Angel Activity in Atlantic Canada: A Year-2000 Review

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EXECUTIVE SUMMARY

The purpose of this research project is to estimate the amount of angel activity taking place in Atlantic Canada. An estimate of $27.5 million - $98.2 million is generated. The low end of the range represents highly improbable circumstances; the higher end of the range represents a more reasonable scenario.

This estimate is very close to the estimate generated in a study conducted in 1998 of $85 million. The ability to replicate results confirms the research design's reliability.

General Results:

- A total of 731 interviews and surveys were conducted from a sample size of 2864 recently incorporated companies incorporated in their province between October 1998 to July 1999.

- Respondents were directors of the newly incorporated companies. Almost 20% percent (25%) of the respondents whose gender was known were women.

- Of the total sample, 92.1% of the companies surveyed indicated they were still conducting business.

Results from Personal Reports:

- 14.5% of directors interviewed reported having made some form of informal venture capital investment in their lives and 10 percent of these were women;

- 106 informal investors reported having made 354 investments averaging 3.33 investments per angel though 40% of the angels had made only one informal investment;

- The 106 investors in the study reported making informal investments that totalled $8 799 400 and ranging in size from $350 to $1 500 000;

- The maximum amount of investment appeared to decline as the individuals' investment histories increased;

- For each of first, second and third investments, 25% of the investments were greater than $50 000;

- 60% of informal investors prefer to take equity shares alone for their finance;

- Habitual angels represent 88% of the investments and the share of equity taken rises (from 28.6% to 37.5%) as angels make subsequent investments;

- More than a quarter (27.5%) of investors had sold an investment at some point or another; but those who have not sold an investment have largely never tried to sell one (93.2%); and

- 35.4% of informal investors report having lost at least one investment to bankruptcy or closure**.**

Results of Investments in Family:

- One-third of informal investors report having made at least one investment in a venture started by a family member;

- Of the total number of investments made by informal investors, 15.5% went to ventures started by a family member; and

- Many of the family investments are made by habitual investors and some habitual investors have made several investments into family ventures.

Results from Companies Financed with Informal Venture Capital:

- 16.1% of the companies surveyed indicated some form of angel capital was present in their companies' capital structures;

- In total, angels in the companies surveyed in the sample contributed $16.2 million to Atlantic Canadian companies;

- Almost half (47.7%) of the companies had only one angel; the remainder had between two and 50 investors;

- The ranges and averages of shares taken decreases as the number of shareholders in a firm increases;

- Retail, business services, manufacturing and processing, and food, beverage and accommodations are the most cited industries for companies receiving informal venture capital; health care, real estate, agriculture and information technology followed.

- 18.3% of the companies that received angel finance also received follow-on finance totalling $1.8 million[1].

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Introduction

Informal venture capital investors, or ‘angels,’ are vital to entrepreneurial activity because they make personal, individual investments into early-stage companies (seed, start-up and growth) where bank finance (without collateral and historical revenues) and formal venture capital (exponential growth prospects) are not yet an option. Anecdotal evidence of angels has existed for some time. Grace White, for example, employed $50,000 from an informal investor to send her first shipment of mackerel to Jamaica. Less than a decade later, CanJam now transacts more than $30 million annually with eight employees.

The entrepreneurship and small business literature is placing increasing emphasis on the role played by informal venture capital investors because informal investment often represents the only outside equity available to the entrepreneur after depleting internal sources. In general, the difficulty of finding financial resources is a result of the uncertainty associated with new ventures because of the unpredictability in forecasting their activities (Knight, 1921).

Emerging information supports the idea that a significant percentage of informal investors are former entrepreneurs[2]. Thus, a scenario is proposed whereby the efforts to encourage current informal investors precipitates the start-up and existence of more entrepreneurial endeavours, some of whom will become highly successful and will go on to become angels themselves by becoming the source of finance for other entrepreneurs. This self-perpetuating cycle has an intuitive ‘propagating the species’ appeal which is consistent with other population ecology approaches to business start-up, success and failure.

A previous study, *Informal Investment in Atlantic Canada: A Representative View of Angels* (1998), was conducted to quantify the amount of angel activity on-going in the Region at the time. A representative sample of businesses incorporated during the previous five years revealed angels who identified significantly more angel activity in the Region than had been expected – at least two to three times larger than the previous largest estimate and possibly seven to eight times larger. The 1998 report was widely circulated and appears on the web site of the Atlantic Canada Opportunities Agency (ACOA). The results were considered favourable as it was sometimes felt that the small Region had suffered from a lack of formal venture capital. The report stimulated discussion regarding methodology and the types of informal investors who should be included in the discussion.

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[2] Edited by Mike Wright, Paul Westhead and Jeffrey Sohl, a special edition of *Entrepreneurship: Theory and Practice* (1998) is devoted to issues surrounding habitual entrepreneurs and informal investors formally recognising the need for further research into the yet unexplored regions of the association between entrepreneurs and angels.

Part of the purpose of this study is to conduct a follow-up of a study finished in 1998, by the same author, for ACOA. Some modifications in the research design should add more precision to the results and accommodate for biases which are common in entrepreneurship research, age and success biases.

This report progresses as follows. The next section outlines the specific purpose and objective of the research and is followed by a detail of the methodology. The methodology specifies how the sample was prepared, how the survey executed, and how the data was recorded. Much of the rationale for the methodology can be found in the earlier report *Informal Investment in Atlantic Canada: A Representative View of Angels* (1998)[3]. The findings are separated into four chapters: general results of all respondents, the results from inquiries about personal informal investment habits, results from inquiries about those investments which may have been made to family members, and results of inquiries as to the amount of angel activity within the companies sampled. *Throughout these chapters, a change to italicized type indicates movement from discussion about the 2000 work to a discussion of the 1998 work. Implications drawn from the two works are noted in italicized type as well.* The next chapter defines the method used to calculate the estimates, and presents the detail of the estimates. The last chapter discusses the implications of the findings.

[3] A complete bibliography can be obtained by contacting the author.

Purpose and Objectives

The 1998 estimate that there may be as many as 1500 angels in Atlantic Canada conducting angel activity up to $80 million has led to a desire to further investigate the representativeness of the sample achieved. A part of the sample of identified firms could not be identified or located by phone which caused one to think they may have gone out of business. That led to considerations of age and success biases, common in entrepreneurship research. Age and success biases are of concern to entrepreneurship researchers because it is important that we investigate both successful and unsuccessful entrepreneurs in our attempts to conduct field work (Bygrave, 1989; Gartner, 1988). It is worrisome that only older or successful firms may be included in research because they are the only ones left by the time researchers identify, enumerate, and study them.

The purpose of this study is to quantify the amount of informal venture capital activity in the Atlantic Region while controlling for age and success biases. Ensuring representativeness has been an objective. Specifically, the research has two objectives: 1) to build on the angel activity estimates in the Atlantic Region using a similar research design to that used previously to ensure representativeness; and 2) to attempt to eradicate age and success bias which may have been present in the previous study.

The first objective is to systematically sample and interview newly incorporated companies to generate an estimate of angel activity that builds on previous work conducted in Atlantic Canada and contributes to existing knowledge. The primary feature of this methodology is the attempt to identify representative angels by avoiding convenience and judgement samples. Conducting representative and random research permits us to generalise to the angel population. This is a valuable and worthwhile exercise as many studies are conducted using methodologies which permit inference *only* about the sample studied and not the population of angels.

The second objective is to systematically sample and interview newly incorporated companies within a time period that controls for potential age and success. Age and success biases are related in entrepreneurship studies because the passage of time eventually eliminates companies which evolve, close, go bankrupt, or otherwise no longer do business. It grows harder and harder, with time, for example, to find the principals and records for a company which has gone out of business. Therefore, as time passes and companies age, those which are available for research tend towards success biases. The research design for this study controls for age and success bias by interviewing companies before they have had a chance to go out of business, as well as by attempting to reach companies which had no business or identifiable personal phone number by mailing surveys to them.

Methodology

A research design has been developed which accommodates for representativeness by using newly incorporated companies listed in the provincial government records. In this way, the research attempts to identify angels by their participation in the newly formed companies in which they may have participated. Companies which have been recently incorporated (controlling for age biases) are selected randomly from the registrations and the directors of the firms are surveyed. Directors of the firms are surveyed using telephone interviews and mail surveys for those companies for which a phone number cannot be located (controlling for success biases). Respondents records are confidentially coded and entered into a database managed by SPSS software.

Representativeness

The exploratory nature of informal investor research is typified by the many non-random, descriptive studies outlining the characteristics of the investments and the investors (Landström 1993 outlines them nicely). More theoretical grounding must be exercised by future investigations into informal investors (Wright, Westhead and Sohl 1998). It is, however, difficult to apply the highly developed theory of formal corporate finance to the actions of informal investors investing in entrepreneurial firms. This is because formal financial theory has evolved by studying the movements of millions of transactions taking place in competitive marketplaces with almost perfect information. The lack of any such marketplace as a vehicle for angel investigation, the expense of surveying large groups to find minute numbers of angels, and the small number of transactions investigated makes this work highly exploratory in nature and extremely 'young' by comparison. Nevertheless, we cannot use these as a crutch for less-than-diligent research methods.

