

Economic Impacts of Residential Construction

Independent Real Estate Intelligence

February 4, 2009



Economic Impacts of Residential Construction

Prepared for:

Canada Mortgage and Housing Corporation

Prepared by:

Altus Group Economic Consulting

1580 Kingston Road Toronto Ontario M1N 1S2

Phone: (416) 699-5645 Fax: (416) 699-2252

economics@altusgroup.com

altusgroup.com

February 4, 2009

EXECUTIVE SUMMARY

New housing construction in Canada generates significant economic activity. The residential construction sector directly employs some 300,000 men and women in Canada¹. In addition, residential construction investment also spurs significant spin-off economic effects across a broad array of other sectors through the materials and services used as inputs into the construction process.

This study examines the incremental effects of a rise (or fall) of some 10,000 housing starts on the Canadian economy. Principal findings include:

- A rise (or fall) of some \$3.3 billion in economic production across a broad array of industries, including some \$727 million in manufacturing output and \$307 million in the wholesale, retail, transportation and warehousing sectors (combined). Additional production impacts are likely created through the induced round;
- A rise (or fall) of some 19,300 jobs (person years of employment), again across a broad array of sectors. Additional job creation is likely through the induced round;
- A rise (or fall) of some \$1.3 billion in household income; and
- A rise (or fall) of some \$56 million in indirect tax revenue for governments and likely much more in terms of direct tax revenues.

This report looks specifically at the effects of an incremental change in the number of housing starts. The macroeconomic context is that if economic events or policy measures are anticipated to lead to a rise or fall in the number of housing starts, then the findings in this study help clarify the impacts of that change in housing starts on a broad array of sectors across the Canadian economy.

¹ Statistics Canada, 2006 Census.

TABLE OF CONTENTS

	Page
EXECUTIVE SUMMARY	i
INTRODUCTION	1
MACROECONOMIC CONTEXT	1
10,000 HOUSING STARTS BOOST PRODUCTION BY \$3.2 BILLION .	2
10,000 HOUSING STARTS CREATE 19,300 NEW JOBS	5
10,000 HOUSING STARTS BOOST INCOMES BY \$1.3 BILLION	7
GOVERNMENT TAX REVENUE ALSO IMPACTED BY HOUSING STARTS	8
CONCLUSIONS	8
APPENDIX I - METHODOLOGY.....	10
APPENDIX II – RATIOS AND MULTIPLIERS WITH INDUCED IMPACT	12

INTRODUCTION

New housing construction in Canada generates significant economic activity. The residential construction sector directly employs some 300,000 men and women in Canada². In addition, residential construction investment also spurs significant spin-off economic effects across a broad array of other sectors through the materials and services used as inputs into the construction process.

To quantify these effects, Canada Mortgage and Housing Corporation (CMHC) retained Altus Group Economic Consulting to prepare estimates of the economic impacts resulting from new residential construction in Canada.

Four measures of economic impact are assessed in this report:

- **Production:** the volume of goods and services used in the residential construction sector;
- **Jobs:** The number of jobs directly and indirectly tied to activity in the residential construction sector;
- **Income:** The volume of income generated through activity in the residential construction sector; and
- **Taxes:** The impact on indirect production tax revenue generated through the direct and indirect production.

This report presents a review of these estimates.

This study relies on analysis from the Input Output Model of the Canadian Economy, which is maintained by Statistics Canada. Customized results from the model were obtained from Statistics Canada in order to prepare the results of this study. The most recent base year for the Input Output Model is 2005. Thus 2005 is used as the benchmark year for the results in this study. Further details on the methodology used in this study are presented in Appendix I.

MACROECONOMIC CONTEXT

This report presents analysis on economic impacts at the margin – meaning the effects on the overall economy from a certain improvement or

² Statistics Canada, 2006 Census.

deterioration in underlying activity in the residential construction sector. This report looks specifically at the effects of **10,000 housing starts**. The macroeconomic context, therefore, is that if economic events or policy measures are anticipated to lead to a rise or fall in the number of housing starts, then the findings in this study help clarify the impacts of that change in housing starts on a broad array of sectors across the Canadian economy.

