: Elaboração própria.

TABELA 8

Brasil: potencial gerador de valor adicionado dos serviços turísticos – 2006

Setores do turismo	Geração de valor adicionado				Direto + Indireto
	Direto	Indireto	Induzido	Total	
Transporte ferroviário de passageiros municipal	688	207	1.019	1.915	896
Transporte ferroviário de passageiros intermunicipal	683	203	1.015	1.901	886
Transporte rodoviário de passageiros municipal	510	319	947	1.776	829
Transporte rodoviário de passageiros intermunicipal	662	221	924	1.807	883
Transporte rodoviário de passageiros interestadual	622	247	906	1.775	869
Transporte rodoviário de passageiros internacional	518	313	864	1.695	831
Serviços de táxi	713	187	926	1.825	900
Serviços de turismo e excursões	735	173	935	1.843	909
Transporte regular em bondes e teleféricos	899	68	1.021	1.989	968
Transporte aquaviário de passageiros	448	359	829	1.636	807
Transporte aéreo de passageiros	192	523	709	1.424	714
Ativ. aux. transp. ferroviário de passageiros	915	58	947	1.920	972
Ativ. aux. transp. rodoviário de passageiros	865	90	939	1.894	954
Ativ. aux. transp. aquaviário de passageiros	899	68	1.107	2.074	967
Ativ. aux. transp. aéreo de passageiros	510	315	965	1.791	825
Agências e organizadoras de viagens	491	336	921	1.748	827
Aluguel de automóveis e de outros meios de transporte terrestre	891	84	640	1.615	975
Alojamento	492	371	930	1.792	863
Alimentação	440	391	880	1.711	831
Atividades recreativas e culturais	741	188	1.105	2.034	929
Média da economia	480	347	818	1.645	827

Fonte: Elaboração própria.

5 A CONTRIBUIÇÃO ECONÔMICA DO COMPLEXO TURÍSTICO COMO UM TODO

De forma a ter uma melhor ideia do que ocorre na economia como reflexo do desenvolvimento do turismo, analisamos aqui o complexo turístico como um todo, ou seja, não apenas os serviços turísticos propriamente ditos, mas a parcela de outros setores que têm seu desenvolvimento ligado ao turismo pelo fornecimento de insumos, ou porque usam os serviços turísticos como insumos na sua produção.

Calculamos, a esse respeito, a contribuição do complexo turístico como um todo não apenas para a geração do PIB da economia, mas também para a geração de ocupações.

No que se refere à contribuição para o PIB brasileiro, vemos que, quando contemplados apenas os serviços turísticos, ela é de 2,3%. Incluídos, porém, tanto os insumos usados pelo turismo, quanto os outros serviços da economia que são demandados por conta das atividades turísticas, essa contribuição alcança 5,0%,

indicando o grande potencial que o setor tem para o desenvolvimento do PIB brasileiro, bem como os riscos de perdas envolvidas, quando o setor se retrai. É o que se acha descrito na tabela 9. A participação dos principais serviços turísticos no PIB do complexo turístico, por sua vez, encontra-se descrita no gráfico 2, onde se destaca a participação dos setores de transporte rodoviário (39,9%), transporte aéreo (21%), alojamento turístico (16,1%) e alimentação turística (9,1%).

Quanto à população ocupada no complexo, os dados mostram uma contribuição ainda maior do que para o PIB. Conforme é possível verificar na tabela 10 adiante, as ocupações geradas pelo turismo propriamente dito correspondem a 3,3% do total de pessoas ocupadas no Brasil, enquanto o complexo turístico contribui com 6,0% das ocupações da economia brasileira. O gráfico 3 que apresenta a participação de cada setor turístico para o total de pessoal ocupado dentro do complexo turístico confirma que os setores que possuem a maior participação em termos de PIB também repetem a importância em termos de pessoal ocupado. Chama, porém, atenção a importância relativa do setor de atividades recreativas e culturais que mostram uma grande capacidade de geração de emprego, como observado anteriormente.

Isso reafirma a importância relativa do turismo para empregar pessoas, importância já destacada em outros trabalhos. Este dado, juntamente com o poder de geração de renda, especialmente quando se integra aos trabalhadores assalariados ou por conta própria, confirma conclusões de outros trabalhos (ANDRADE *et al.*, 2008) de potencial grande de inserção produtiva no setor.

Além disso, estudos como os de Machado e Ribas (2008) concluem sobre a concentração de trabalhadores pobres no setor informal, grande parte dos quais aparece como trabalhadores autônomos, sugerindo a importância dos ganhos que o turismo pode proporcionar para reduzir a pobreza, como já destacado em outros trabalhos (BLAKE *et al.*, 2008; TAKASAGO; MOLLO, 2008). Essas considerações, contudo, exigem estudos mais profundos e detalhados sobre a contribuição dos trabalhadores autônomos no turismo, tendo em vista a diversidade de casos encaixados nessa categoria, em termos de tamanho, renda média, capital utilizado, de forma a tirar conclusões mais detalhadas e seguras sobre o potencial do turismo para o combate à pobreza.

