



CHAIRE CONDITION AUTOCHTONE
Chaire de recherche du Canada sur la condition autochtone comparée

The 1991 Social Accounting Matrix for the Nunavik Regional Economy

Gérard Duhaime
Véronique Robichaud
Pierre Fréchette

Collection
RECHERCHE EN LIGNE



La **Chaire de recherche du Canada sur la condition autochtone comparée** est affiliée au Centre interuniversitaire d'études et de recherches autochtones (CIÉRA) et à la Faculté des sciences sociales de l'Université Laval.

Le présent document a été publié initialement dans la collection **Recherche** du Groupe d'études inuit et circumpolaires (GÉTIC) de l'Université Laval.

Adresse postale:

Chaire de recherche du Canada sur la condition autochtone comparée

Centre interuniversitaire d'études et de recherches autochtones

Pavillon Charles-De Koninck

Université Laval

Québec, QC

Canada G1K 7P4

Téléphone: (418) 656-7596

Télécopieur: (418) 656-3023

ciera@ciera.ulaval.ca

© Gérard DUHAIME, Véronique ROBICHAUD, Pierre FRÉCHETTE, 1999

Dépôt légal: Bibliothèque nationale du Québec, 4^e trimestre 1999

Bibliothèque nationale du Canada, 4^e trimestre 1999

G rard DUHAIME¹
V ronique ROBICHAUD²
Pierre FR CHETTE³

**THE 1991 SOCIAL ACCOUNTING MATRIX
FOR THE NUNAVIK REGIONAL ECONOMY**

The authors are grateful to the Social Sciences and Humanities Research Council of Canada, for subsidizing this research program. An earlier version of this paper was presented at the Second International Congress of Arctic Social Sciences (ICASS II), Rovaniemi, Finland, May 28th - June 1st 1995.

¹ Director, Group for Circumpolar and Inuit Studies (G TIC), and professor, Department of Agrifood Economics and Consumers Sciences, Universit  Laval, Qu bec, Canada, G1K 7P4. Gerard.Duhaime@fss.ulaval.ca

² Associate Researcher, Research Center on Planning and Development (CRAD), Universit  Laval, Qu bec, Canada, G1K 7P4. vrob@total.net

³ Professor, Research Center on Planning and Development (CRAD), Universit  Laval, Qu bec, Canada, G1K 7P4. Pierre.Frechette@crad.ulaval.ca

TABLE OF CONTENTS

1 – Introduction	1
2 – Economic development of Nunavik	1
3 – The social accounting matrix (SAM)	1
4 – The social accounting matrix of Nunavik	2
5 – Conclusion	3
6 – Bibliography	4

LIST OF TABLES

Table 1 – Aggregated social accounting matrix, Nunavik, 1991	6
Table 2 – Gross domestic product by industry, Nunavik, 1991.	6
Table 3 – GCP on an expenditure basis, Nunavik and Canada, 1991.	7
Table 4 – GCP on an income basis, Nunavik and Canada, 1991	7
Table 5 – Government expenditure, Nunavik and Canada, 1991	7
Table 6 – Per capita personal income, personal disposable income and personal expenditure on consumer goods and services, Nunavik and Canada, 1991	8

1- INTRODUCTION

Covering 475 000 square kilometers north of the 55th parallel, Nunavik accounts nearly for a third of the area of the province of Quebec (Canada) with a population in 1991 of a little more than 7600 inhabitants, mostly Inuit. The population is scattered among 14 Inuit villages, gathered around Ungava Bay, Hudson Strait and Hudson Bay. In the course of the last few decades, Nunavik experienced an important evolution marked by the settling of its inhabitants, which favored the development of production activities. The impacts of this evolution and of government intervention, in particular the James Bay and Northern Quebec Agreement (JBNQA), on the regional economy are already noticeable.

However, the absence of an efficient instrument to evaluate the socio-economic impacts of such changes is detrimental to the development of the region. Contrary to other Arctic regions for which detailed statistics are available, Nunavik has a very poor statistical base. In order to increase the knowledge of this region's economic evolution and to compare its economic indicators with those of Canada and other circumpolar regions, a social accounting matrix (SAM) was constructed for 1991. The first part of this paper presents the development of the Inuit economy over the last decades, the second explains the theoretical foundations of the SAM and its construction, and finally a comparison of some macroeconomic variables with Canada will permit to measure the differences and similarities with the rest of the country.