10,000 HOUSING STARTS BOOST PRODUCTION BY \$3.2 BILLION

An increase or decrease in the number of housing starts in Canada can have dramatic impacts on economic activity. These impacts take two principal forms:

- The **Direct Production Impacts** of expenditures on the residential construction sector; and
- The **Indirect Production Impacts** of the demand for materials and services used in the construction process. These indirect impacts also include the subsequent rounds of indirect impacts (e.g., the first round may be the kitchen cabinets purchased by the construction firm, the second round the wood purchased by the cabinet maker and subsequent rounds being expenditure to the lumber and then forestry sectors respectively).

In 2005, the average single-family³ housing start in Canada generated some \$181,256 in direct residential investment⁴. 10,000 such housing starts, therefore, generate \$1.8 billion.

The total direct and indirect production impacts are set out in Figure 1. The data are presented below itemizing the production impacts by industry sector (as defined by the North American Industry Classification System⁵).

As illustrated, in addition to the over \$1.8 billion in production within the construction sector (most of which are the direct round of impacts) an increase in single-family housing starts by 10,000 units will lead to increased production output in a wide array of sectors ranging from some \$727 million

³ Single-detached, semi-detached and row housing combined.

⁴ CANSIM matrix (026-0013) – value excludes ownership transfer costs

⁵ For further details on NAICS: www.statcan.gc.ca/subjects-sujets/standard-norme/naics-scian/2007/introduction-eng.htm

in manufacturing output, to large impacts in such sectors as wholesale and retail trade, transportation and warehousing, finance, insurance and real estate, forestry, mining and others.

The exhibit also shows that a decline in housing starts has an opposite effect, in reducing the production output among a wide array of sectors.

All told, an increase (decrease) in 10,000 single-family housing starts leads to a rise (fall) of some \$3.3 billion in production output across the economy.

Figure 1 Total Direct and Indirect Production Impacts from 10,000 Single-family Housing Starts, 2005

NAICS ¹ Code	Industry Sector	Impacts from	Impacts from
		Increase in Starts	Decrease in Starts
		\$,000	\$,000
11	Agriculture, Forestry, Fishing and Hunting	71,516	(71,516)
21	Mining, Quarrying, and Oil and Gas Extraction	45,979	(45,979)
22	Utilities	17,709	(17,709)
23	Construction	1,822,925	(1,822,925)
31-33	Manufacturing	726,676	(726,676)
31	<i>Food, beverage, textiles, etc.</i>	16,491	(16,491)
321	<i>Wood Products</i>	185,717	(185,717)
322	<i>Paper Manufacturing</i>	15,590	(15,590)
323	<i>Printing and Related Support Activities</i>	6,393	(6,393)
324	<i>Petroleum and Coal Product Manufacturing</i>	59,227	(59,227)
325	<i>Chemical Manufacturing</i>	35,815	(35,815)
326	<i>Plastics and Rubber Products Manufacturing</i>	60,782	(60,782)
327	<i>Non-Metallic Mineral Product Manufacturing²</i>	91,430	(91,430)
331	<i>Primary Metal Manufacturing</i>	31,804	(31,804)
332	<i>Fabricated Metal Product Manufacturing</i>	122,669	(122,669)
333	<i>Machinery Manufacturing</i>	22,929	(22,929)
334	<i>Computer and Electronic Product Manufacturing</i>	6,863	(6,863)
335	<i>Electrical Equipment, Appliance and Component Manufacturing</i>	14,726	(14,726)
336	<i>Transportation Equipment Manufacturing</i>	7,348	(7,348)
337	<i>Furniture and Related Product Manufacturing</i>	45,376	(45,376)
339	<i>Miscellaneous Manufacturing</i>	3,516	(3,516)
41	Wholesale Trade	172,384	(172,384)
44-45	Retail Trade	44,338	(44,338)
48-49	Transportation and Warehousing	90,026	(90,026)
51	Information and Cultural Industries	31,941	(31,941)
52-53	Finance and Insurance, Real Estate and Rental and Leasing	104,927	(104,927)
54	Professional, Scientific and Technical Services	68,265	(68,265)
55	Management of Companies and Enterprises	15,325	(15,325)
56	Administrative and Support, Waste Management, etc.	24,521	(24,521)
61	Educational Services	1,056	(1,056)
62	Health Care and Social Assistance	880	(880)
71	Arts, Entertainment and Recreation	2,313	(2,313)
72	Accommodation and Food Services	9,737	(9,737)
81	Other Services (except Public Administration)	14,327	(14,327)
91	Public Administration	12,371	(12,371)
Total Economy		3,277,216	(3,277,216)

¹ North American Industry Classification System Codes.