TABELA 9

O PIB do complexo turístico brasileiro – 2006

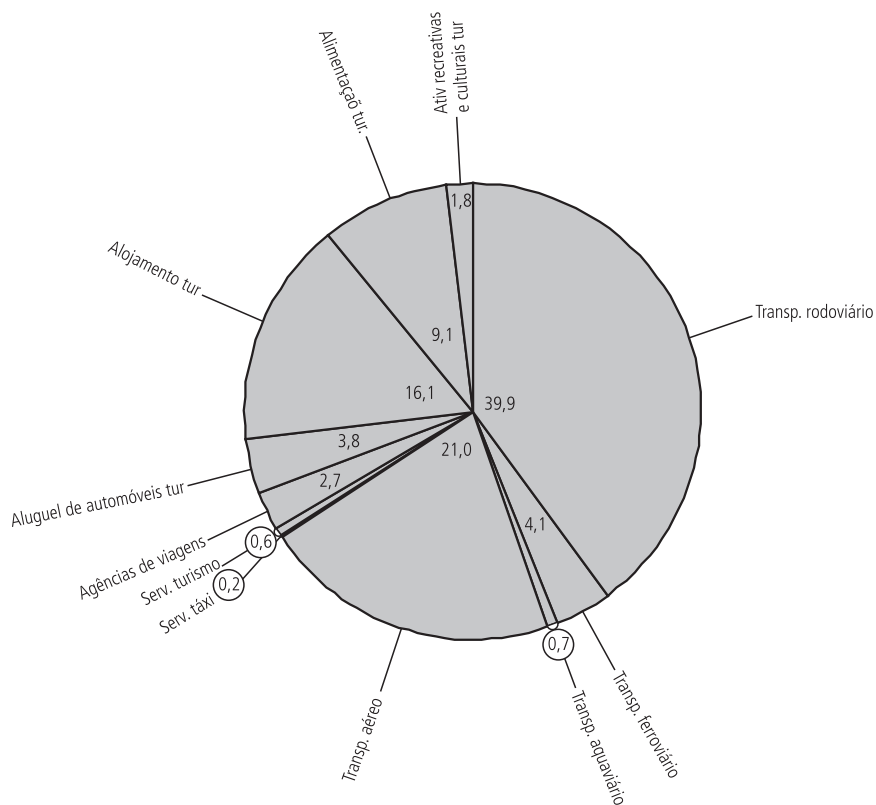
PIB do complexo turístico	R\$ milhões	PIB BR (%)
Complexo turístico	119.514	5,0
Insumos	19.094	0,8
Turismo	54.597	2,3
Serviços	45.823	1,9

Fonte: Elaboração própria.

GRÁFICO 2

Brasil: participação dos setores no PIB do complexo turístico – 2006

(Em %)



Fonte: Elaboração própria.

TABELA 10

Brasil: a população ocupada no complexo turístico – 2006

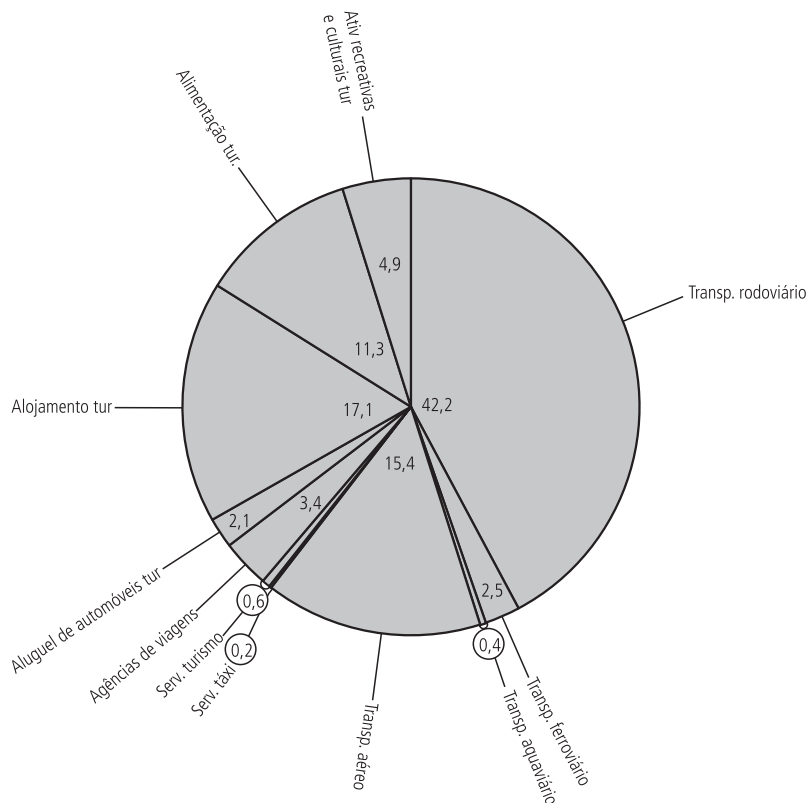
População ocupada (PO) do complexo turístico	Pessoas (mil)	PO BR (%)
Complexo turístico	5.560	6,0
Insumos	669	0,7
Turismo	3.106	3,3
Serviços	1.785	1,9

Fonte: Elaboração própria.

GRÁFICO 3

Brasil: participação dos setores na população ocupada do complexo turístico – 2006

(Em %)



Fonte: Elaboração própria.

6 COMENTÁRIOS FINAIS

Analisou-se neste artigo o turismo na economia brasileira por meio da matriz de insumo-produto, calculando os potenciais geradores de produção, emprego, renda e valor adicionado dos vários setores que formam o turismo.

Embora outros estudos tenham feito isso nos últimos anos, os dados de 2006, últimos disponíveis para esse tipo de estudo no momento, não apenas atualizam as informações, mas o fazem cobrindo um período em que os serviços turísticos cresceram muito, não apenas quantitativa, mas qualitativamente. Assim, os dados inovam no sentido de mostrar melhor a situação atual.

A análise da matriz de insumo-produto permitiu, inicialmente, comparar o emprego e as remunerações do turismo com relação às mesmas variáveis no total da economia brasileira, mostrando que o turismo tem um potencial de contribuição

para a geração de emprego e renda maior do que sua própria contribuição para a geração de PIB.

Em seguida, foram estimados com mais detalhes os potenciais de geração de emprego e renda para cada serviço entre os 20 formadores de turismo e o poder gerador de emprego e renda desses serviços foi confirmado. As estimativas feitas dos efeitos geradores mostraram um bom potencial de geração de empregos, mas principalmente de renda, quando comparados aos potenciais geradores médios da economia brasileira, destacando-se, a esse respeito, a renda gerada quando se incluem os trabalhadores autônomos ou por conta própria. Destacaram-se, por outro lado, entre os serviços com maior potencial de geração de renda e emprego os de atividades recreativas e culturais e atividades auxiliares do transporte aquaviário de passageiros, no primeiro caso, e, no segundo caso, os setores de atividades recreativas e culturais, de alimentação, de alojamento e de transporte rodoviário municipal de passageiros, nessa ordem.