2- ECONOMIC DEVELOPMENT OF NUNAVIK

Before the 1950's, the Inuit economy was essentially based on hunting. The preys and their furs were exchanged for other consumption goods. Barter was the principal form of exchange, and money was practically absent in the economy. For several reasons, notably precarious economic and sanitary conditions, federal and provincial governments increased their intervention in the 60's and 70's. This greatly encouraged the emergence of a wage-earning class and the settling of the Inuit nation.

The signature of the James Bay and Northern Quebec Agreement in 1975 between the federal and provincial governments, the Inuit and the Crees, and the companies involved in hydro-electrical development, reinforced these new economic characteristics. New administrations at the regional and local levels and

several firms were created as a consequence of the Agreement; the Makivik Corporation and its subsidiaries are such examples. These enterprises, in addition to providing jobs for the Inuit, contributed to the economic development of the region.

By redefining the rights of the Inuit and Cree nations, the Agreement brought several deep changes in the structure of the Inuit economy. Compensations received since 1975 financed the creation of numerous new public services but also created an increasing dependency of the Inuit nation on public administrations. State intervention increased at the same rate as the ministries committed to the development of the region, so it is difficult to evaluate how much it has cost the provincial and federal governments.

In spite of governmental ubiquity, the Inuit nation has little political autonomy; in fact, few decisions are made solely by local administrations (Duhaime 1993). The Nordic Village Corporations' activities, the Inuit version of municipalities, depend essentially on funds received from the remainder of country. The situation is the same for regional administrations. However, the redefinition of functions for each level of administration in the region can only be done properly with complete and reliable data on the region.

A social accounting matrix (SAM) was constructed in 1987 in order to depict the Inuit economy. Duhaime (1987) gathered and reconciled data from different sources in the coherent framework of the SAM concepts. This work is extremely innovative as it provided, for the first time, a complete portrait of the Inuit economy. However, this SAM is based on 1983 data, which is now more than ten years old. Important changes have occurred in the structure of Nunavik's economy over the last decade. This paper therefore presents the updated version of the Nunavik SAM for 1991, from which some macroeconomic variables are calculated and then compared with Canada.

3- THE SOCIAL ACCOUNTING MATRIX (SAM)

A social accounting matrix (SAM) is a picture, for a given year, of monetary exchanges in an economy. In the matrix, which is square, each line and its corresponding column are an account; each line shows the income of the account and each column its expenditure. The value in each cell therefore represents both an income for an account and an expenditure for another. Moreover, the sum of each line has to be equal to that of the corresponding column; in other words, the

income of each account is equal to its expenditure, which is a guarantee of coherent results.

The SAM methodology was elaborated during the 1970's and 1980's. However, the first conceptual developments are attributed to Stone (1961). Extensively developed and used by the World Bank in order to analyze the economy of developing countries, the SAM methodology is now widely used in developed countries. For example, SAMs have been constructed to study the region of Buffalo by Cole (1987) and the Mezzogiorno in Italy by Antonio, Colaizzo and Leonello (1988). In Canada, Lefebvre, Mayer and Morin (1988) built a SAM for the province of Quebec, which was subsequently used to construct a SAM for the Quebec Metropolitan Area by Fréchette, Villeneuve, Boisvert and Thériault (1991) and the Montreal Metropolitan Area by Lemelin (1994). Duhaime (1987) is the first to have used this approach in order to depict the economy of Nunavik.

4- THE SOCIAL ACCOUNTING MATRIX OF NUNAVIK

The SAM of Nunavik is composed of 73 accounts grouped in five categories: factors of production (labor and capital), current account (private and public firms, governments, households), capital account (private and public firms, governments, households)¹, production activities (primary, secondary and tertiary sectors) and the rest of the world. Within most of these categories, there is a distinction between natives and non-natives; this makes it possible to measure the differences between the economic characteristics of the two populations.

Production activities are the same as those used in national accounting with the following economic sectors²: fishing and trapping; mining; manufacturing; construction; transportation; communication; energy; trade; finance, insurance and real estate; public administration; services.