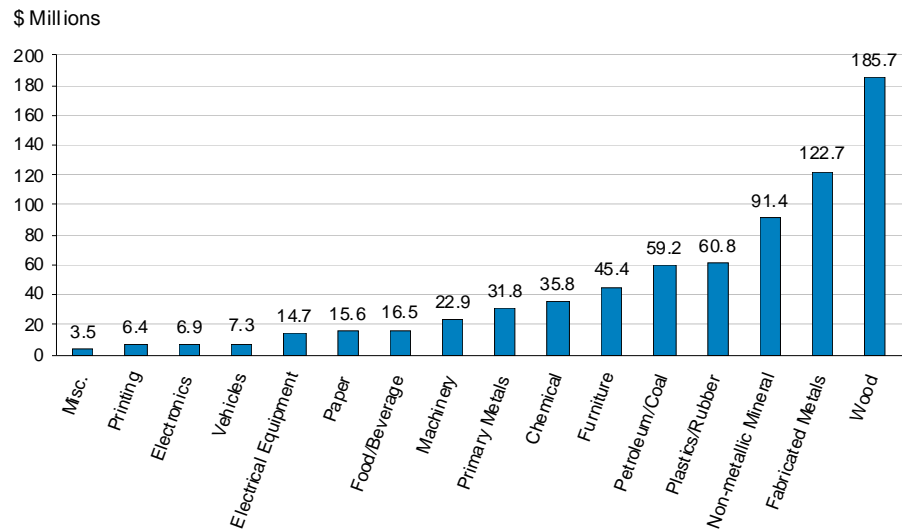
² Includes cement, concrete, masonry and gypsum.

Source: Altus Group Economic Consulting based on data from Statistics Canada

The largest sector outside of construction to experience impacts from a change in housing starts is the manufacturing sector. Figure 2 illustrates that within the manufacturing sector, the largest sub-sector to feel an impact is the wood products subsector – which sees its output rise by some \$186 million for each additional 10,000 single-family housing starts in Canada – and fall by as much from each 10,000-unit decline in housing starts. The next largest sectors in terms of spill-over impacts are the fabricated metals sector, the non-metallic minerals sector (concrete, masonry and gypsum), and the plastics and rubber sector.

Figure 2

Manufacturing Sub-Sector Production Impacts from 10,000 Single-Family Housing Starts



Source: Altus Group Economic Consulting based on data from Statistics Canada

In addition to the direct and indirect economic production impacts, many economists point to a third round of “induced” impacts from an economic event. This third round of impacts acknowledges that the increased (from a positive economic shock) production in the direct and indirect rounds will itself spur further positive economic effects through the labour income it creates that ultimately stimulates further economic activity through personal consumption.

Using standard induced multiplier ratios, some \$1.2 billion in “induced” production impacts are likely from an incremental change in 10,000 single-family housing starts. All told, therefore, the direct, indirect and induced production impacts could be said to be some \$4.5 billion related to 10,000

single-family housing starts. Details on these calculations are provided in Appendix II.