Contemplado o complexo turístico como um todo, ou seja, incluindo além do turismo os insumos a ele relacionados e os serviços prestados a outros setores no processo produtivo, a importância do desempenho do turismo no Brasil cresce bastante. Se para o PIB, em 2006, o turismo contribuiu com 2,3%, o complexo turístico participou com 5,0%. No fornecimento de ocupações o complexo turístico mostrou ainda melhor desempenho, com o turismo propriamente dito fornecendo 3,3% das mesmas no Brasil, e o complexo turístico como um todo fornecendo 6,0%.

ABSTRACT

The objective of this paper is to quantify the tourism sector in Brazil, and to examine its capacity to generate income and employment. To this aim, we build an input-output matrix for the year 2006 that explicitly takes into consideration the main relationships between the tourism sector and the rest of the economy. After computing forward and backward linkages of the tourism sector, we analyze the sector's impact on national income and employment, and compare it with the average potential for generating income and employment in the Brazilian economy.

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THE BRAZILIAN TOURISM SECTOR AS A SOURCE OF EMPLOYMENT AND INCOME GENERATION

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Abstract

The main objective of this paper is to assess the tourism activity in Brazil, and examine, particularly, its capacity to generate employment. To this aim an input output matrix, that considers the tourism as a set of sectors of the economy, was computed for the year 2006. This matrix made it possible to examine the main relationships between tourism and the rest of the economy. Forward linkages and backward linkages of the tourism sector were computed. In addition, the effects of the development of the tourism sector on income and employment were analyzed and compared in this respect with the average of the Brazilian economy.

Key words: *Tourism; Tourism Economic; Input-output Model; Employment and Income, Brazil.*

1. Introduction

The input-output model developed by Leontief (1951) is an excellent tool for analysis of tourism, a sector composed of several services that cater to visitors, allowing the understanding of the interconnections between the sectors of tourism and the rest of the economy, as well as to estimate the impacts of tourism as buyer and supplier of inputs for the economy as a whole, evaluating the effects of its growth on income and employment.

There are several studies using the input-output model to analyze the economic impact of tourism in different countries, as: Wien (1989) for Vorarlber, Austria, and Archer (1995) for Bermuda. Oosterhaven and Fan (2006) makes an analysis of the impact of international tourism in the Chinese economy, and Surugiu, Frent and Surugiu (2009) on the Romanian economy. Blake (2008) evaluates the impact of tourism on income distribution in East Africa, and Mitchell & Ashley (2010) the tourism as a tool for poverty reduction. Recently, we have the book edited by Matthias, Nijkamp and Neto (2007) which presents methods and applications in the analysis of tourism, with particular emphasis on the input-output models.

For Brazil, Casimiro Filho (2002), describes and analyze the tourism in Brazil with data for 1999, he also estimates the impacts of final demand on output and employment income given by the sectors that make up tourism. We take a similar approach in this paper, working with 2006 data released from the Brazilian Statistical Office (IBGE), which are the latest figures available. The Centre of Excellence in Tourism (CET) at the University of Brasilia has also estimated input-output and social accounting data from 2002, according Arbache et al. (2008).

The findings in the literature about the real benefits of tourism vary greatly from country to country. Hence, for East Africa the industries related to tourism almost have no impact on the poor population and do not constitute an activity suitable for poverty alleviation (Blake, 2008), in the case of Brazil, Blake, Arbache, Teles and Sinclair (2006), simulating a 10% increase in international demand for tourism in Brazil, found a significant positive impact on reducing poverty and inequality. There are several reasons for such differences, related to the importance of tourism in the country's economy, as well as the quality of jobs that the industry can offer as compared to ones offered by the sectors competing with tourism in relation to employment and income generation.

Blake (2008) realizes that in the case of East Africa, the share of income received from tourism by the poor is lower than that from exports of goods, which is why the tourism does not seem to be a good solution to alleviate poverty. The author points out, however, that this may be related to the fact that jobs in tourism sectors pay more than exports of goods, but on the other hand the development of tourism could improve the level of compensation of employees.

Oosterhaven and Fan (2006) stated, in the case of China, that the impact of international tourism on income and employment is considerably lower than the one on GNP, stimulating mainly high-value added activities in the modern services sector. Takasago and Mollo (2008) shows that in some circumstances it is possible to increase the income of the poorest in Brazil. It depends on how increases in demand are obtained. More particularly, increases in the income of the poor will occur only when the government spending will not fall, or when the gain or loss of government revenue arising from the increasing of tourism demand, are transferred in order to benefit the lower income classes.

The 2006 data from the IBGE, used here, reflect the changes in Brazilian System of National Accounts occurred in 2007 and are much more disaggregated than the one in the work of Casimiro Filho (2002) and Arbache et al. (2008). Instead of 54 sectors, the new methodology considers 85 sectors. This disaggregation in the case of tourism is particularly important because the characteristics of tourism activities serve both tourists and residents. Thus, the more disaggregated the sectors are, the greater precision with regard to the sectors that actually cater to tourists. Furthermore, we tried to improve the understanding of the impacts of tourism activities, separating the portion of their demand that serves the residents to the one that caters to tourists.

Given that tourists do spend in all kinds of goods, thereby stimulating a country's economy, in this work tourism was defined in a more broad way, including the sectors of transport, food, lodging, travel and culture and leisure, which are more related with the visitors spendingⁱ. We thus have data on the supply side of these sectors. But as we still don't have a Tourism Satellite Account, and in particular data on expenditure of national and international tourists, we have tried to separate the spending from tourists and residents based on the survey on employment in tourism, conducted by IPEA (2006)ⁱⁱ.