The expenditure and receipts of each level of government in the region is estimated. For the federal and provincial governments, the expenditures on goods, services and transfers are much larger than the receipts from taxes; the gap between them is offset by a transfer from the rest of the country to governments in the region.

¹ When aggregated, this account becomes "accumulation", that is "saving" or "investment".

² There is no agricultural activity in Nunavik.

Finally, the not-for-profit organizations (such as Makivik Corporation, although some of its for-profit subsidiaries are included with private firms) were grouped with households in the aggregated version of the SAM, in order to respect national accounting practices.

Official data from government publications and corporate annual reports were combined with non-official data from interviews. When no data was available for 1991, estimations based on the 1983 SAM were used to complete the available information. Once the production of each firm and of each government was determined, the data were aggregated into 37 accounts, and the matrix was balanced. Balance was attained by modifying the value of accounts for which the data had been estimated; the transactions for which the information were the most reliable served as foundations to balance the matrix. Since the value and the composition of production activities and the value of their exports constitute the most reliable data, households consumption and investment were calculated as a residual so as to balance the production accounts.

Table 1 presents the 1991 SAM of Nunavik aggregated into 11 sectors with the income of each account appearing in line and its corresponding expenditure in column. It provides a good insight into the relative importance of the different accounts. This SAM does not include subsistence activities which are certainly important in Nunavik; only activities that are the object of commercial transactions are reported in the matrix.

From the data of this SAM, it is possible to calculate various macroeconomic indicators which are then used to assess the economy of Nunavik.

Total production of goods and services, for a given year, in a regional or a national economy is measured by the gross domestic product (GDP). It can be measured in three ways: production by industry (or value added by industry), final expenditure on goods and services by economic agents and income accruing to factors of production during the production process.

Table 2 presents regional production by industry. The principal industrial sector of Nunavik is public administration, which represents a little more than half of total GDP, indicating the importance of government in the region's economy. It is also important to outline the virtual absence of the manufacturing sector. In fact, carving represents the only activity in this sector; no

other manufacturing activity is taking place in the region.

Among the other production sectors, construction, transportation and trade represent approximately a third of regional economic activity. In fact, these three sectors are also related to government activities. Most of construction consists in housing for the population of Nunavik, which is almost entirely provided by the provincial government. Moreover, transportation and trade are strongly linked, given the distance between Nunavik and other Canadian regions; transportation is also an important part of government expenditures.

Table 3 presents the GDP on an expenditure basis for Nunavik and Canada³. It reveals some interesting characteristics of the region; the pattern of GDP expenditure is very different in Nunavik than in the rest of Canada. Government expenditure on goods and services is much more important in Nunavik, where it accounts for 95,8% of total GDP, as compared to 21,4% for Canada. Per capita government expenditure amounts to 19 197\$ in Nunavik, as compared to 5 137\$ for Canada.

The magnitude of imports must also be noted. Imports accounts for 104,7% of GDP (20 980\$ par capita) in Nunavik and for 25,6% in Canada (6 133\$ per capita).

It is normal for a small regional economy like Nunavik to have much greater imports relative to total GDP than the country as a whole, since it produces a more restricted set of goods and services than the country. Moreover, because of the relatively small size of the private sector and of the virtual absence of a manufacturing sector, it is not surprising that exports are smaller in Nunavik (10,8% of GDP) than in Canada (24,3% of GDP).

Finally, investment in fixed capital in Nunavik is relatively higher (41,2% of GDP) than elsewhere in Canada (19,1%), mainly because of airport and residential construction undertaken by the provincial government.

Table 4 presents the GDP of Nunavik and Canada on an income basis. Non-natives receive 52,6% of total wages and salaries (or 38,9% of GDP), despite the fact that these households represents only 10% of the population

³ For a very formal comparison, Nunavik figures should be subtracted from those of Canada, so that the comparison would be between Nunavik and the rest of Canada. However, Nunavik is such a small part of the Canadian economy, that this arithmetical operation is not necessary for comparison purposes.

of Nunavik. Several reasons could explain this result. Most of non-native workers originate from the south and their wages and salaries include their lodging and transportation allowances. Moreover, non-natives without jobs do not stay in the region, as opposed to natives. Finally, the natives working in traditional activities like fishing and trapping, which are not wage-earning activities, do not receive as much income as non-natives.