This research has been allowed to employ more rigorous methodology than most because of the funding of the research sponsors. In many instances, research is conducted where optimum circumstances are not possible.

Registry of Joint Stock Company registrations can be an excellent and reliable source for identifying newly incorporated companies (Farrell 1997)[4]. However, while new companies are easily identified by mailing addresses provided via the Registries' records, attempting to reach this group by phone (to generate the improved response rates which are achieved by

[4] The author has written several papers and a report based on the methodology and data used here. The papers are included at the end of this report in Appendix 5.

telephone surveys) is more challenging. In previous research efforts, large sections of the sample could not be matched with a telephone number. The representativeness of the results are compromised when large groups of the sample cannot be located. It is important to identify at least some salient characteristics of the missing members to ensure there are not significant differences.

Age and Success Bias

Firms exhibit different strengths at different periods of their organisational lives; therefore it is inappropriate to systematically neglect firms with respect to age. Population ecology theory holds that different companies are favoured at different stages of their organisational lives; 'early founders' are favoured in the early stages of population density while 'late forming' firms are favoured at later stages of population density (Aldrich, 1990). Consequently, while most foundings will be by early founders, most research will focus on the late formers because they are the ones that are left by the time researchers come to study them.

Age and success biases arise when methods for identifying young firms are not readily available (Bygrave 1989; Busenitz and Murphy 1996). There is a tendency for sample selection procedures to bias samples towards successful entrepreneurs by sampling from somewhat older firms. More established lists (Standard and Poors, trade associations, business development directories, etc.) produce slightly older firms because they must have the advertising dollars, excess cash flow for such listings, or organisational maturity to be in these listings. Firms with the time, money or maturity generally survive longer resulting in unintentional culling (by researchers) of the less successful firms over time, thereby producing a systematic bias. Hence, the bias results from a tendency to interview entrepreneurs who have been in business a number of years (Aldrich, 1990) and hence have succeeded for a number of years.

With respect to this research specifically, difficulty in finding telephone numbers for older ones that have gone out of business, or younger firms which are not yet fully established, may suggest an age bias that has definite implications for the samples' representativeness of the population.

Rectifying the success bias posed by the sample can be achieved by interviewing company entrepreneurs and investors during a period closer to their date of incorporation (so fewer of them have time to go out of business and are more easily located). Representativeness can be attempted by making every effort to locate 'unfound' members of the sample via mailing addresses to solicit interviews with members who were previously unreachable by phone. These two remedies combined with the results of the 'first-time-reached' surveyed sample respondents will build on the work conducted earlier to add more precision to the estimates of angel activity in the Region. The following sections in this chapter outline how the sample was prepared, the survey executed and the data encoded.

Obtaining Population Lists – Newly Incorporated Companies

Records from the four province's Departments of Corporate Affairs, Community Affairs, Business and Consumer Affairs and Justice were prevailed upon to identify the total number of new incorporations listed in their province. Each of these took different forms. In Nova Scotia, the list of the new numbered companies were purchased from the Nova Scotia Government Bookstore and then the Registry of Joint Stocks information about each company was obtained from the Nova Scotia Government's web site. For New Brunswick, the provincial legislature's record of newly incorporated companies was obtained from a university library. A random list was generated and sent to New Brunswicks's Department of Corporate Affairs where they compiled the final list of addresses for us. In Prince Edward Island, the Department of Community Services, again, kindly sent us the detailed list of all companies incorporated during the period. Newfoundland required the assistance of a student from Memorial University who sat in the registry's office for three days and copied the addresses of a random sample drawn from the files in the office.

Sample Preparation

The lists which are compiled or supplied by the various government departments do not include telephone numbers (save PEI). This is a long and labourious component as the telephone numbers for each of the sample is investigated. Internet-based 411 services are used to arrive at the phone numbers for as many of the sample as are possible.

The principle preferred method of contact is by telephone. Mail surveys are a secondary measure if the contact's phone number cannot be found. Those whose phone numbers cannot be found have their information compiled into a physical mail merged database. Because mail has a lower response rate than telephone, we mailed to all directors for whom we had a specific location to improve the coverage potential for a response from each company.

Interviewing

Telephone interviews were conducted variously over a six-month period. For each company involved, the telephone interview may have occurred between nine months to 18 months following their incorporation. A total of 571 telephone interviews were conducted. A copy of the telephone survey is included in Appendix 1.

Mail surveys were mailed to those corporations who could not be identified with a telephone number. The first mailing returned few responses. A follow-up mail out of the complete survey was conducted again within a 4-week period to reinforce the initial mailing and encourage support. A total of 160 mail surveys were returned. A copy of the mail survey is included in Appendix 2.

Data Coding

Occasionally, data coding is an interpretative process if respondents' answers are unclear despite the best efforts of the telephone interviewers. Consequently, it helps to have consistency in the coding effort. Coding the data is labourious and vital. As comparisons were anticipated between the previous study and this one, it is helpful to have the same interpretations and coding strategies. The same researcher was used to code the data as was used for the research conducted in the 1998 study.

Results from General Sample

The sample, selected randomly, is half of the population. A total of 731 interviews were conducted in total. Based on the original sample size of 2864, this represents an overall response rate of 25%. Provincial response rates ranged from 19.5% to 27.0%. These are excellent response rates for a sample such as this as many highly quoted studies have worked with extremely low response rates. The excellent response rate is largely due to the telephone interview part of the study; most studies are conducted by using mail surveys alone.

Of the four provinces, Nova Scotia had the highest rate of response with about half of the responses. This is not surprising in that Nova Scotia represented 51% of the population and 49% of the sample. New Brunswick turned out 190 respondents. Thirty-seven respondents from Prince Edward Island seems low, however, in the 10-month period in question, Prince Edward Island had only 361 companies incorporate. Newfoundland had 103 respondents from a sample size of 527 companies. A total of 731 interviews were conducted and surveys returned.

Population, Sample Distribution, Responses and Response Rates for 10-Month Period, October 1998 to July 1999

	Population		Sample		Respondents	
	n	%	n	%	n	%
Nova Scotia	2920	51.0%	1413	49.3%	382	27.0%
New Brunswick	1119	19.6%	786	27.4%	190	24.2%
Prince Edward Island	361	6.3%	138	4.8%	37	26.8%
Newfoundland	1323	23.1%	527	18.4%	103	19.5%
Total	5723	100%	2864	100%	712*	24.9%

* Numbers do not total to 731 because the province of some respondents was unclear.

It may help to put the larger picture in context by pointing out that the respondents (731) represented 12.8% of the *entire* population of new registrations of incorporated companies. This is a substantial proportion of the population.   It contributes further to point out that not all newly registered incorporations are new ventures or start-ups which are the subject of interest in this case. Some newly registered incorporations are simply newly registered as incorporations in the Province in which they were identified. They may also include companies which have merged under a new name requiring registration. Hence, the population of newly incorporated ventures is actually smaller than the population sampled, thereby improving our response rates by an unknown quantity.

Responses By Province and Survey Method

		Survey	Type	Total
		Telephone Mitzi	Mail Survey	
NS	n	331	43	374
	%	88.5%	11.5%	100.0%
NB	n	142	38	180
	%	78.9%	21.1%	100.0%
PEI	n	17	19	36
	%	47.2%	52.8%	100.0%
NFLD	n	81	22	103
	%	78.6%	21.4%	100.0%

* Totals do not add to 731 due to a small number of surveys for which the province was unknown.

The study was conducted using both a mail survey and a telephone interview. If a phone number could not be identified for either the company or the director, a postal survey was mailed to the director at their home address. Of the responses returned where the province was known, a total of 17.7% of responses were returned by mail; 82.3% were telephone interviews. This is generally accepted response tendency; better response rates are achieved from telephone interviews.

By province, 11.5% of Nova Scotia's responses, 21.1% of New Brunswick's responses, 52.8% of Prince Edward Island's responses, and 21.4% of Newfoundland's responses were surveyed via mail as opposed to telephone interviews.

Though the response rates are about the same, the current study represents a much larger proportion of the population. The response rate for the 1998 study was 23%, and represented less than one percent of the population. It considered companies which had been registered as incorporated five years previously. The sample was only about half the size of the current sample.

Any differences which appear between the previous study and the current one can be partly attributed to age and success biases. For the previous sample, it would have been easier to find companies which had survived to age five years, and it would have been more difficult *to find companies which had not survived during the five-year period. The companies which had survived are easier to find because they are still in business and their directors still able to be located. As time passes, it becomes more difficult to locate the directors of the companies that had not survived as they move on to other endeavours and possible other locations.*

In every aspect, the current study improves over the previous one: smaller population, larger sample, more respondents, and more recently incorporated companies.

Gender

For all respondents whose gender was known, 18.9% are female and 76.7% are male. Of the known respondents, almost 20% were women (138/699).