The organization of this paper is as follows, the data base is presented in section 2, while the methodology used is presented in section 3. The impacts of tourism on production, income,

employment and value added will be shown and analyzed in Section 4. Section 5 presents the importance of the tourism complex as a whole on the nation GDP and employment.

2. Data Base

The survey by IPEA on Employment in Tourism, conducted in 2006, presents the share of formal employment in different activities that serve tourists and residents, separating the share related to the tourist service. The data on formal employment in different sectors shows that the following percentages of the workforce are employed in the tourist service: Lodging - 73.06%; Food - 11.92%; Transportation - 53.32%; Activities linked with Transportation - 19, 71%; Travel Agencies - 85.70%; Rental Cars - 35.71%; Culture and Leisure - 6.69%. In total employment of the tourism related sectors correspond to 26.19%, which refers to services provided to tourists and non-residents. These percentages were used in this paper to estimate the tourist services in Brazil, with the exception of the transportation sector. In the case of transports, it was not used the coefficient found by the above study because, first, it is an item that can be quite disaggregated from the data from IBGE, in order to exclude sectors such as freight, which does not refer to the tourist service. Second, after the disintegration and exclusion of sub-sectors that only serve residents, we have obtained a share of the transportation industry in general of 55%, very close to the percentage of 53.32% found by IPEA.

The input-output matrix for 2006 was constructed from data from Brazil's System of National Accounts, according to the methodology presented by Guilhoto and Sesse Filho (2005), which provides information on a commodity-by-sector approach, and basic prices, enabling each commodity to be produced by more than one sector and each sector to make more than one commodity, i.e. there are make and use matrices. The size of estimated make matrix is 81 sectors by 134 commodities and the size of the estimated use matrix being of 134 commodities by 81 industries.

In the construction of input-output matrix for Tourism two methods were used. The first is to make compatible Make and Uses tables and the second is the aggregation of some industries (which have little relation to tourism) and the breakdown of other sectors (which are more related to tourism).

Tourism is defined by the World Tourism Organization as the set of services that cater to tourists. In Brazil, based on available data from IBGE, it was possible to get information for 20 services that make up the tourism. The largest share of these sectors in tourism is on the road transportation of passengers in the city (22.6%), followed by the lodging industry (13.7%), the sector of support activities of road transportation of passengers (12.0%), of road transportation of passengers - intercity (8.9%), air transportation of passengers (8.0%), and foodservices (7.6%). The share of tourism for leisure itself (recreational and cultural activities) that defines the preferred activity, according to the World Tourism Organization, is much smaller, accounting for only 2.3% of the total. This shows the high complementarity of activities that constitute the tourism from the economic standpoint. The attractions for culture and leisure, however, as we shall see below, have an important role in generating income, employment and value added, spreading the benefits across different sectors and activities, showing that the impact on the economy as a whole can be much higher.

3. Theoretical Background

From the basic Leontief model, the total output of an economy can be expressed as the sum of intermediate consumption and final consumption (Leontief, 1951) as

$$X = AX + Y \quad (1)$$

$$(I - A)^{-1} = B \quad (2)$$

$$Y = BX \quad (3)$$

where X is the $n \times 1$ total output vector, A is the $n \times n$ direct input coefficients matrix, describing the interindustry relationships between all sectors of the economy, Y is the $n \times 1$ final demand vector, and B is the Leontief inverse matrix, $(I - A)^{-1}$. AX denotes the intermediate input vector, which can be obtained by multiplying the direct input coefficient matrix by the total output vector. The final demand vector, Y , can be treated as exogenous to the system, for example, the level of total production can be determined by the final demand.

To calculate the induced effect is necessary to endogenize consumption and income of households in the input-output model, in this way, instead of using the matrix A described above, we have:

$$\bar{A} = \begin{bmatrix} A & H_c \\ H_r & 0 \end{bmatrix} \quad (4)$$

where \bar{A} is the new matrix of technical coefficients $((n+1) \times (n+1))$ with the income (H_r) and the consumption (H_c) of the families.

In the same way, we have the new vectors of total production \bar{X} $((n+1) \times 1)$, and final demand \bar{Y} $((n+1) \times 1)$ which would be represented, respectively, as

$$\bar{X} = \begin{bmatrix} X \\ X_{n+1} \end{bmatrix} \quad (5)$$

$$\bar{Y} = \begin{bmatrix} Y^* \\ Y_{n+1}^* \end{bmatrix} \quad (6)$$

In this way, the Leontief system would be represented as:

$$\bar{Y} = \bar{B}\bar{X} \quad (7)$$

$$\bar{B} = (I - \bar{A})^{-1} \quad (8)$$

We could also consider a vector W ($n \times 1$) where the elements w_j could be the coefficients of employment, imports, taxes, wages, value added, among others, which are obtained by dividing, for each sector, the value of these variables used in the production by the corresponding total industry output, ie:

$$w_j = \frac{e_j}{x_j} \quad (9)$$

Thus, we can calculate the generating potential of each of these variables. Suppose that w_j is, for example, employment. We have then that w_j is the coefficient of employment in sector j , e_j is the personnel employed in sector j , and x_j is the production in sector j .

Using the derivation elaborated above, we can calculate the generator of employment.

$$E_j = \sum_{i=1}^n b_{ij} w_i \quad (10)$$

where E_j is the generator of employment that estimates how much employment is generated by direct, indirect and induced effects for each dollar of production directed for the final demand of the j^{th} sector.

Likewise, we can calculate all the other generators of wages, remuneration of the self-employed, value added etc.

3.1. Interindutsry Linkages

The work of Rasmussen (1956) and Hirschman (1958) led to the development of indices of linkage that have now become part of the generally accepted procedures for identifying key sectors in the economy.