10,000 HOUSING STARTS CREATE 19,300 NEW JOBS

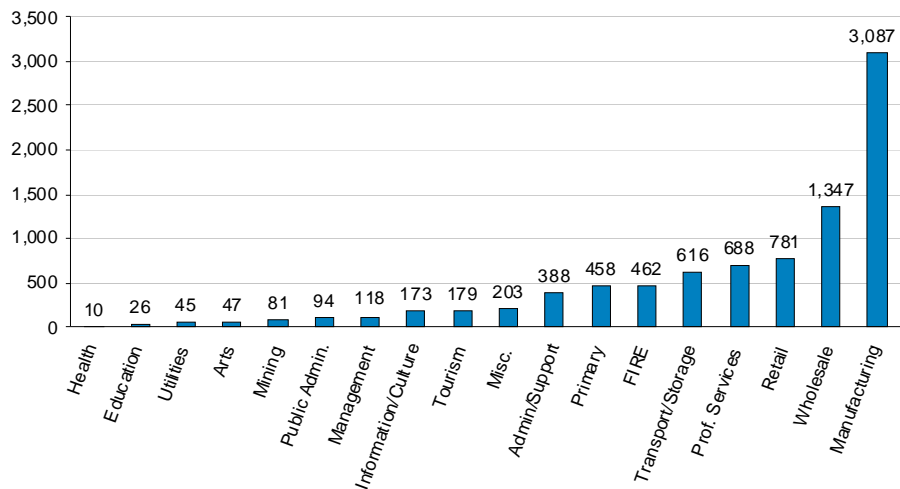
Similar to the production impacts, new housing starts create jobs both directly within the residential construction sector (both on and off the job site) and indirectly among the array of industries supplying goods and services to the residential construction sector.

All told, an additional 10,000 housing starts creates over 19,300 jobs within the Canadian economy through the direct and indirect rounds of impact (Figure 4). Slightly over half of these jobs are created within the Construction industry, most of them being direct jobs in the residential construction sector. The remainder of the jobs are created across a wide array of sectors (Figure 3)

Figure 3

Outside of Construction, Jobs are Found Amongst a Wide Array of Sectors

Persons, Jobs Created* through 10,000 new Single-family Housing Starts



* Chart does not include some 10,500 jobs created in Construction
 Source: Altus Group Economic Consulting based on data from Statistics Canada

Conversely, there is an equal and opposite effect following the decline of 10,000 housing starts in Canada – with the corresponding loss of over 19,300 related jobs.

There are also some 7,700 jobs that are created through the “induced” round of economic activity related to the first rounds. All told, therefore, an additional 10,000 housing starts influences the creation of some 27,000 jobs

across the Canadian economy. Details on this induced round of impact is provided in Appendix II.

Figure 4 Total Direct and Indirect Employment Impacts from 10,000 Single-family Housing Starts, 2005

NAICS ¹ Code	Industry Sector	Impacts from Increase in Starts	Impacts from Decrease in Starts
<i>Person Years of Employment</i>			
11	Agriculture, Forestry, Fishing and Hunting	458	(458)
21	Mining, Quarrying, and Oil and Gas Extraction	81	(81)
22	Utilities	45	(45)
23	Construction	10,533	(10,533)
31-33	Manufacturing	3,087	(3,087)
31	<i>Food, beverage, textiles, etc.</i>	75	(75)
321	<i>Wood Products</i>	784	(784)
322	<i>Paper Manufacturing</i>	58	(58)
323	<i>Printing and Related Support Activities</i>	45	(45)
324	<i>Petroleum and Coal Product Manufacturing</i>	45	(45)
325	<i>Chemical Manufacturing</i>	76	(76)
326	<i>Plastics and Rubber Products Manufacturing</i>	301	(301)
327	<i>Non-Metallic Mineral Product Manufacturing²</i>	407	(407)
331	<i>Primary Metal Manufacturing</i>	65	(65)
332	<i>Fabricated Metal Product Manufacturing</i>	640	(640)
333	<i>Machinery Manufacturing</i>	106	(106)
334	<i>Computer and Electronic Product Manufacturing</i>	34	(34)
335	<i>Electrical Equipment, Appliance and Component Manufacturing</i>	63	(63)
336	<i>Transportation Equipment Manufacturing</i>	19	(19)
337	<i>Furniture and Related Product Manufacturing</i>	340	(340)
339	<i>Miscellaneous Manufacturing</i>	29	(29)
41	Wholesale Trade	1,347	(1,347)
44-45	Retail Trade	781	(781)
48-49	Transportation and Warehousing	616	(616)
51	Information and Cultural Industries	173	(173)
52-53	Finance and Insurance, Real Estate and Rental and Leasing	462	(462)
54	Professional, Scientific and Technical Services	688	(688)
55	Management of Companies and Enterprises	118	(118)
56	Administrative and Support, Waste Management, etc.	388	(388)
61	Educational Services	26	(26)
62	Health Care and Social Assistance	10	(10)
71	Arts, Entertainment and Recreation	47	(47)
72	Accommodation and Food Services	179	(179)
81	Other Services (except Public Administration)	203	(203)
91	Public Administration	94	(94)
Total Economy		19,337	(19,337)