Moreover, profits, interest and rent (capital income) account for a smaller portion of GDP in Nunavik (11,7%) than in Canada (19,1%) because of the weakness of the private sector in the region.

Table 5 shows that government expenditure per capita in Nunavik is nearly three times that of Canada, and that government expenditure on goods and services is almost four times that of Canada.

Table 6 aims at comparing the standard of living of the inhabitants of Nunavik with those of Canada. Interpretation of this table does not come straightforward and illustrates the complexity on the Nunavik society. The overall personal income per capita⁴ in Nunavik (22 416\$ in 1991) is superior to that of Canada (21 511\$).

However, the portrait is different when Inuit and Non-Inuit personal income is taken into account. Most Inuit do not have access to paid employment and they have rather large families (4,3 persons on average) which leads to somewhat low average income, while Non-Inuit are high wage earners whose families tend to live in the south of the country, which leads to artificially high average income. The personal income per capita of Non-Inuit (82 269\$) is thus five times that of the Inuit (15 765\$).

However, per capita personal expenditure on consumer goods and services by Non-Inuit is much lower (34 384\$) because they transfer an important part of their income to their families in the south (28 720\$ per capita).

Real differences in the standard of living are shown in per capita personal expenditure on consumer goods and services, where the Inuit average stands at 60,2% that of Canada.

⁴ Personal income per capita represents income earned by individuals (wages and salaries, dividends, interests...), plus transfer payments (mainly from governments, including housing subsidies), before personal income tax, divided by the population of the region, in order to measure an average. Disposable personal income per capita is similar as above, except that personal income tax has been deducted.

5- CONCLUSION

The economic evolution of the Nunavik economy is well recognized by historians, sociologists, anthropologists and economists. However, this recognition alone cannot insure a satisfactory basis for political and economic decisions. Many studies present data for this region, but they are often fragmented and contradictory. The work presented here is an effort to regroup and reconcile this data in a social accounting matrix.

The analysis of the SAM permits to have a much better understanding of the regional economic situation. In addition to outlining the economic profile of Nunavik, the SAM allows to compare the different national accounting aggregates with the remainder of country. Based on such comparison and on the analysis of the standard of living in Nunavik, it is hoped to provide a coherent source of information useful to numerous studies. A similar analysis with other circumpolar regions would allow to appreciate more adequately the differences and similarities among these societies. Moreover, it would provide a complete portrait and comparable data which would be valuable to all social scientists interested in circumpolar studies.

6- BIBLIOGRAPHY

ADMINISTRATION RÉGIONALE KATIVIK (1991), *Rapport annuel 1990, 1991*, Kuujuaq.

AFFAIRES INDIENNES ET DU NORD CANADA (1992,1993), *La Convention de la Baie James et du Nord québécois et la Convention du Nord-Est québécois: Cris-Inuit-Naskapis/Rapport annuel 1991, 1992*, Ottawa, ministère des Affaires indiennes et du Nord Canada.

BANQUE DU CANADA (1992), *Bank of Canada Review: November 1992/Revue de la Banque du Canada: novembre 1992*, Ottawa, p. S102-S111.

BOUSSELMI, N., B. DECALUWÉ, A. MARTENS et M. MONETTE (1989), *Développement socio-économique et modèles calculables d'équilibre général: Méthodes et applications à la Tunisie*, Centre de recherche et développement en économique, Université de Montréal, 309 p.

COLE, S. (1987), "Growth, Equity and Dependence in a Restructuring City Region", *International Journal of Urban and Regional Research*, 11:4, p. 461-477.

CONSEIL RÉGIONAL KATIVIK DE LA SANTÉ ET DES SERVICES SOCIAUX (1991, 1992), *Rapport annuel 1990-1991, 1991-1992*, Kuujuaq.

D'ANTONIO, M., R. COLAIZZO et G. LEONELLO (1988), "Mezzogiorno/Centre-North", *Journal of Policy Modeling*, 10:3, p. 437-451.

DUHAIME, G. (1993), *La gouverne du Nunavik: Qui paie quoi?*, Québec, Université Laval, GÉTIC, 28 p.