Define b_{ij} as a typical element of the Leontief inverse matrix, B ; B^* as the average value of all elements of B , and B_{*j} the associated typical column sum, then the backward indices may be developed as follows:

$$U_j = [B_{*j} / n] / B^* \quad (11)$$

Defining F as being the matrix of the row coefficients obtained from the intermediate consumption matrix; G as the Ghosh matrix obtained from $G = (I - F)^{-1}$ (see Miller e Blair, 2009); G^* as the average value of all elements of G , and G_{i*} the associated typical row sum, then the forward indices may be developed as follows:

$$U_i = [G_{i*} / n] / G^* \quad (12)$$

One of the criticisms of the above indices is that they do not take into consideration the different *levels* of production in each sector of the economy, which is done by the Pure linkages as developed and presented by Guilhoto, Sonis and Hewings (2005), and summarized below.

Consider a technical coefficients matrix represented by the following block A matrix:

$$A = \begin{bmatrix} A_{jj} & A_{jr} \\ A_{rj} & A_{rr} \end{bmatrix} = \begin{bmatrix} A_{jj} & A_{jr} \\ A_{rj} & 0 \end{bmatrix} + \begin{bmatrix} 0 & 0 \\ 0 & A_{rr} \end{bmatrix} = A_j + A_r \quad (13)$$

where A_{jj} is the matrix of direct inputs to sector j from itself; A_{jr} is the matrix of direct inputs that sector j acquires from the rest of the economy; A_{rj} is the matrix of direct inputs that the rest of the economy acquires from sector j ; A_{rr} is the matrix of direct inputs that the rest of the economy

acquires from itself; A_j refers to the sector j isolated from the rest of the economy; and A_r represents the rest of the economy.

From (13), one can generate the following expression:

$$B = (I - A)^{-1} = \begin{pmatrix} B_{jj} & B_{jr} \\ B_{rj} & B_{rr} \end{pmatrix} = \begin{pmatrix} \Delta_{jj} & 0 \\ 0 & \Delta_{rr} \end{pmatrix} \begin{pmatrix} \Delta_j & 0 \\ 0 & \Delta_r \end{pmatrix} \begin{pmatrix} I & A_{jr}\Delta_r \\ A_{rj}\Delta_j & I \end{pmatrix} \quad (14)$$

where:

$$\Delta_j = (I - A_{jj})^{-1}$$

$$\Delta_r = (I - A_{rr})^{-1}$$

$$\Delta_{jj} = (I - \Delta_j A_{jr} \Delta_r A_{rj})^{-1}$$

$$\Delta_{rr} = (I - \Delta_j A_{rj} \Delta_j A_{jr})^{-1}$$

From equation (14) it is possible to reveal the process of production in an economy as well as derive the Pure Backward Linkage (*PBL*) and the Pure Forward Linkage (*PFL*), i.e.,

$$PBL = \Delta_r A_{rj} \Delta_j Y_j \quad (15)$$

$$PFL = \Delta_j A_{jr} \Delta_r Y_r \quad (16)$$

where the *PBL* will give the pure impact on the rest of the economy of the value of the total production in region, i.e., the impact that is free from a) the demand inputs that region j makes from region j , and b) the feedbacks from the rest of the economy to region j and vice-versa. The *PFL* will give the pure impact on region j of the total production in the rest of the economy

Other advantage of the Pure linkages in relation to the Hirschman-Rasmussen linkages is that it is possible to get the Pure Total linkage in the economy (*PTL*) by adding the *PBL* and the *PFL*, given that this index are measured in current values, i.e.,

$$PTL = PBL + PFL \quad (17)$$

To facilitate a comparative analysis of the pure linkages with the Hirschman-Rasmussen linkages one can do a normalization of the pure linkages. This normalization is done by dividing the pure linkage in each sector by the average value of the pure linkage for the whole economy, in such a way that the pure linkages normalized are given by the following equations for the backward (*PBLN*), forward (*PFLN*) and total (*PTLN*) linkages:

$$PBLN_i = PBL_i / \left(\sum_{i=1}^n PBL_i / n \right) \quad (18)$$

$$PFLN_i = PFL_i / \left(\sum_{i=1}^n PFL_i / n \right) \quad (19)$$

$$PTLN_i = PTL_i / \left(\sum_{i=1}^n PTL_i / n \right) \quad (20)$$

3.2. *The Gross Domestic Product (GDP) of the Tourism Complex*

Following the methodology proposed and detailed in Guilhoto et al. (2007) and used to measure the importance of agribusiness in the Brazilian economy, it is possible to derive the methodology below, used to measure the GDP of the Tourism Complex in the Brazilian economy.

The Tourism Complex can be divided into three clusters: a) suppliers of inputs and products, b) the tourism activity by itself, and c) services related to items (a) and (b).

GDP is obtained by adding the value added at basic prices to the net indirect taxes resulting in the following expression:

$$GDP = VA_{bp} + INT \quad (21)$$

Where: GDP = Gross Domestic Product

VA_{bp} = Value added at basic prices

INT = Indirect net taxes

To calculate the GDP of aggregate I (suppliers of products and services) are used the information available in the input-output tables regarding the values of purchased inputs by sectors of the tourist complex. The columns with the values of the inputs are multiplied by respective coefficients of GDP (CGDP).

To obtain the coefficients of GDP, we divided the sector GDP by the sector total output (X_i), i.e.:

$$CGDP_i = GDP_i / X_i \quad (22)$$

For each sector k belonging to the tourism complex, the coefficient of GDP is multiplied by the input of sector i purchased by this sector. To avoid double counting, the sectors belonging to the tourism complex have their value considered in the Aggregate II, i.e., their inputs are not considered in the aggregate I, so we have that the GDP of Aggregate I for sector k of the tourism complex Tourism is given by:

$$GDP_k^I = \sum_{i=1}^{n, i \neq k} z_{ik} \cdot CGDP_i \quad (23)$$

Where: GDP_k^I = GDP Aggregate I for sector k of the tourism complex,

n = number of sectors in the input-output matrix,

z_{ik} = total value of the supply of sector i for the tourism sector k ,

$CGDP_i$ = coefficients of GDP of sector i .