¹ North American Industry Classification System Codes.

² Includes cement, concrete, masonry and gypsum.

Source: Altus Group Economic Consulting based on data from Statistics Canada

These findings suggest that there are broad and far reaching impacts from residential construction, and that during periods of sharp declines in housing starts almost no corner of the economy is left unaffected. Even sectors such as health care, education and public administration can suffer, in a modest way, when housing starts decline – and benefit as they rise.

10,000 HOUSING STARTS BOOST INCOMES BY \$1.3 BILLION

Income is generated through economic activities through wages and other labour income and through profits. When a rise of housing starts leads to addition production and jobs, it also boosts the incomes of Canadian households. Conversely a drop in housing starts leads to a drop in incomes. These effects are generated through the direct activity (within the residential construction sector) and the indirect (among the array of industries providing goods and services to the residential construction sector).

The effects of a 10,000 housing starts rise (or fall) in terms of incomes include:

- The impact on wages and salaries is some \$715 million;
- The impact on supplementary labour income is some \$92 million;
- The impact on other earnings (mostly self employed) is some \$146 million; and
- The impact on corporate profits is some \$345 million.

All told, a rise (fall) in housing starts by 10,000 single family units can have the impact of a rise (or fall) in the incomes of Canadians by some \$1.3 billion.

Traditionally, there is thought to be an additional round of economic impact from an activity, referred to as an **induced impact**. This is the so-called Keynesian multiplier effect resulting from the expenditure of incomes generated in the first two rounds. The wages, salaries and other income that accrue to households as a result of the direct and indirect rounds will, in turn, generate economic activity as these households spend their incomes in the general economy. The relationship between these spin-off impacts and the initial expenditure resulting from the construction of a home is less clear than for the direct and indirect rounds – much household spending would occur regardless of whether it is financed by wages and salaries, or through unemployment insurance, other government transfers or savings if the direct and indirect employment did not occur. The addition (or loss of) up to \$1.3 billion in household income for every incremental rise (or fall) of 10,000 single-family housing starts, however, is certainly likely to have some noticeable economic impacts. Estimates of these additional impacts are presented in Appendix II.

GOVERNMENT TAX REVENUE ALSO IMPACTED BY HOUSING STARTS

Governments (federal, provincial and municipal) collect tax on economic activity:

- Directly through taxes, fees and other levies applied to lots, houses, and housing transactions (such as the GST, development cost charges, etc.); and
- Through indirect taxes on production.

In other studies, CMHC has examined the degree to which governments are reliant on revenue from direct taxes, fees and levies on residential construction and found that government revenues differ significantly from one municipality to the next, but that on average direct government taxes amount to some 13% of the median selling price of a typical single-family home⁶. A gain (or loss) of 10,000 single family starts would, by these estimates, generate considerable additional (less) revenue for governments of all orders – particularly municipal governments that have become increasingly more dependent on development charge revenue over the past ten years.

In terms of indirect taxes on production, the Input Output Model measures this impact and suggests that a rise (fall) of 10,000 single-family housing starts would generate (lose) some \$56 million in indirect taxes for governments.

CONCLUSIONS

This study examines the incremental effects of a rise (or fall) of some 10,000 housing starts on the Canadian economy. Principal findings include:

- A rise (or fall) of some \$3.3 billion in economic production across a broad array of industries, including some \$727 million in manufacturing output and \$307 million in the wholesale, retail, transportation and warehousing sectors. Additional production impacts are likely created through the induced round;

⁶ Tomalty, R., Skaburskis, A., *Government-Imposed Charges On New Housing in Canada*, Prepared for CMHC, January 2009.