DUHAIME, G. (1991), "Contraintes économiques à l'autonomie. Une matrice de comptabilité sociale du Nunavik", *Canadian Journal of Regional Science/Revue canadienne des sciences régionales*, XIV:1, p. 93-112.

DUHAIME, G. (1987), *Ni chien, ni loup. L'économie, l'État et les Inuit du Québec arctique*, Thèse de doctorat, Québec, Département de sociologie, Université Laval, 524 p.

FÉDÉRATION DES COOPÉRATIVES DU NOUVEAU-QUÉBEC (1991), *Growing with Co-ops*, January 31, 1991, 105 p.

FRÉCHETTE, P., P. VILLENEUVE, M. BOISVERT et M. THÉRIAULT (1992), "Évaluation des retombées économiques régionales de l'Université Laval à l'aide d'un modèle calculable d'équilibre général", *Canadian Journal of Regional Science/Revue canadienne des sciences régionales*, XV:1, p. 81-100.

LEFEBVRE, P., F. MAYER et C. MORIN (1988), *Matrice de comptabilité sociale du Québec 1984: un ensemble de micro-données cohérentes pour l'analyse d'équilibre général*, Cahiers techniques, Bureau de la statistique du Québec, Québec, 62 p.

LEMELIN, A. (1994), "Analyse économique régionale et équilibre général: un modèle appliqué à la région métropolitaine de Montréal", *Revue d'économie régionale et urbaine*, no. 5, p. 795-820.

MARTIN, M.-C., M. SOUISSI et B. DECALUWÉ (1993), *Les modèles calculables d'équilibre général: les aspects réels*, Volume 2, École PARADI de modélisation de politiques économiques de développement, Québec, Université Laval.

OFFICE DE PLANIFICATION ET DE DÉVELOPPEMENT DU QUÉBEC (1991), *Bilan socio-économique 1990/Région Nord-du-Québec*, Gouvernement du Québec, Québec, 65 p.

PYATT, G. and J.I. ROUND, eds. (1985), *Social Accounting Matrices: A Basis for Planning*, World Bank, Washington, 281 p.

SECRETARIAT AUX AFFAIRES AUTOCHTONES (1991-1992), *Déboursés, aides et dépenses autochtones pour l'année 1990-1991, 1991-1992*, Gouvernement du Québec, Québec.

SIMARD, J.J. (1993), *Les infrastructures. Étude sur les changements sociaux 1970-1990 dans les régions autochtones sous convention*, Québec, Université Laval, GÉTIK.

SIMARD, J.J. et G. DUHAIME (1993), *Les dépenses gouvernementales. Étude sur les changements sociaux 1970-1990 dans les régions autochtones sous convention*, Québec, Université Laval, GÉTIK.

SIMARD, J.J., R. ROBITAILLE et al. (1990), *Le revenu personnel des autochtones touchés par le projet de la Baie James. Tendances 1970-1986*, Québec, Université Laval, GÉTIK.

SOCIÉTÉ D'HABITATION DU QUÉBEC (1992), *Rapport annuel 1991*, Québec, 65 p.

SOCIÉTÉ MAKIVIK (1990-1993), *Société Makivik. Rapport annuel 1989-1990, 1990-1991, 1991-1992, 1992-1993*, Kuujjuaq.

STATISTICS CANADA (1993), *National Income and Expenditure Accounts, Annual Estimates 1982-1993*, no. cat. 13-201, Ottawa.

STATISTICS CANADA (1992), *Profil des divisions de recensement du Québec-Partie A*, 2 volumes, Ottawa, no. cat. 95-325, Ottawa, p. 806-818.

STATISTICS CANADA (1988), *Profil. Divisions et subdivisions de recensement/Québec: Partie 2*, 2 volumes, no. cat. 94-110, Ottawa, p. 1352-1390.

STONE, J.R.N. (1961), "Social Accounts at the Regional Level", *Regional Economic Planning*, J. Cumberland et W. Isard (eds), OECD, Paris, p. 263-296.