For Agregate II, the GDP of the tourism industry k is given by:

$$GDP_k^{II} = GDP_k \quad (24)$$

Where GDP_k^{II} = Gross Domestic Product os Aggregate II of the tourism complex

The Aggregate III includes the sectors of transport, trade and services (except the sectors of the tourism complex). The treatment for this group of sectors is to determine the share of final demand sector k from the tourism complex in total final demand (coefficient) and multiplying this coefficient by the total value-added of services with the exclusion of the sectors of tourism, namely:

$$AS = GDP_{Trans} + GDPT + GDPS \quad (25)$$

$$GDP_k^{III} = AS \cdot \frac{FD_k}{GFD} \quad (26)$$

Where: AS = Aggregate of services

GDP_{Trans} = GDP of the transportation sectors not linked with tourism

$GDPT$ = GDP of the trade sector

$GDPS$ = GDP of the service sectors not linked to the tourism complex

GDP_k^{III} = GDP of Aggregate III for sector k of the tourism complex,

FD_k = final demand for tourism of sector k ,

GFD = global final demand for the economy.

The GDP for the tourism sector k is thus given by:

$$GDP_k^T = GDP_k^I + GDP_k^{II} + GDP_k^{III} \quad (27)$$

While the GDP of the tourism complex for each of their aggregates and as a whole is given by the sum of GDPs of each of the sectors that belong to this complex, namely:

$$GDPT^I = \sum_{k=1}^t GDP_k^I \quad (28)$$

$$GDPT^{II} = \sum_{k=1}^t GDP_k^{II} \quad (29)$$

$$GDPT^{III} = \sum_{k=1}^t GDP_k^{III} \quad (30)$$

$$GDPT = GDP^I + GDP^{II} + GDP^{III} \quad (31)$$

It is possible to measure the personnel employed in the production of goods and services used in the production chain that includes the travel industry as the final link. Procedure similar to the calculation of Gross Domestic Product can be applied using the coefficient of employed persons rather than the coefficient of GDP, which is obtained by dividing the number of employed persons in industry i (PO_i) by the total output of this sector, namely:

$$CPO_i = PO_i / X_i \quad (32)$$

4. The tourism sectors in the Brazilian economy

Using the methodology presented in section (3) above, this section analyzes the relationship between tourism and other sectors of the economy, through the indicators of backward linkages (due to demand for tourism inputs from other sectors) and forward linkages (from supply of inputs from the tourism sector to other sectors in the economy). This appears in Table 1 below, which describes the backward and forward linkages of each sector related to the tourism complex of the Brazilian economy.

The backward linkages show higher values than the forward linkages, i.e., the tourism sectors demand inputs from other sectors, while provide less inputs to the other sectors. This is a common result of this activity, given that most of the production value of this set of industries is direct to the final demand, a fact confirmed by Oosterhaven and Fan (2006), referring to China and

also mentioning in the previous work of Archer (1995), on Bermuda, and of Archer and Fletcher (1996), about Seychelles. The same is observed for East Africa by Blake (2006).

In terms of the pure linkages, the tourist services that generate more backward effects are found in the airline sector, followed by the road transportation of passenger in the cities. The latter sector is also the one, who shows the greatest value for the forward linkage, i.e., it is the service among the tourism sectors, which is the main supplier of inputs for the economy as a whole. In the case of Rasmussen-Hirschman index deserve highlights the sectors of air transportation of passengers, foodservices, water transportation of passengers, supporting activities of air transportation of passengers and travel agents and agencies. In the latter case, this sector also shows forward linkages more than one, thereby being the only sector of tourist services which presents the two values greater than one.

Table 1 - Hirschman-Rasmussen (H-R) and Pure Linkages of the Tourism Sectors, Brazil 2006

Tourism Sectors	H-R		Pure		Total
	Backward	Forward	Backward	Forward	
Rail transportation of passengers - city	0.826	0.762	0.039	0.020	0.030
Rail transportation of passengers - intercity	0.843	0.748	0.027	0.012	0.020
Road transportation of passengers - city	0.995	0.751	0.725	0.212	0.469
Road transportation of passengers - intercity	0.855	0.745	0.152	0.062	0.107
Road transportation of passengers - interstate	0.892	0.747	0.089	0.033	0.061
Road transportation of passengers - international	0.988	0.749	0.002	0.001	0.001
Taxi services	0.811	0.693	0.003	0.001	0.002
Services of tourism and excursion	0.789	0.695	0.011	0.004	0.007
Regular transport on trams	0.638	0.691	0.000	0.000	0.000
Water transportation of passengers	1.050	0.742	0.013	0.003	0.008
Air transportation of passengers	1.289	0.678	1.242	0.117	0.680
Support activities of rail transportation of passengers	0.625	0.870	0.002	0.008	0.005
Support activities of road transportation of passengers	0.671	0.882	0.051	0.116	0.084
Support activities of water transportation of passengers	0.640	0.884	0.002	0.005	0.003
Support activities of air transportation of passengers	1.001	0.966	0.092	0.080	0.086
Travel agencies	1.003	1.115	0.060	0.099	0.079
Rental of automotive and other transportation equipment	0.648	0.661	0.026	0.016	0.021
Lodging and accommodation	0.970	0.588	0.525	0.018	0.272
Foodservices and drinking places	1.112	0.587	0.432	0.009	0.221
Amusement and recreation services	0.755	0.651	0.027	0.008	0.017
Economy average	1.000	1.000	1.000	1.000	1.000

Source: Research data

The economic potential of tourism can be evaluated in the following tables, which estimates the impacts on output, employment, income and value added of the services that make up tourism complex. The impacts can be: a) direct, when they occur in the sector itself, given an increase in the final demand; b) indirect, by affecting other sectors that need to grow to meet the demand of tourist services; and c) induced, to meet the increase in the household demand generated by the increase in the families income.

Table 2 shows the impact that the increase in the final demand in the tourism sectors has on the production of other sectors. The sectors that have the greatest output impacts, when adding the direct, indirect and induced effects, are the sectors of foodservices, air transportation of passengers and supporting activities of air transportation of passengers. This shows that these sectors, while growing, can induce the growth of other sectors, and also shows that, in time of crisis or problem in their productions, the inverse is true.