The "unknown" category represents some respondents who responded by mail. Some mail surveys presented an occasional problem in identifying gender as their names could not be categorized by observation because surveys were sent to both a male and female director with the same last name.

Gender of All Respondents

	Frequency	Valid Percent
Female	138	18.9
Male	561	76.7
Unknown	32	4.4
Total	731	100.0

In the 1998 study, almost twenty percent (19.6) of the respondents to the overall survey were female. There were no unknowns in that case because all the interviews were conducted by phone.

It appears that there is a greater proportion of women in the younger firms than in the older sample of firms studied in 1998. One may speculate on a couple of reasons, firstly, that women do not sustain their interest, or their profitability, in their firms for as long as men and therefore do not show up in as great numbers as the older companies. Another explanation may be simply more women directors involved in start-ups and new ventures in the 1999 sample as compared to the 1992-1997 sample.

Relationship of Respondent to Company

Survey respondents were told that their names had been acquired through the incorporation records of their respective provinces. As listed directors of specific companies, they were asked about their relationship to the named company.

There were a small number of lawyers representing others (4.1%) and themselves (1%). The greatest group of respondents identified themselves as entrepreneurs (70.9%). Respondents identifying themselves as investors alone represented 8.4% of the total respondents. The category “entrepreneur/ investor” was added during the last study as some respondents did not seem comfortable with the term entrepreneur alone. The six percent of “others” are those who identify themselves as a manager, operator, vice-president, etc.

Relationship of the Respondent to the Company

		Frequency	Valid Percent
Valid	Lawyer	29	4.1
	Entrepreneur	504	70.9
	Investor	60	8.4
	Entrepreneur and Investor	68	9.6
	Other	43	6.0
	Lawyer, Entrepreneur &	7	1.0
	Total	711	100.0
Missing	System	20	
Total		731	

There is a greater tendency to call one’s self an entrepreneur in the current study than in the 1998 work. In 1998, only 53.3% of the sample called themselves entrepreneurs. As well, 20.1% called themselves “entrepreneur/investors.” “Investors” represented 9.6% of the sample and “others” represented 8% of the sample.

Rate of Business Survival

Another important question asks respondents if the firm for which they are providing information is still conducting business. A very large proportion of firms were still in business at the time of the survey. Of the 713 respondents to this question, 92.1% indicated the company that was recently registered was still in business.

Companies Currently Conducting Business

	Frequency of Observations	Valid Percent
No	56	7.9
Yes	657	92.1
Total	713	100.0

The results of the 1998 study, which considered companies registered during a previous five-year period, showed a closure/failure rate of 19.6%

The large discrepancy between the failure rates between the two surveys suggests considerable success in eliminating the age and success biases as so many more firms were still conducting business at the time of the present survey. The present study administered surveys within nine to 18 months of each company's filing of their papers of incorporation.

Results From Personal Angel Activity

One of the unique features of the survey, particularly when administered by telephone, is that respondents are not aware of the kind of information which is *yet* to be asked. The survey begins by asking about their personal investment activities; they do not know that they are about to be asked questions about specific companies with which they are, or have been, associated. In this way, at this stage, they are responding to questions about personal investment habits as they relate to informal investing and are not aware of any interest about their entrepreneurial participation.

One of the key questions in the entire survey is the first question following the preliminary information and introduction. The first key question relates to their personal, informal venture capital activities.

Informal Investments by New Corporation Directors

Terms such as “informal investor,” “private investor,” “private equity investor,” “informal venture capital investor,” or “angel” are vague and open to interpretation. Therefore, respondents are not asked about any of these terms. Respondents are asked, “Have you ever made an investment of your own personal money into a new or expanding small business venture that was largely started and operated by someone else?”

A total of 14.5% of respondents indicated they had made an informal investment at some point in their lives. All those contacted are directors of newly registered incorporated companies. These are people who are associated with small business, new business, new ventures, and -- to the degree that amalgamating companies are listed in the new incorporations -- other more established companies. The respondents can be entrepreneurs, investors, lawyers and other directors in the firms.

Respondents Who Have Made An Informal Investment

	Frequency	Valid Percent
No	625	85.5
Yes	106	14.5
Total	731	100

The previous study produced a response of 20.2%of individuals who indicated having made an informal venture capital investment. Respondents in the 1998 study were given a five-year time frame in which to limit their answer. Requiring respondents to limit their responses to a *specific period of time would be expected to decrease the proportion of investors. The opposite effect is observed here serving to widen the gap between the two studies.*

The unexpected direction of the movement of responses from the two studies may be due to a greater number of new firms who had no angels in the current study, or a greater number of newer, younger, more inexperienced directors in the new firms hence producing a smaller rate of angels. As the current study has a greater number of newer companies -- many of which will be expected to go out of business within a short period -- inexperienced directors associated with these companies who are not as seasoned, or yet successful, as the directors interviewed in the 1998 study may have been interviewed thereby producing the observed difference.

Numbers of Investments Made By Informal Investors

Almost 40% of the respondents indicating that they had made an informal, angel-type investment had made only one investment so far. The remaining majority of more than 60% of those who had made an informal, angel-type investment had made two or more investments. Five investors indicated having made ten or more informal investments.

Numbers of Investments Made by Informal Investors

Number of Investments per Investor	Frequency of Observances	Valid Percent (%)
1	42	39.6
2	27	25.5
3	16	15.1
4	5	4.7
5	7	6.6
6	4	3.8
10	2	1.9
11	1	.9
25	1	.9
75	1	.9
Total	106	100

The importance of novice investors, those who have invested informally only once so far, is substantial as they represent 39.6% of the investors . Novice investors obviously represent a large cohort, some of whom may invest again. Suffice it to say that we cannot have habitual investors without novice investors so a large group of first-time and one-time investors is a necessary pre-condition for habitual investment. It would be useful to know what factors predict, or are at least correlated to, reinvestment by this group.

The remaining 60.4% are habitual angels which is also significant. Twenty-five percent of the 106 angels made two informal investments, and another 19.8% of angels had made three or four investments. Some angels report significant amounts of investment activity including three angels who reported investing 11, 25 and 75 times each.

In the 1998 study, the proportions between novice and habitual angels were almost reversed. The one-time investors represented 60.9%of the investors, and the habitual angels represented the remaining 40.1%

This pattern is consistent with expected rates of informal investment as the previous study asked respondents about their investment habits "during the past 5 years." Because informal investing requires years to develop, grow and exit, limiting respondents activities to the most recent five years would have a tendency to produce more one-time investors. If, as in the 2000 study, individuals are asked about the number of investments they have ever made, there would be a tendency towards more habitual investors as they are able to count the total number of informal investments they had made in a lifetime.

The importance of the heterogeneity of business angels (and entrepreneurs) is a growing area of the literature. Understanding the diversity amongst the behaviours, attitudes, cognition, and motivations of novices and habituals improves our ability to identify and support them.

Total and Average Investments Per Investor
In total, the 106 angels represent 354 investments. Habitual angels, those who have made more than one informal investment, represent 88% of all investments[5]. Even if the two largest angels are removed as being significant outliers, habitual angels still represent 83% of the angel activity.

Total Investment Activity of Novice and Habitual Angels

Number of Investments	X Number of Investors	= Total Investments
1	42	42
2	27	54
3	16	48
4	5	20
5	7	35
6	4	24
10	2	20
11	1	11
25	1	25
75	1	75
Total	106	354

The average number of investments per investor across the whole group is 3.33. If the two very large numbers (represented by the two individuals who report having made 25 and 75 investments) are ignored in the calculation, the average number of investments is 2.44 per investor.

If only the actions of habitual angels are considered, the average number of investments for habitual angels is 4.88 and 3.42 investments per habitual investor excluding the two large respondents.

[5] The term habitual and novice angels was first proposed as a classification for angels by the author in a paper presented at the Babson-Kauffman Entrepreneurship Research Conference in June, 2000. The paper is included in an Appendix 5.

The 1998 study had a total of 95 investments made by 64 individuals. The much larger representation of one-time angels in that group is the cause of the much lower average of 1.48 investments per investor.

Investment Amounts Per Investment and Subsequent Investment
A total of $8 799 400 was invested by sample respondents who chose to report their investment values. Eighty-seven (87) of a possible 106 respondents provided information about their first investment, 47 provided information about their second informal investment, 26 provided information about their third investment and a total of 14 people presented information about their fourth and fifth investments.

Not all respondents provided detailed information about the amounts of every investment. Therefore, the estimate of the total amount these individuals invested is likely to be considerably higher than the sum of those reported here alone.

As an index measure, the $8.8 million of investment for 354 investments represents an average of $24 857 per investor.