- A rise (or fall) of some 19,300 jobs (person years of employment), again across a broad array of sectors. Additional job creation is likely through the induced round;
- A rise (or fall) of some \$1.3 billion in household income; and
- A rise (or fall) of some \$56 million in indirect tax revenue for governments and likely much more in terms of direct tax revenues.

APPENDIX I - METHODOLOGY

Estimates for the economic impact of new residential construction were derived through the use of Statistics Canada's Input-Output Model of the Canadian Economy. The current model relates to the year 2005. An input-output model is used to estimate the impacts of various types of economic activities. It is an accounting framework of an economy's production system. It shows the interconnections that exist between the various sectors of the economy when goods and services are produced. Using an input-output model, it is possible to determine which goods and services are required to achieve a certain production level in a particular industry – or the economy as whole.

The model can take an estimate of expenditures on a given economic activity (in this case, new housing construction) and translate it into the impacts on various industries – and ultimately, the amount of income and jobs created. A key component of an input-output model is the set of "input structures" for each economic activity covered by the model. An input structure literally splits the original expenditure among all the different inputs that are used in that economic activity. For example, in constructing a home, expenditures are incurred in a variety of industries – wood, steel, concrete, various service industries, etc. Each of these industries has an input structure of its own that involves inputs from a variety of other industries plus labour and owners of firms in that industry.

An input-output model includes a full array of input structures that have been estimated for all industries in the economy. Use of the model in this analysis involves estimating the impacts of new housing construction. To generate these estimates, an expenditure "shock" was applied to the model. The expenditure shock chosen was \$100 million dollars (in 2005\$).

This expenditure shock was used by Statistics Canada to simulate the impacts of additional residential construction on the Input-Output Model. The results were re-estimated by Altus Group based on a benchmark shock of 10,000 single-family housing starts. To do so, the investment in single-family housing in 2005 (from CANSIM matrix 026-0013) was compared to overall housing starts in that year (from CMHC) to yield an average value.

The total direct expenditure of some \$1.8 billion was derived from this process and the impacts generated by the model for \$100 million in expenditure were grossed up accordingly.

Some of the findings are presented in terms of “jobs” generated (or lost). This is the term used by the Input-Output Division of Statistics Canada in its estimates of employment generated. The term “jobs” is close to but not the same as “person-years of employment”. The estimate of jobs provides the number of workers that would be employed for a full-year; however, the estimate includes both full and permanent part-time jobs at the ratios appropriate for each of the industries involved.

APPENDIX II – RATIOS AND MULTIPLIERS WITH INDUCED IMPACT

Ratios and multipliers from 10,000 Single-family Housing Starts, 2005

	Impact from Increase in Starts
GDP (Thousands \$)	
Direct GDP	720,932
Total GDP	1,416,937
GDP multiplier (GDP generated per \$ of investment)	0.78
Ratio of total-to-direct GDP	1.97
<i>Induced GDP multiplier *</i>	0.44
<i>Induced GDP</i>	616,505
<i>Total GDP including induced</i>	2,033,442
Labour income (Thousands \$)	
Direct labour income	527,132
Total labour income	953,350
Labour income multiplier (Income generated per \$ of investment)	0.53
Ratio of total-to-direct labour income	1.81
Employment (Number of jobs)	
Direct employment	10,452
Total employment	19,337
Employment multiplier (per million dollars of investment)	10.67
Ratio of total-to-direct employment	1.85
<i>Induced employment multiplier *</i>	0.40
<i>Induced employment</i>	7,748
<i>Total employment including induced</i>	27,086
Gross output (Thousands \$)	
Direct gross output	1,812,559
Total gross output	3,277,216
Gross output multiplier	1.81
<i>Induced output multiplier *</i>	0.37
<i>Induced gross output</i>	1,223,941
<i>Total gross output including induced</i>	4,501,157

* Note induced multipliers are assumed based on literature review. This number is not based on original modelling with the 2005 Input Output Model.

Source: Altus Group Economic Consulting