The total impacts on employment, as can be seen in Table 3, are greater when the final demand occurs in the sectors of recreational and cultural activities, foodservices and lodging. The

sector of recreational and cultural activities, it should be noted, has a potential generator of employment more than twice the average of the Brazilian economy.

As for the impacts on income, we first analyzed the remuneration of employees, and on a second step add to them the self-employed, because it is known that the latter play an important role in tourism, as highlighted in several papers (Blake et al., 2008, Andrade et al., 2008).

When only the salaries of employees are taken into consideration, as in Table 4, we observe the main total impacts in the sectors of support activities to water transportation of passengers, followed by the sectors of city and intercity rail passenger transportation and support activities of air transportation of passengers.

Table 2 – Impacts on Total Output of the Tourism Services given an increase of R\$ 1 million in the Final Demand, Brazil 2006

Tourism Sectors	Total Output				Direct + Indirect
	Direct	Indirect	Induced	Total	
Rail transportation of passengers - city	1 000	501	2 036	3 537	1 501
Rail transportation of passengers - intercity	1 000	533	2 027	3 560	1 533
Road transportation of passengers - city	1 000	808	1 891	3 699	1 808
Road transportation of passengers - intercity	1 000	554	1 846	3 400	1 554
Road transportation of passengers - interstate	1 000	622	1 810	3 431	1 622
Road transportation of passengers - international	1 000	796	1 726	3 522	1 796
Taxi services	1 000	474	1 849	3 323	1 474
Services of tourism and excursion	1 000	434	1 868	3 302	1 434
Regular transport on trams	1 000	159	2 040	3 199	1 159
Water transportation of passengers	1 000	908	1 656	3 564	1 908
Air transportation of passengers	1 000	1 342	1 417	3 760	2 342
Support activities of rail transportation of passengers	1 000	135	1 892	3 028	1 135
Support activities of road transportation of passengers	1 000	220	1 876	3 096	1 220
Support activities of water transportation of passengers	1 000	163	2 212	3 374	1 163
Support activities of air transportation of passengers	1 000	819	1 929	3 748	1 819
Travel agencies	1 000	823	1 839	3 663	1 823
Rental of automotive and other transportation equipment	1 000	177	1 279	2 456	1 177
Lodging and accommodation	1 000	762	1 857	3 619	1 762
Foodservices and drinking places	1 000	1 021	1 758	3 779	2 021
Amusement and recreation services	1 000	372	2 208	3 580	1 372
Economy average	1 000	817	1 634	3 451	1 817

Source: Research data

When, however, the self-employed are added, as in Table 5, the greatest impact on income are found in the sectors of recreational and cultural activities, and support activities to water transportation of passengers. When one includes the self-employed, the earning potential is shown even greater, since almost all the tourist sector impacts are higher than the average of the Brazilian economy, which appears at the end each table. The exceptions are the car rental services and air transportation of passengers, which have a potential of impact below the average of the economy.

Regarding the contribution of various sectors for the impact on the value added, the results are presented in Table 6, and the greatest values are found in the support activities of air transportation of passenger and recreational and cultural activities, in that order.

Table 3 – Impacts on Employment (Number of Persons) of the Tourism Services given an increase of R\$ 1 million in the Final Demand, Brazil 2006

Tourism Sectors	Employment				Direct + Indirect
	Direct	Indirect	Induced	Total	
Rail transportation of passengers - city	15	7	50	72	23
Rail transportation of passengers - intercity	18	7	50	74	24
Road transportation of passengers - city	46	11	46	104	58
Road transportation of passengers - intercity	34	8	45	87	42
Road transportation of passengers - interstate	37	9	44	90	45
Road transportation of passengers - international	27	11	42	80	38
Taxi services	40	6	45	92	46
Services of tourism and excursion	37	6	46	89	43
Regular transport on trams	19	2	50	71	21
Water transportation of passengers	8	12	40	61	20
Air transportation of passengers	3	18	35	56	21
Support activities of rail transportation of passengers	24	2	46	72	26
Support activities of road transportation of passengers	27	3	46	76	30
Support activities of water transportation of passengers	26	2	54	82	28
Support activities of air transportation of passengers	37	11	47	95	48
Travel agencies	42	12	45	99	54
Rental of automotive and other transportation equipment	16	4	31	51	20
Lodging and accommodation	39	21	45	105	60
Foodservices and drinking places	47	28	43	118	75
Amusement and recreation services	155	7	54	217	163
Economy average	23	14	40	77	37

Source: Research data

Table 4 – Impacts on Wages of Employees of the Tourism Services given an increase of R\$ 1 million in the Final Demand, Brazil 2006

Tourism Sectors	Wages of Employees				Direct + Indirect
	Direct	Indirect	Induced	Total	
Rail transportation of passengers - city	474	79	403	956	554
Rail transportation of passengers - intercity	487	75	401	963	563
Road transportation of passengers - city	424	121	374	920	546
Road transportation of passengers - intercity	330	83	365	778	413
Road transportation of passengers - interstate	314	93	358	765	407
Road transportation of passengers - international	281	119	341	741	400
Taxi services	318	69	366	752	387
Services of tourism and excursion	323	65	369	757	387
Regular transport on trams	408	24	403	836	432
Water transportation of passengers	244	137	327	709	382
Air transportation of passengers	140	199	280	619	339
Support activities of rail transportation of passengers	278	20	374	672	298
Support activities of road transportation of passengers	284	32	371	686	315
Support activities of water transportation of passengers	557	24	437	1 018	581
Support activities of air transportation of passengers	464	119	381	963	582
Travel agencies	375	131	364	870	506
Rental of automotive and other transportation equipment	132	36	253	420	167
Lodging and accommodation	239	147	367	753	385
Foodservices and drinking places	168	167	347	683	336
Amusement and recreation services	257	74	436	768	332
Economy average	226	139	323	688	365