Investment Values and Totals for Individual Respondents

	n	Minimum	Maximum	Sum	Mean
FIRST	87	$ 500	$ 1,500,000	$ 5,632,100	$ 64,737
SECOND	47	$ 2,500	$ 200,000	$ 1,771,100	$ 37,683
THIRD	26	$ 2,000	$ 300,000	$ 1,179,500	$ 45,365
FOURTH	9	$ 350	$ 50,000	$ 117,350	$ 13,039
FIFTH	5	$ 350	$ 65,000	$ 99,350	$ 19,870
TOTAL				$ 8,799,400	

The range of investment values (difference between the minimum and maximum investment values) across all investments ranges between $350 to $1 500 000. Broadly speaking, the range appears to decline significantly after the first investment from $1 499 500 ($500 - $1 500 000 = $1 499 500) to $298 000 for the second and third investment ($2 000 - $300 000 = $298 000), and then drops again for the fourth and fifth investment to $64 650 ($350 - $65 000 = $64 650).

There appears to be a noticeable inverse relationship between the maximum investment amount and the number of investments; the maximum investment value generally declines as the number of investments per angel increases. It appears that first investments have a tendency to be larger than subsequent investments. This has implications for habitual and novice investments. Various explanations might be proposed. Firstly, novices alone may be the angels for much larger investments thereby limiting their future participation in other investments. Alternatively, habitual investors learn the high risk nature of informal investing first-hand and therefore limit their future investments deliberately. Neither of these can be substantiated here.

In the 1998 study, information for only three investments was specifically solicited in contrast to the current study's five investments. A total of $5.4 million was reported in that study by 54 of the possible 64 investors. As a comparative index evaluation, the 1998 study of $5.4 million produced 95 investments representing an average of $57 183. A similar trend was observed whereby the second and third investments saw a significant decrease in the range between maximum and minimum investments. The range was $499,999 for the first investment, $$196,700 for the second investment, and $146,700 for the third investment. As there are more novice investors in the 1998 study, and as we have seen a tendency towards higher expenditures on initial investments, this pattern is internally consistent and consistent between the two studies.

The greater dollar values represented in the current study is a result of the greater number of informal investors in the study and the reporting of more information by allowing room for detailed reporting of five investments instead of three.

The significance of these observations suggests that subsequent investments, or the investors who are inclined to make more than one investment, are smaller than the first investment or investors who are inclined to make only one investment.

Investment Size Details
Because the range of investments is so large and comparatively fewer investments, the average (means shown in graph above) have little meaning. Means and their standard deviations are only useful descriptors for data that follow a normal distribution. Where the distribution is highly skewed, or has significant outliers, means are less valuable. Therefore, no interpretation is placed on the means outlined above.

Quarterly percentiles may be more useful to analysts and policy makers. Percentiles are values that are above, or below, which 25, 50, and 75 percent of the cases fall. For the first investment, 25% of investments made are $7,500 or less, the mid-point amongst all the cases is $25,000 and 25% of the investments were for more than $50,000.

Individual Investment Percentiles

		FIRST	SECOND	THIRD	FOURTH	FIFTH
N	Valid	87	47	26	9	5
Percentiles	25	$7,500	$10,000	$10,000	$3,500	$2,175
	50	$25,000	$20,000	$22,500	$10,000	$10,000
	75	$50,000	$50,000	$50,000	$17,500	$42,500

Of the 47 observations of second investments, 25% of the investments were $10 000 or less, 50% were $20 000 or less, and 25% were for more than $50 000. Of the 26 observations of third investments, 25% were $10 000 or less, 50% were $22 500 or less, and 25% were greater than $50 000. Of the nine observations of fourth investments, 25% were $3 500 or less, 50% were $10 000 or less, and 25% were more than $17 500. Of the five fifth investments, the 25^{th} percentile is $2 175, the 50 percentile is $10 000 and 25% of the fifth investments were for more than $42 500.

Be sure to note that percentiles represent cases, not 25,50, and 75 percent of the total dollars. A chart showing the details of all investments and their frequencies is contained in Appendix 3.

Gender of Informal Investors

More than ten percent (10.4%) of the survey's angels are known to be women, and 84.9% are known to be men. The third category, Unknown, represents surveys returned by either one of two groups: surveys returned by companies for whom the directors were a man and woman of the same last name, or they were mail surveys returned by directors with generic names (Chris, Pat) or other unknown names. Generally, the issue of gender was not a problem with telephone surveys.

Gender of Angels

	Frequency	Valid Percent
Female	11	10.4
Male	90	84.9
Unknown	5	4.7
Total	106	100

The surprising results of the 1998 study are confirmed by this report. That study showed that 9.2%of the sample's informal investors were women.

Other studies had only identified very small numbers of females. While expectations might suggest that most angels are men, the almost imperceptible number of women seemed unnaturally low. It now appears that the unusually low representation of women in other studies is a result of the convenience and judgement sample methodologies. The extra effort to compose a representative sample has produced tangible differences in the nature and make-up of angels.

Preferred Structure For The Finance

The predominant method of advancing the funds is in the form of equity. More than 60% of respondents indicated this was the method they used in advancing the funds. Some sort of loan in combination with equity was the preferred method of 18.6% of investors, and a loan alone was equally preferred by another 18.6%. Just more than two percent reported something other than the three options. Not all angels revealed this information.

Structure of the Investment

	n	Valid Percent (%)	1998 Study (%)
Loan	18	18.6	15.8
Equity/Shares	59	60.8	56.1
Other	2	2.1	
Loan & Equity	18	18.6	28.1
Total	97	100	100

Compared to 1998, values are very similar except a slight increase in the amount of equity or loans provided, combined with an equivalent decrease in the category "Loan and Equity."

Share of Equity Taken
Investors take an average equity position of 28.6% of the first company in which they invest. On their second investment, angels tell us they have taken an average of 33.7% for their share and 37.6% for those who have made a third investment. In each category there is a wide range of shares taken.

Equity Taken On Subsequent Investments

	N	Minimum	Maximum	Mean
EQUITY1	57	1	100	28.60
EQUITY2	26	1	100	33.65
EQUITY3	10	2	100	37.55

Angels appear to take more equity on successive investments than they did on previous investments. Earlier, evidence suggested that the range of investments decreases as the number of subsequent investments increases. Combined, these two suggest that angels, on average, invest less and take more equity as their experience grows.

Investments Exited
As shown in the table below, of 102 respondents to this question, 27.5% had sold an investment while 72.5% had not sold an investment.

Investments Sold by Investors

	Frequency	Valid Percent
Not Sold an Investment	74	72.5
Have Sold an Investment	28	27.5
Total	102	100

Because of the large number of investors who have made more than one investment, there are obviously some investors who have made more than one investment, yet have not sold any.

The rate of investments sold in the previous study was much less at 17.9% This is consistent with patterns of informal investment and the parameters of the previous study which requested information for the previous five-year period. The recognised and oft-reported patient capital provided by angels would have meant that some of those reporting in the 1998 study did not have time to exit the investments that were being reported in the five-year time frame. In this case, asking respondents to report without any limitation on time suggests that more of them would have had time to exit their investments.

Attempts to Sell Investments

As part of the survey flow, only those who indicate they have not sold an investment are asked if they had ever tried to sell an investment. Relatively few of those who indicate not having sold an investment indicate having tried to sell them. Of the 73 individuals who reported not having sold an investment, 93% of them indicate not ever having tried to sell an investment.

Investors Who Have Tried to Sell Investments

	Frequency	Valid Percent
Not Tried to Sell	68	93.2
Have Tried to Sell	5	6.8
Total	73	100.0

The 1998 study also showed a very low tendency for angels to attempt to try to sell investments. In the previous study, less than five percent (4.5%) of those who had not sold an investment reported trying to sell an investment.

The numbers this year, though only slightly larger, follow the pattern previously established and move in the expected direction. Given the opportunity to comment on all previous investments in the current study (not just the past five years as in the 1998 study), there would be a tendency for more angels to report attempting to sell as they are referring to investments they have held over many years previously.

Combined, there are a considerable number of investors who have never attempted to sell their investments. This may be evidence of a trend broached in the literature, but not yet rigorously examined, whereby informal investors do not give previous thought or concern to the exit before making the investment. As well, it is possible that many of those investors who report not having tried to sell an investment are the same investors who will report having lost an entire investment to bankruptcy or closure.

Bankruptcy and Losses
Respondents were asked to comment on the outcomes of some of their investments. When asked if they had ever made an informal investment which went bankrupt, closed operations, or otherwise caused them to lose their investment, 35.4% of respondents had experienced one of those scenarios.

Investors Who Have Experienced Investment Bankruptcy and Losses

	Frequency	Valid Percent
No	62	64.6
Yes	34	35.4
Total	96	100

This number does not necessarily mean that 35.4% of investments are bad. The question asks if the investor has had a bankruptcy or loss experience, not how many investments they have lost. Bearing in mind that investors have an average of 3.33 investments, or 2.44 if we exclude the two large investors, there is a possibility that only a small portion of their investments have been very poor.

The similar question in the 1998 study produced almost identical results; 36.8%of informal investors reported having lost an investment to bankruptcy or closure. Though the results are unchanged, there is still a large percentage of informal investors who experience bankruptcy, closure, or some other complete loss of their investments. The true high risk nature of informal venture capital investment is evident in these results.