TABLE 1- Aggregated social accounting matrix, Nunavik, 1991 (000\$)

		Factors		Current account				Accumulation (investment)	Production activities			Rest of the world	TOTAL
		1	2	3	4	5	6	7	8	9	10	11	
Factors	Labor	1							7271,7	11608,2	94923,8		113803,5
	Capital	2							42,4	4486,7	14766,8		19295,9
Current account	Private Firms	3	5949,5	1674,9		302,7							7927,1
	Public Firms	4										2006,9	2006,9
	Governments	5	8949,3		2775,7	0,8	173074,6	16951,0			21051,7	217985,8	440788,9
	Households	6	82759,8	4153,9	3371,5	2006,1	15535,3	600,0				20,7	108447,3
Accumulation (saving)		7				58782,2	3294,1					1482,0	63558,3
Production activities	Primary sector	8						28600,0			228,7	6223,1	35051,8
	Secondary sector	9						30647,4			545,0		31192,4
	Tertiary sector	10					147680,3	68598,5		1035,9	4583,3	77423,5	309809,9
Rest of the world		11	22094,4	9192,5	105,0		45413,8	19003,7	4310,9	26701,8	10514,2	100870,8	378577,6
TOTAL			113803,5	19295,9	7927,1	2006,9	440788,9	108447,3	63558,3	35051,8	31192,4	309809,9	616784,5

TABLE 2- Gross domestic product by industry, Nunavik, 1991

	000\$	%
Fishing and trapping	1 762	1,3
Mining	5 553	4,2
Manufacturing	351	0,3
Construction	15 744	11,8
Transportation	14 397	10,8
Communications	1 099	0,8
Electricity	1 907	1,4
Trade	15 657	11,8
Finance, insurance and real estate	853	0,6
Public administration	68 062	51,1
Services	7 717	5,8
GDP at factor cost	133 102	100,0



TABLE 3- GDP on an expenditure basis, Nunavik and Canada, 1991

	Nunavik			Canada		
	000\$	\$ per capita	%	000 000\$	\$ per capita	%
Personal expenditure on consumer goods and services	87 602	11 387	56,8	412 246	14 661	61,1
Government current expenditure on goods and services	147 680	19 197	95,8	144 436	5 137	21,4
Investment in fixed capital and variations in inventories	63 558	8 262	41,2	129 013	4 588	19,1
Exports	16 711	2 172	10,8	163 943	5 830	24,3
Imports	-161 401	-20 980	-104,7	-172 453	-6 133	-25,6
Statistical discrepancy	-	-	-	-2 419	-86	-0,4
GDP at market prices	154 150	20 038	100,0	674 766	23 998	100,0

TABLE 4- GDP on an income basis, Nunavik and Canada, 1991

	Nunavik		Canada	
	000\$	%	000 000\$	%
Wages, salaries and supplementary labour income	113 803	73,8	381 645	56,6
- native	53 878	35,0	n.a.	-
- non-native	59 925	38,9	n.a.	-
Profits, interest and rent	17 997	11,7	129 095	19,1
Net domestic income at factor cost	131 800	85,5	510 740	75,7
Capital consumption allowances	1 298	0,8	81 622	12,1
Net indirect taxes	21 052	13,7	79 985	11,9
Statistical discrepancy	-	-	2 419	0,4
GDP at market prices	154 150	100,0	674 766	100,0

TABLE 5- Government expenditure, Nunavik and Canada, 1991

	Nunavik:		Canada:	
	000\$	\$ per capita	000 000\$	\$ per capita
Expenditure on goods and services	147 680	19 197	144 436	5 137
Investment	58 782	7 641	16 397	583
Transfers to persons	15 740	2 046	98 387	3 499
Transfers to corporations	320	42	15 886	565
Transfers to non-residents	0,0	0,0	2 690	96



Total government expenditure (net of transfers between levels of government)	222 522	28 925	277 796	9 880
--	---------	--------	---------	-------

TABLE 6- Per capita personal income, personal disposable income and personal expenditure on consumer goods and services, Nunavik and Canada, 1991

Per capita (\$)	Nunavik		Canada	
	Inuit	Non-Inuit	Total	Total
Personal income	15 765	82 269	22 416	21 511
Personal disposable income	13 193	71 747	19 049	16 533
Personal expenditure on consumer goods and services	8 832	34 384	11 387	14 661