Source: Research data

Table 5 – Impacts on Income (Employees and Self-Employed) of the Tourism Services given an increase of R\$ 1 million in the Final Demand, Brazil 2006

Tourism Sectors	Income (Employees and Self-Employed)				Direct + Indirect
	Direct	Indirect	Induced	Total	
Rail transportation of passengers - city	548	104	526	1 179	652
Rail transportation of passengers - intercity	555	98	524	1 176	652
Road transportation of passengers - city	453	156	489	1 098	609
Road transportation of passengers - intercity	446	108	477	1 032	554
Road transportation of passengers - interstate	421	121	468	1 010	542
Road transportation of passengers - international	362	154	446	962	516
Taxi services	455	91	478	1 024	546
Services of tourism and excursion	467	85	483	1 035	552
Regular transport on trams	580	35	527	1 142	615
Water transportation of passengers	314	176	428	919	491
Air transportation of passengers	156	254	366	776	410
Support activities of rail transportation of passengers	501	29	489	1 019	530
Support activities of road transportation of passengers	487	45	485	1 017	532
Support activities of water transportation of passengers	675	35	572	1 282	710
Support activities of air transportation of passengers	478	153	499	1 130	631
Travel agencies	414	167	475	1 057	581
Rental of automotive and other transportation equipment	141	47	331	519	188
Lodging and accommodation	375	197	480	1 052	572
Foodservices and drinking places	297	237	454	989	534
Amusement and recreation services	636	95	571	1 302	731
Economy average	291	177	422	891	469

Source: Research data

Table 6 – Impacts on Value Added of the Tourism Services given an increase of R\$ 1 million in the Final Demand, Brazil 2006

Tourism Sectors	Value Added				Direct + Indirect
	Direct	Indirect	Induced	Total	
Rail transportation of passengers - city	688	207	1 019	1 915	896
Rail transportation of passengers - intercity	683	203	1 015	1 901	886
Road transportation of passengers - city	510	319	947	1 776	829
Road transportation of passengers - intercity	662	221	924	1 807	883
Road transportation of passengers - interstate	622	247	906	1 775	869
Road transportation of passengers - international	518	313	864	1 695	831
Taxi services	713	187	926	1 825	900
Services of tourism and excursion	735	173	935	1 843	909
Regular transport on trams	899	68	1 021	1 989	968
Water transportation of passengers	448	359	829	1 636	807
Air transportation of passengers	192	523	709	1 424	714
Support activities of rail transportation of passengers	915	58	947	1 920	972
Support activities of road transportation of passengers	865	90	939	1 894	954
Support activities of water transportation of passengers	899	68	1 107	2 074	967
Support activities of air transportation of passengers	510	315	965	1 791	825
Travel agencies	491	336	921	1 748	827
Rental of automotive and other transportation equipment	891	84	640	1 615	975
Lodging and accommodation	492	371	930	1 792	863
Foodservices and drinking places	440	391	880	1 711	831
Amusement and recreation services	741	188	1 105	2 034	929
Economy average	480	347	818	1 645	827

Source: Research data

The above indicators of potential for generating employment and income are important in defining public policy priority, since, as we know, scarce resources, if sprayed, tend to compromise the results of stimulus measures implemented. We can observe, for example, in the above results that some sectors stand out, not only in terms of impacts on employment but also on income and on value added, which are the sectors of recreational and cultural activities, foodservices, and support activities to air transportation of passengers. The importance of the sector of cultural and recreational activities, both in generating employment and income, indicates the importance of stimulating the development of leisure tourism in Brazil, including extending the duration of business trips. This participation is still very small in tourism, but nevertheless showed great potential for generating employment and income. This gives us the idea of the gains in income and employment that can be still provided, in view of the ample opportunities this sector still has to grow.

5. In conclusion: the social and economic contribution of tourism complex

In order to get a better idea of what happens in the economy as a result of tourism development we make here an analysis of the tourism complex as a whole, i.e. not just the tourism services by themselves, but also the dependence that the other sectors have for their development on the tourism sectors, either through the provision of inputs, or because they use tourism services as inputs in their production.

We calculate in this regard, the contribution of the tourism complex as a whole not only for the generation of GDP in the economy but also to employment generation.

As regarding the contribution to GDP in Brazil, we see that, when addressed only the tourism services, it is 2.3%. When we include both the inputs used by tourism, and other services of the economy that are demanded on behalf of tourist activities, this contribution reaches 5.0%, indicating the great potential that the industry has for the development of Brazil's GDP and the risks of loss involved, as the industry shrinks. Among the main tourism services in the GDP of the tourism complex, one has the participation of the sectors of road transportation (39.9%), air transportation (21%), lodging (16.1%), and foodservices (9, 1%).

As for the employed population in the complex, the data show an even greater contribution than to GDP. The jobs generated by tourism itself account for 3.3% of total employed persons in Brazil, while the tourism complex contributes to 6.0% of the employment in the Brazilian economy. Noteworthy is the relative importance of the sector of recreational and cultural activities that show a great capacity to generate employment, as noted earlier. This confirms the relative importance of tourism to employ people, especially when also taking into consideration the self-employed, confirming findings from other studies (Andrade et al., 2008).

Furthermore, studies such as Machado and Ribas (2008) conclude on the concentration of poor workers in the informal sector, much of which appears as self-employed, suggesting the importance of the gains that tourism can provide to reduce poverty, as highlighted in other studies (Blake et al., 2008, Takasago and Mollo, 2008) These considerations, however, require further study about the effective contribution of the self-employed in tourism, in view of the diversity of workers found in this category.

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ⁱ The method of defining tourism differs greatly between different studies, and this is due in particular to the difference between the ways of collecting data and the availability of these varies enormously from country to country. In Surugiu, Frent and Surugiu (2009), for example, tourism is defined only as being constituted in the sectors of hotels, restaurants and travel agencies.

ⁱⁱ For a detailed analysis of this survey see the article by Cole (2008).