Additionally, there should be consideration of the investments which may lie somewhere between those that are sold and those that are completely lost to bankruptcy or closure. There are likely many investors occupying the middle ground of either the "living dead" (the phenomena as expressed by venture capitalists whereby investments are surviving and producing a living for the entrepreneur, but have no likely prospects of turning into liquid investments for the investor), or those that are improving in value with likely prospects of producing valuable returns.

Results Of Investments In Family

Thirty-five, or fully one-third, of those individuals indicating they had made an informal investment had done so in a venture started by a family member. Of the 106 individuals who indicated having made informal investments, 33.7% reported having made at least one investment in a venture started by a family member.

Investing in a Venture Started by a Family Member

	Frequency	Valid Percent
No	69	66.3
Yes	35	33.7
Total	104	100

The 1998 study showed a similarly large percentage of interest in informal investing in businesses started by a family member (34.9%). Pursuing the success of these investments would be a valuable exercise.

Rate of Involvement in Family by Different Types of Investors

Amongst the general group of angels, there is a significant amount of involvement in family investments. It is interesting to know more about these types of investors. For example, are they junior or inexperienced novice investors, or are they more seasoned and experienced habitual investors? The following chart shows the number of investments made by informal investors cross tabulated with those informal investors who have made a family investment. Both novice and habitual investors are making significant numbers of investments in family-started ventures.

Involvement in at Least One Family Investment Amongst Novice and Habitual Angels

		NUMBER OF INVESTMENTS PER INVESTOR							
INVOLVEMENT		**1**	**2**	**3**	**4**	**5**	**6**	**36809**	**25/75**
IN FAMILY	**No**	29	18	9	4	5	2		2
INVESTMENTS	**%**	69	69.2	60	80	71.4	50		100
	Yes	13	8	6	1	2	2	3	
	%	31	30.8%	40	20	28.6%	50	100	
Total		42	26	15	5	7	4	3	2

Almost a third (31.0%) of novice investors' investments are in family-oriented ventures. Of angels who have made two investments, 30.8% have made at least one family investment. Forty percent of those who have made three investments have made at least one family investment. Angels who have made as many as six , ten, or 11 investments have also invested in a family venture at least once.

There is an impression that 'real' angels do not invest in family, or alternatively that any investments in family-oriented ventures do not really qualify as angel investments. Though that debate need not be pursued here, it is clear that a large percentage of habitual investors, as well as novice investors, are making family investments as well.

Proportion of Family Investments to Total Investments
Of the informal investors who reported making investments in a venture started by a family member, more than a third (37.2%) made more than one investment in a venture started by a family member. Two investors reported making five and six investments in a venture started by a family member.

Of the 35 investors involved, a total of 55 investments were made to family members. This represents 15.5% of the total investments made (55/354). (This number occupies considerable importance later when it will be used as the proportion of activity subtracted from the estimates for angel activity.)

Frequency of Investments in Ventures Started By Family

Number of Investments	Frequency of Observances	Valid Percent
1	22	62.9
2	11	31.4
5	1	2.9
6	1	2.9
Total	35	100.0

In the 1998 study, 34.9%of the informal investors reported making an investment in a venture started by a family member. Nineteen percent of those who reported investing in a venture started by a family member had made more than one investment to a family member. Almost 25%of all investments recorded were made to a family member.

As the efforts to locate newly registered incorporations increases, such as in the present study, fewer observations of investments in family businesses are recorded. The overall proportion of family investing is smaller for the current study and the proportions are greater in the 1998 study which interviewed directors of older firms . As the present study includes a greater proportion of non-family-backed investments than the last study, one might hypothesize that family-backed ventures have a better survival rate than non-family backed ventures.

Tentative evidence indicates that informal investors who back entrepreneurs who are previously known to them may have better success rates (Kelly and Hay 1996). Prior knowledge of the entrepreneurs' strengths, capabilities, trustworthiness and integrity are valuable tools in making investment decisions as they reduce the potential to make a poor *entrepreneurial selection. Where investments in family members act as proxies for knowledge about the entrepreneur, there may be better survival rates for investing in family.*

Results From Companies Financed With Informal Venture Capital

Following the initial interview with directors of newly incorporated companies about their personal investment habits, respondents were then asked to comment on the specific company for which they were originally identified in the sample selection. This key question, now asks the respondent to comment on the recently incorporated company and some aspects of its capital structure. It is the comments on these company angels which form the basis for the Atlantic Region estimates generated in the next chapter.

Companies Financed By Informal Investment Capital

There are considered to be two key questions on the survey. The first one is whether or not the individual had ever made an informal equity investment. The second is whether the company for which the respondent is representing had been financed with informal venture capital. As the survey progresses, some attrition is expected for a variety of reasons. Only 29 respondents did not answer this question. The lack of any substantial attrition in this case is favourable.

Of the more than 700 respondents to this question, 16.1% of the respondents indicated that the firm they represented involved some form of angel financing in the capital structure. Informal venture capital was described to the respondent as “contributions of money by an individual other than the lead entrepreneurs.” As all respondents were directors in their firms, it was expected they would have detailed knowledge of the capital structure.

Companies Started With Informal Investor Financing

	Frequency	Valid Percent
No	589	83.9
Yes	113	16.1
Total	702	100

T he results are strikingly similar to the 1998 study though the current study is slightly higher than the 14.8%reported two years earlier. With an improved research design, smaller population, and larger sample, the current sample is more credible. The ability to replicate *findings signifies reliability. The large number of respondents who indicate there is angel money in their companies is larger than had been expected in both studies. This is likely due to the 'grass roots' methodology employing representative techniques instead of convenience samples of well known, wealthy, habitual angels.*

Syndicating and Solo Angels

Syndicating (co-investing) and solo angels are generating interest in the literature. There are no strictly defined distinctions between syndicating and co-investing, however, the general impression would be that syndicating angels are part of a group who seek investments as a group. Co-investing angels are those who invest in deals where other angels are present. It is of interest to know what proportion of firms had only one angel, and how many might have had two or more.

A total of 290 angels are represented in 107 firms producing an average number of angesl per firm of 2.7.

Rate of Co-Investment Amongst Informal Investors

# of Angels	Frequency	Valid Percent
1	51	47.7
2	20	18.7
3	16	15.0
4	10	9.3
5	7	6.5
6	1	.9
20	1	.9
50	1	.9
Total	107	100.0

Almost half (47.7%) of the 107 firms responding to this question indicated there was only one angel who had contributed capital other than the original entrepreneurial team. The remaining 52.3% of firms are home to co-investing angels. A large number of firms (18.7%) have two angels, and 15% have three angels. Another 25% have three or four angels. As should be expected, there are even a couple of firms showing 20 and 50 investors.

As the number of investors increases, the frequency of occasions of multiple investors drops off steadily. In other words, there are fewer companies housing large numbers of informal investors than there are housing fewer numbers of angels. .

In 1998, the 14.8%of companies reporting informal investment had a mean of 2.1 angels per firm. There were a far greater percentage of one-only angel firms representing 76.1%of the angel-backed companies.

As the sample ages, as in the 1998 study, the mean number of angels declines. This suggests that the companies which are surviving the longest may have fewer angels.

A number of hypotheses could be pursued to explain these phenomena. Firstly, if too many angels are interacting with the entrepreneur, as well as on his/her behalf, fewer cooks may actually improve the broth. Alternatively, Amit, Glosten and Mueller produced significant and compelling theoretical hypotheses that formal venture capital-backed will attract lower-ability entrepreneurs than non-venture capital-backed firms. If this hypothesis were able to be directly applied to informal venture capital, and if the rate, amount, or number of venture funds was a factor, the differences between these two samples may provide evidence for its proof. (Entrepreneurial ability is not necessarily synonymous with increased sales, exports, employment, or R&D that is possible with greater funds provided by venture backers.) Both of these explanations are highly speculative and represent early insights into a phenomena which has been previously unobserved.

Industrial Sector of Angel-Backed Companies

The sector or industry represented by the companies financed by angels is of interest. The most frequently noted industries were business services, retail, manufacturing and processing and food, beverage and accommodations. Health care followed closely and agriculture, real estate and IT were mentioned seven or eight times.

Industrial Sector of Angel-Backed Companies

	Frequency of Observations*
Manufacturing /	14
Food/ Beverage/	14
Business Services	15
Health Care	12
Real Estate	8
Agriculture	8
Transportation	4
Retail	15
IT	7
Other	16

*Percentages are not supplied as some respondents are represented in more than one category.

Visual observation of the company names included in the "Other" category include: two film production companies, two construction companies, and at least one education, energy and entertainment company each. Percentages are not offered in this chart because some respondents identified themselves as fitting into more than one category. Many respondents indicated two categories and are represented in both.

This section was an addition to the 2000 study. The equivalent analysis is not available for 1998.

There are a wide variety of sectors for which angel-funding is available. Retail likely receives considerable attention as it is such a large sector and one which can be less favoured by more traditional financial institutions at start-up. The prevalence of informal equity funding for manufacturing, business services and the tourism sector is encouraging. Equity for health care may represent the growth and interest in privately run health related operations.

Information technology is also represented which is considered a good sign since concern has been expressed about investors' unwillingness to invest in sectors with which they are not *familiar (Lionaise and Johnstone, 1999). Equity for information technology suggests an increase in the knowledge of, and therefore interest in, information technology projects.*

More study in this area could prepare information regarding which of these sectors is receiving the most funding and which have the most angels per company.

Relationship of Respondents to Angel-Backed Companies
When the file is split to consider only the companies which were identified as having had angel backing, there is a change in the proportions amongst the relationships between the respondent and the company. In this case, where only the angel-backed companies are considered, the proportion of respondents which are entrepreneurs decreases to 58.6%. The proportion of "investors" increases substantially to 22.5% and "entrepreneur/investors" increases to 12.6%. There are fewer "others" as well.

Relationship of Respondents to Angel-Backed Companies

	Frequency	Valid Percent
Lawyer	3	2.7
Entrepreneur	65	58.6
Investor	25	22.5
Entrepreneur and Investor	14	12.6
Other	2	1.8
Lawyer, Entrepreneur &	2	1.8
Total	111	100.0
System Missing	2	
Total	113	

The larger proportion of individuals who describe their relationship with the company as "investors" is an expected outcome which lends support to the overall research design. The individuals responding are listed as directors for the company in question. As directors, it is reasonable to expect that some proportion would be investors. Further, it is reasonable that a larger proportion would show as investors for the companies which were identified as having angel backing.

Contribution of Finance by Angels
When asked about the amounts of money that informal investors injected into their ventures, the total amount of funds invested by sample respondents' companies was $16 178 865 (up to and including the first five investors). This includes all companies sampled from the Atlantic Region which reported the data.

The range was large, from $10 to $2 000 000. Seventy-two (72) respondents gave information about the finance contributed by their first investor. Thirty-nine (39) respondents gave information about their second investor's contribution. Twenty-five (25) respondents provided information about their third investor, and so on.

Contributions of Finance by Angels to New Incorporations

	Frequency of Observation	Minimum	Maximum	Sum	Mean
First Investor	72	$10	$2,000,000	$7,278,625	$101,092
Second Investor	39	$10	$1,500,000	$3,191,035	$81,821
Third Investor	25	$10	$1,500,000	$2,170,185	$86,807
Fourth Investor	13	$10	$1,500,000	$1,952,010	$150,155
Fifth Investor	8	$10	$1,500,000	$1,587,010	$198,376
			Total	$16,178,865	

Respondents sometimes answer the "yes/no" questions and later refuse to answer the value questions because of the sensitivity of the information requested. The one respondent who indicated the $10-investments is likely a qualified angel who felt compelled to answer the initial questions, but then later did not want to give the actual amounts.

As in the personal reports of investments , the means have little meaning when there are large variances. Again, the percentiles are provided below and the detailed accounts of investments made to newly registered incorporations are provided in Appendix 4. For the 72 observations of a first investment, 25%of the investments were equal to or less than $2 750, 50%of the observations were equal to or less than $17 500, and 25%of the observations were greater than $32 250.

Percentiles of Multiple Investments in Newly Registered Incorporated Companies

		Investor1	Investor2	Investor3	Investor4	Investor5
N	Valid	72	39	25	13	8
Percentiles	25	$2,750	$2,000	$2,000	$5,000	$2,750
	50	$17,500	$10,000	$10,000	$25,000	$7,500
	75	$32,250	$35,000	$35,000	$50,000	$41,250

For the 39 records of second investments in Atlantic Canadian companies, 25%were $2 000 or less, 50%were $10 000 or less and 25%were for more than $35 000.

For the 25 records of third investments in newly registered incorporated companies, 25%were for $2 000 or less, 50%were for $10 000 or less and 25%were for greater than $35 000.

For fourth investments recorded, 25%were for $5 000 or less, 50%were for $25 000 or less, and 25%were for greater than $50 000.

For fifth investments recorded, 25%of fifth investors investments were for $2 750 or less, 50% were for $7 500 or less, and 25%were for greater than $41 250.

Many of the investments are relatively small as shown in the details in Appendix 4. Likewise, many of the investments are substantial.

Shares Taken by Solo and Syndicating Angels

Seventy-seven (77) respondents gave us information about the shares taken by the first or only investor in the firm. Thirty-seven (37) respondents provided information about the shares taken by each of two investors in their firms. Shares taken by a third, fourth and fifth investor were reported in 25, 12, and 6 cases respectively.

The average shares taken by a single investor for their contribution is 38.8%. Where two investors are involved, the average share taken by the second investors drops to 25.6%. Where a third angel is involved, the average shares taken by the third angel is 20.6%. For four shareholders, the average shares taken by the fourth is 15.5%. Where five shareholders are involved, the average shareholding for the fifth is 11.7%.

This analysis is not meant to be interpreted such that the first shareholder takes 38.8% and the second takes 25.6% and the third, 20.6% and so on. Clearly, there would not be enough equity left for the fifth shareholder or the entrepreneur in such a situation. Angels participation is not so easily 'ordered' in such a fashion.

The more appropriate interpretation is that where one angel exists in the firm, the first angel averages about 38% of the equity; two angels, on average, would occupy approximately 50% of the equity (25.6 X 2) and three angels would hold approximately 60% of the equity (20.6 X 3). Four angels, likewise, would hold approximately 60% of the equity (4 X 15.5%), and five angels would hold approximately 60% of the equity (5 X 11.7%).

Shareholdings of Solo and Syndicating Angels

	N	Minimum	Maximum	Mean
SHARE1	77	0	100	38.8
SHARE2	37	0	50	25.6
SHARE3	25	0	50	20.6
SHARE4	12	2	25	15.5
SHARE5	6	2	20	11.7

The fact that the ranges and the means decline as the number of investors in the firm increases, provides confidence in the reports as greater numbers of angels present in the firm necessarily reduces the amount of equity that can be taken as the total amount of equity is limited to 100%. If the interpretation above is appropriate, there appears to be an average threshold of approximately 60%. Individually, or as a group, angels appear to leave an average of 40% of the equity for the entrepreneurs.

The 1998 study had a total number of observances of 44 for the first three shareholders. One shareholder averaged 33.4%, two shareholders averaged 24.9% and three shareholders averaged 23.0%. The two studies reinforce the findings as they share similar patterns and trends.

Injections of Finance Subsequent to Start-up

Companies are often required to acquire follow-on finance for either planned, or unplanned, events. It is reasonable to expect that very new firms will experience this phenomena as well. Eighteen percent (18.3%) of the 109 respondents to this question had received angel-type finance since their start-up.

Companies Which Have Received Angel Finance Since Start-Up

	Frequency	Valid Percent
No	89	81.7
Yes	20	18.3
Total	109	100.0

The amount of follow-on finance provided to ten newly incorporated companies totalled $1 801 000, ranging from $4 000 to $950 000.

Follow-on Finance to Newly Incorporated Companies

	Observations	Minimum	Maximum	Sum	Mean
SINCE$	10	$4,000	$950,000	$1,801,000	$180,100.

Calculating Atlantic Canada Angel Activity Estimates

The overall objective of this research is to determine the amount of angel activity taking place in the Atlantic Region. Estimates conducted previous to this work and the 1998 study have been little more than good hunches based on the activities of a few, well known angels in convenience samples. This current methodology, as well as the 1998 study, represent a more 'grass roots' approach producing representative angels using a systematic and rigorous procedure.

There were a large number of non-respondents for a variety of reasons: some of the sample refused to be interviewed or to complete a survey, some mail was returned "address unknown," some people could not be found at the phone number, and some phone numbers turned out to be disconnected or wrong numbers. Any of these reasons, however, does not provide an adequate rationale to believe that non-respondents were financed, or not financed, by angel capital. This presents a scenario where there is no argument for, or against, the use of angel capital by sample members who were not surveyed. This situation leaves no rationale for a factor that would be used to represent those not surveyed.

As there is no middle ground, the best estimates can be generated from assuming that at one extreme, the respondents were perfectly representative of the population, and at the other extreme, that the respondents were perfectly unrepresentative of the population. This is a slightly different method of estimate calculation than that which was used in the 1998 study which assumed the perfectly representative scenario. This rationale is more fully developed in a separate research paper (Farrell 1999).

Another difference in calculations separates this study from its predecessor in 1998. In the 1998 study, an estimate of angel activity was developed using the results from personal accounts. This is not included in this estimate for two reasons. Firstly, the 1998 study put a time limit on the number of years (five) which the respondent was asked to comment. This was eliminated to get a more complete picture of lifetime investments. With no standard time period specified, we have no idea of the average annual investments. Second, the personal estimate has no population context on which to draw and was used in the last study as a comparison to the corporate estimate to give confidence to the size and direction of the estimate. With the high and low estimates being developed from the corporate information, this seems unnecessary.

Estimation Method
Calculating the final estimates is a multi-step process.

A. First, the company results for investments in each province are calculated and two weights are developed for each province. Weights are developed by province instead of the Region as a whole because research indicates the more local nature of informal investing. Weights are calculated using two extremes: one assumes that the sample respondents are perfectly representative of the population, and the other assumes that the sample respondents are perfectly unrepresentative of the population.
B. The proportion of informal investment activity that is attributed to family investing is subtracted.
C. The survey was administered to companies which were incorporated during a 10-month period. Therefore, the numbers are annualized to represent the figures as they would appear in a 12-month context.
D. The total of the estimates represents the annual informal investments to newly incorporated companies in Atlantic Canada during the period of a year.

A. Informal Investments to Corporations by Province

The sum of the initial angel investments in newly registered incorporation were $5.16 million for Nova Scotia, $9.95 million for New Brunswick, $0.95 million for Prince Edward Island, and $117,350 for Newfoundland.

The distribution of the investments for corporations amongst the four provinces is very lopsided to say the least. Nova Scotia and New Brunswick are reporting significantly more informal investment funds though Prince Edward Island and Newfoundland were well represented by their sample size (about a third for each) and by their response rates to the survey.

Informal Investments to Corporations by Province

	Sum of Investments for each Province ($)
Nova Scotia	5156875
New Brunswick	9951140
Prince Edward Island	953000
Newfoundland	117350

B. Calculation of Weights

When the sample is assumed to be perfectly representative, the rationale is that the proportion of respondents who had angel finance in the sample is the same as the proportion of the population that receives angel finance. This is a possible event for a rigorously designed and executed research study. The weighting will tend to be larger than the alternative scenario.

When the sample is assumed to be perfectly unrepresentative, the suggestion is that the only angels in the entire sample were those who happened to be interviewed as respondents. Against incredible odds, we just happened to find -- and interview by chance -- all the angel financed companies in the sample. In this case, the proportion of the sample which had angel finance will be much smaller and the weighting will tend to be smaller. This is an extremely unlikely event.

Regardless, the correct number will lie somewhere between the two, but more likely towards the perfectly representative scenario.

Calculation of Weights

	Population of Incorporated Companies	Weight Factor for Perfectly *Un*representative Sample	Weighting for Perfectly Representative Sample
Nova Scotia	2030	2030/1031= 1.97	2030/382= 5.31
New Brunswick	1119	1119/786 = 1.42	1119/190 = 5.89
Prince Edward Island	361	361/138 = 2.67	361/37 = 9.76
Newfoundland	1323	1323/527 = 2.51	1323/103 = 12.84

C. Reduction by Amount Considered to be Family Investments

Family investments are not considered – by some – to be informal venture capital activity. Leaving the merits of that argument aside, previous estimates extracted the portion that were considered to be investments in ventures started by a family member. That trend will continue here.

The proportion of invest*ments* devoted to family investment is then subtracted from the provincial totals. The method used to develop the proportion to deduct differs from the method used in the 1998 study. In 1998, the percentage of invest*ors* investing in family ventures was subtracted from the provincial totals. The proportion of invest*ments* is considerably smaller because there are many habitual angels who are making numerous investments with only some of them being to family start-ups and ventures. This represents a fine tuning of this method and an improvement over previous estimates.

D. Calculation of Estimates

Low Estimate or Perfectly Unrepresentative Scenario:
This following scenario assumes the very unlikely scenario that every angel in the entire sample was coincidentally interviewed amongst the 731 interviews conducted. This is extremely unlikely and represents a very conservative estimate – i.e. the absolutely lowest number remotely possible.

In this instance, Nova Scotia is estimated to have achieved $10.3 million in informal investment, New Brunswick had an annual rate of informal investment exceeding $14.3 million, Prince Edward Island had almost $2.6 million for the period, and Newfoundland had informal investments of almost $0.3 million. This represents a lowest possible total of informal investment activity estimated at approximately $27.5 million for one year for Atlantic Canada.

Perfectly Unrepresentative Estimate

	A Actual Sum of Investments for each Province ($)	**B** Weight Factor	**C** Minus Family Proportion (A*B*84.5%)	**D** Annualized ($) (C*12/10)
Nova Scotia	5,156,875	1.97	8,584,400	10,301,270
New Brunswick	9,951,140	1.42	11,940,373	14,328,447
Prince Edward	953,000	2.67	2,150,111	2,580,133
Newfoundland	117,350	2.51	248,893	298,672
Regional Total				27,508,534

The estimate above:

- Is understated because there are angels who returned surveys with data for provinces unknown;
- Is understated because angel contributions subsequent to start-up are not included;
- Is understated to the extent that angels invest in non-incorporated companies;
- Assumes conditions which are unrealistically conservative; and
- Is considered to be the lowest possible estimate.

High Estimate or Perfectly Representative Scenario:
The following estimates are for the case of the sample and responses perfectly representing the population. This scenario assumes that the sample was representative (the purpose of random sampling) and that the interviews conducted were representative of the sample including

those who were not surveyed. Given the significant efforts to design the research to be random and representative, this is a more likely scenario than the previous estimate. It represents a higher, more realistic, end of the estimate parameters.

Here, the estimates for informal investments in incorporations show Nova Scotian companies receiving $27.77 million, New Brunswick leading the list at $59.43 million in investment, Prince Edward Island at $9.43 million, and close to $1.53 million for Newfoundland. The total estimate for Atlantic Canada under the perfectly representative scenario is $98.16 million.

Perfectly Representative Estimate

	A Actual Sum of Investments for each Province ($)	**B** Weight Factor	**C** Minus Family Proportion (A*B*84.5%)	**D** Annualized ($) (C*12/10)
Nova Scotia	5,156,875	5.31	2,313,864	27,766,368
New Brunswick	9,951,140	5.89	49,527,321	59,432,786
Prince Edward Island	953,000	9.76	7,859,582	9,431,498
Newfoundland	117,350	12.84	1,273,224	1,527,869
Regional Total				98,158,533

The estimate above:

- Is understated because there are angels who returned surveys with data for provinces unknown;
- Is understated because angel contributions subsequent to start-up are not included;
- Is understated to the extent that angels invest in non-incorporated companies;
- Assumes conditions which are realistic given the survey design; and
- Is a more realistic estimate.

Atlantic Canada Informal Investment Activity

The range for angel activity in Atlantic Canada is between $27.5 million and $98.2 million. The amount of informal investment ongoing in Atlantic Canada is substantial and of significant interest. For those unfamiliar with the Region or angels, this range seems so large as to be rendered meaningless, but this is assuredly not the case. Because the low estimate represents very difficult assumptions, and the high estimate represents more reasonable conditions, it is likely that the real number is closer to $98 million than to $27 million. Furthermore, the low estimate is still larger than any previously reported results (prior to the 1998 study) which previously had always been simple speculation.

Discussion and Implications

There is a considerable amount of informal investment taking place in Atlantic Canada. Evidence presented here suggests that a realistic estimate of $98.2 million is invested annually in Atlantic Canada. A very conservative estimate of $27.5 million is the least amount of activity considered possible in the Region.

These estimates are based on the 16.1% of newly registered incorporations that report having some angel-type capital in their capital structure. As many as 15.5% percent of those investments are made to family, and 37.1% of novice and habitual informal investors are making family investments. These estimates seem plausible when compared to the responses given by individuals associated with new ventures.

Almost 15% of directors of newly registered incorporations, mostly entrepreneurs and investors, indicate they have made at least one informal investment.

These results were tabulated from a sample representing half of the population of 5723. A total of 731 interviews and surveys were completed.

Comfort should be derived from the similarity between the results from this study and the study completed in 1998. Using corporate reports, the 1998 study estimated informal investment in the Region to be $85 million. This adds considerable confidence to our use of the estimates. Rates of individual investment by directors of newly registered incorporated companies, rates of family investment, and rates of investment in newly registered incorporated companies were similar to rates reported two years previously for companies incorporated in the previous five- to six-year period.

Regarding methodologies, there is notable achievement in developing a research design that accommodates for potential age and success bias *and* produces a representative angel. Angel research has been plagued with sample problems since its inception. The population and sample members were surveyed less than 18 months from the registration of their incorporation, thereby acting on the age bias. The number of firms reporting to be still in business was in the order of 90 percent; this is much higher than the rate of firms still in business in the previous study (80.4%). It is apparent that more young firms can be interviewed using this method, thereby facilitating the collection of information about capital structure while they are still capable of being located.

The 1998 research uncovered a large number of informal venture capital investors in the general business population. That study interviewed 328 randomly sampled, recently incorporated companies in the Atlantic Region. Results showed an incidence of angels of close to 10 percent present in companies incorporated within the past five years. While many of the firms had already gone out of business, those companies which had angels had an average of 2.1 angels per firm. These results exclude persons investing in enterprises started by family members.

Based on that work, and assuming sample representativeness, straight line estimates suggested that approximately 700 companies are financed by more than 1500 angels operating in the region annually (Farrell 1999). This was much larger than other estimates that suggested that angels numbered in the dozens -- maybe even 100 -- but certainly not of a magnitude such as this (Mcdonald 1992; Riding, Cin, Duxbury, Haines and Safrata 1993; Wetzel 1983).

The data from the two studies is structured in such a way that further analysis may make it possible to answer a number of other interesting questions including:

- An analysis of industrial sectors and which are receiving the largest, or most frequent, finance contributions;
- An analysis of the distribution of investment amounts amongst habitual angels and novices including developing proof for the observation that novices invest sums much larger than habitual angels;
- The likelihood of family investments being substantially larger or smaller than investments by non-family members, and/or the possible success and survival rate of family-backed compared to non-family backed;
- A correlation analysis of the relationships between those who have not tried to sell their investments and those who have lost their investments to bankruptcy or closure.

This research project also facilitates the researcher's long range objectives to establish a database of informal investors to use for further research. There are few longitudinal databases in entrepreneurship and the apparent association between angels and entrepreneurs is extremely enlightening to our future understanding of entrepreneurs, business creation and entrepreneurial finance. Longitudinal interest requires large databases as data loss is a problem. This may be particularly difficult with entrepreneurs and their investors who may be inclined to be more short-lived than other species. Samples must be sufficiently large to accommodate data loss and still have a statistically viable sample as the years pass (Busenitz and Murphy, 1996). Compensating for data loss, therefore, tends to be expensive (Bygrave 1989).

Appendix 1 – Telephone Survey

Appendix 2 – Mail Survey

Appendix 3 - Detail of Personal Investments

Detail of First Personal Investments

	Frequency	Valid Percent	Cumulative Percent
$500	1	1.1	1.1
$1,000	1	1.1	2.3
$2,000	1	1.1	3.4
$2,500	2	2.3	5.7
$3,000	3	3.4	9.2
$4,000	4	4.6	13.8
$5,000	7	8.0	21.8
$7,000	2	2.3	24.1
$7,500	2	2.3	26.4
$8,000	1	1.1	27.6
$10,000	5	5.7	33.3
$11,600	1	1.1	34.5
$12,000	3	3.4	37.9
$15,000	2	2.3	40.2
$20,000	5	5.7	46.0
$21,000	1	1.1	47.1
$24,000	1	1.1	48.3
$25,000	8	9.2	57.5
$30,000	1	1.1	58.6
$40,000	4	4.6	63.2
$50,000	11	12.6	75.9
$60,000	1	1.1	77.0
$75,000	2	2.3	79.3
$90,000	1	1.1	80.5
$100,000	8	9.2	89.7
$125,000	1	1.1	90.8
$140,000	1	1.1	92.0
$150,000	2	2.3	94.3
$166,000	1	1.1	95.4
$300,000	1	1.1	96.6
$333,000	1	1.1	97.7
$350,000	1	1.1	98.9
$1,500,000	1	1.1	100.0
Total	87	100.0	

Detail of Second Personal Investments

	Frequency	Valid Percent	Cumulative Percent
$2,500	2	4.3	4.3
$3,000	1	2.1	6.4
$3,100	1	2.1	8.5
$3,500	1	2.1	10.6
$4,000	1	2.1	12.8
$5,000	4	8.5	21.3
$6,500	1	2.1	23.4
$10,000	5	10.6	34.0
$15,000	4	8.5	42.6
$20,000	6	12.8	55.3
$25,000	4	8.5	63.8
$30,000	2	4.3	68.1
$35,000	1	2.1	70.2
$40,000	1	2.1	72.3
$50,000	5	10.6	83.0
$75,000	2	4.3	87.2
$90,000	1	2.1	89.4
$100,000	1	2.1	91.5
$150,000	1	2.1	93.6
$155,000	1	2.1	95.7
$166,000	1	2.1	97.9
$200,000	1	2.1	100.0
Total	47	100.0	

Detail of Third Personal Investments

	Frequency	Valid Percent	Cumulative Percent
$2,000	1	3.8	3.8
$2,500	1	3.8	7.7
$4,000	1	3.8	11.5
$5,000	2	7.7	19.2
$10,000	4	15.4	34.6
$15,000	2	7.7	42.3
$20,000	2	7.7	50.0
$25,000	2	7.7	57.7
$30,000	1	3.8	61.5
$35,000	1	3.8	65.4
$50,000	4	15.4	80.8
$70,000	1	3.8	84.6
$90,000	1	3.8	88.5
$110,000	1	3.8	92.3
$166,000	1	3.8	96.2
$300,000	1	3.8	100.0
Total	26	100	

Detail of Fourth Personal Investments

	Frequency	Valid Percent	Cumulative Percent
$350	1	11.1	11.1
$3,000	1	11.1	22.2
$4,000	1	11.1	33.3
$5,000	1	11.1	44.4
$10,000	2	22.2	66.7
$15,000	1	11.1	77.8
$20,000	1	11.1	88.9
$50,000	1	11.1	100.0
Total	9	100.0	

Detail of Fifth Personal Investments

		Frequency	Valid Percent	Cumulative Percent
Valid	$350	1	20.0	20.0
	$4,000	1	20.0	40.0
	$10,000	1	20.0	60.0
	$20,000	1	20.0	80.0
	$65,000	1	20.0	100.0
	Total	5	100.0	

Appendix 4 - Detail of Corporate Investment Reports

Detail of Corporate Reports of First Investor Capital

	Frequency	Valid Percent	Cumulative Percent
$10	1	1.4	1.4
$25	1	1.4	2.8
$40	1	1.4	4.2
$50	1	1.4	5.6
$100	3	4.2	9.7
$250	1	1.4	11.1
$350	1	1.4	12.5
$500	2	2.8	15.3
$1,000	3	4.2	19.4
$2,000	4	5.6	25.0
$5,000	7	9.7	34.7
$5,800	1	1.4	36.1
$6,000	1	1.4	37.5
$8,800	1	1.4	38.9
$10,000	3	4.2	43.1
$12,000	1	1.4	44.4
$15,000	4	5.6	50.0
$20,000	5	6.9	56.9
$25,000	9	12.5	69.4
$30,000	4	5.6	75.0
$33,000	1	1.4	76.4
$35,000	2	2.8	79.2
$50,000	2	2.8	81.9
$60,000	1	1.4	83.3
$100,000	5	6.9	90.3
$150,000	2	2.8	93.1
$200,000	1	1.4	94.4
$300,000	1	1.4	95.8
$1,500,000	1	1.4	97.2
$1,600,000	1	1.4	98.6
$2,000,000	1	1.4	100.0
Total	72	100.0	

Detail of Corporate Reports of Second Investor Capital

	Frequency	Valid Percent	Cumulative Percent
$10	1	2.6	2.6
$25	1	2.6	5.1
$50	1	2.6	7.7
$100	2	5.1	12.8
$250	1	2.6	15.4
$500	1	2.6	17.9
$1,000	1	2.6	20.5
$2,000	4	10.3	30.8
$5,000	2	5.1	35.9
$8,000	1	2.6	38.5
$10,000	5	12.8	51.3
$15,000	1	2.6	53.8
$25,000	5	12.8	66.7
$30,000	2	5.1	71.8
$33,000	1	2.6	74.4
$35,000	1	2.6	76.9
$45,000	1	2.6	79.5
$50,000	2	5.1	84.6
$150,000	2	5.1	89.7
$200,000	1	2.6	92.3
$300,000	1	2.6	94.9
$400,000	1	2.6	97.4
$1,500,000	1	2.6	100.0
Total	39	100.0	

Detail of Corporate Reports of Third Investor Capital

	Frequency	Valid Percent	Cumulative Percent
$10	1	4.0	4.0
$25	1	4.0	8.0
$50	1	4.0	12.0
$100	1	4.0	16.0
$1,000	1	4.0	20.0
$2,000	2	8.0	28.0
$5,000	3	12.0	40.0
$10,000	4	16.0	56.0
$15,000	1	4.0	60.0
$25,000	3	12.0	72.0
$35,000	2	8.0	80.0
$50,000	2	8.0	88.0
$150,000	1	4.0	92.0
$200,000	1	4.0	96.0
$1,500,000	1	4.0	100.0
Total	25	100.0	

Detail of Corporate Reports of Fourth Investor Capital

	Frequency	Valid Percent	Cumulative Percent
$10	1	7.7	7.7
$2,000	1	7.7	15.4
$5,000	2	15.4	30.8
$10,000	1	7.7	38.5
$20,000	1	7.7	46.2
$25,000	1	7.7	53.8
$35,000	1	7.7	61.5
$50,000	3	23.1	84.6
$200,000	1	7.7	92.3
$1,500,000	1	7.7	100.0
Total	13	100.0	

Detail of Corporate Reports of Fifth Investor Capital

	Frequency	Valid Percent	Cumulative Percent
$10	1	12.5	12.5
$2,000	1	12.5	25.0
$5,000	2	25.0	50.0
$10,000	1	12.5	62.5
$15,000	1	12.5	75.0
$50,000	1	12.5	87.5
$1,500,000	1	12.5	100.0
Total	8	100.0	

Appendix 5 - Related Papers