

# Start-Up Capital: “Does Gender Matter?”

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**ABSTRACT.** Female and male entrepreneurs differ in the way they finance their businesses. This difference can be attributed to the type of business and the type of management and experience of the entrepreneur (indirect effect). Female start-ups may also experience specific barriers when trying to acquire start-up capital. These may be based upon discriminatory effects (direct effect). Whether gender has an impact on size and composition of start-up capital and in what way, is the subject of the present paper. The indirect effect is represented by the way women differ from men in terms of type of business and management and experience. The direct effect cannot be attributed to these differences and is called the gender effect. We use of a panel of 2000 Dutch starting entrepreneurs, of whom approximately 500 are female to test for these direct and indirect effects. The panel refers to the year 1994. We find that female entrepreneurs have a smaller amount of start-up capital, but that they do not differ significantly with respect to the type of capital. On average the proportion of equity and debt capital (bank loans) in the businesses of female entrepreneurs is the same as in those of their male counterparts.

## 1. Introduction

Developed countries are undergoing a fundamental shift away from a managed economy and toward an entrepreneurial economy (Audretsch and Thurik, 2001). Economic activity is moving from large, incumbent firms toward small, new ones. There is a growing literature about how and why the developed countries are undergoing this fundamental shift (Brock and Evans, 1989; Admiraal, 1996; Audretsch and Thurik, 2000).

The speed of this industrial transformation process has varied considerably across countries and industries (Carree et al., 2001; Thurik, 1999).

Increasingly, evidence becomes available that this transformation has to be promoted (Gavron et al., 1998). Empirical evidence shows that those countries and industries that are lagging behind in this process experience lower growth and productivity levels and higher levels of unemployment (Thurik, 1996; Carree and Thurik, 1999; Audretsch and Thurik, 2000).

Entrepreneurship seems to be a driving force in economic development. However, entrepreneurship itself cannot be a determinant of growth. It is an ill-defined, at best multidimensional concept. Understanding its role requires the decomposition of the concept (Wennekers and Thurik, 1999). Dimensions of entrepreneurship are smallness, competition, deregulation, innovation, co-operation, variation, turbulence and motivation (Audretsch and Thurik, 1999, 2001). Deregulation and variation are essential dimensions. Low barriers should enable a broad variety of entrepreneurs to enter the market. Diversity in terms of products, processes, forms of organisation and targeted markets should lead to a selection process where customers are at liberty to choose according to their preferences.

This process where entrepreneurs seek for better products, processes, forms of organisation and markets can only thrive under enabling rather than constraining public policies (Audretsch and Thurik, 2001). Therefore, it is important that all potential entrepreneurs are able to play a role in securing maximum diversity and in taking maximum advantage of free competition. No group of potential entrepreneurs should experience any barrier for starting or developing a business. From this perspective it is worth noting that female entrepreneurs are still underrepresented.

The desire of women to be economically independent leads to their increasing participation in the labour market and an increasing number of

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female entrepreneurs (Koper, 1993). Moreover, contextual factors, like social structures, family and organized life influence the access women have to entrepreneurial opportunities (Brush and Hisrich, 1999).

In spite of the growing number of female entrepreneurs, the share of female entrepreneurs is still disproportionately low when compared to their participation rate. This share accounts for approximately thirty percent of the total number of entrepreneurs in the Western world (OECD, 1998) whereas more than forty percent of employees is female. Considering the backward position of female entrepreneurs and the need for diversity, it is important to pay attention to specific barriers for female entrepreneurs, like the combination of social and economic responsibilities and the consequences of these specific barriers for female entrepreneurship. Furthermore, it is important to investigate whether the impact of general barriers, like the acquisition of financial resources, differs between female and male entrepreneurs.<sup>1</sup>

Entrepreneurs may meet several obstacles when starting a business like unexpected or fierce competition, delayed customer payments and limited access to financial resources. Indeed, acquiring financial capital is often referred to as an important problem for entrepreneurs (Hughes and Storey, 1994; EIM, 1998; OECD, 1998). Entrepreneurs starting up a business usually have little equity to finance their business with, while debt capital is difficult to acquire. Banks are often reluctant to lend money to small businesses because of low expected profit margins, asymmetrical information and high risks (EIM, 1998). Most starting entrepreneurs use their own money for financing their business. However, when the amount of financial capital needed is higher, more external capital is needed. External capital is an important source also for small enterprises (OECD, 1998). Bank loans in particular are much relied upon. This is also put forward by Riding and Swift stating that "It is well known that small businesses rely heavily on banks for both short- and long-term debt capital" (Riding and Swift, 1990, p. 329). Other important sources of external finance are family members, suppliers and other business partners (Van Uxem and Bais, 1996). These sources will not be explicitly investigated in the present study.

Considerable sums of public money are spent to diminish alleged debt gaps, particularly for small expanding firms and start-ups. Subsidised loans and loan guarantees are the most common instruments of government assistance programs to support small and new businesses. The idea is that capital markets do not provide adequate funds for small and new businesses. There are differing views whether the resulting debt gaps influences the probability of survival. In Cressy's analysis (Cressy, 1996) this is not the case whereas in that of Evans and Jovanovic (1989) and Bates (1990) it is. In the present paper we focus on the specific situation of female start-ups.

In the literature much attention is paid to financial problems of female entrepreneurs. This may have to do with the size of their businesses. It is often reported that the start-up size of businesses run by women is smaller than that of businesses run by men (Carter and Rosa, 1998; OECD, 1998; Stigter, 1999). A variety of reasons is brought forward for the smallness of the enterprises run by women. First, female entrepreneurs usually have a smaller amount of equity capital available because of lower salary payments in earlier jobs, discontinuities of earlier jobs or because family property is usually registered in the name of the husband. Second, the amount of start-up capital may also be related to the sector where an entrepreneur operates (ENSR, 1996). Women often start in sectors with low capital requirements, like the service sector. Banks are often reluctant to lend money to these sectors characterised by a high mobility. Finally, women are more likely to be risk averse than men (ENSR, 1996). This can also be an explanation for the smaller size of the businesses of female entrepreneurs.

Apart from the amount of start-up capital, female and male entrepreneurs may differ with respect to the capital structure of their business. Clearly, a distinction can be made between equity and debt capital. Finance theorists have argued about whether there exists an optimal capital structure for small firms in terms of both debt and equity (Hughes and Storey, 1994). Market imperfections, like taxes, bankruptcy costs, agency costs (monitoring) and the signalling effect (information asymmetry leading to information costs) have been brought forward as determinants of the firm's

optimal capital structure (Van der Wijst and Thurik, 1996). In practice, the ensemble of market imperfections leads to a trade-off between equity and debt financing.

In the neo-classical tradition, the trade-off theory describes the optimum in terms of a trade-off between tax advantages of debt and the increase in expected bankruptcy costs. The agency theory gives an alternative explanation, independent of taxes and bankruptcy costs, which is based on minimising agency costs. Myers' Pecking Order Theory uses elements from both the trade-off theory and the agency theory. According to the Myers' Pecking Order Hypothesis the financing of projects is undertaken first by using internal resources, then debt and equity as a final resort. Holmes and Kent have developed a "Restricted Pecking Order Theory" (Holmes and Kent, 1991). This theory can be applied to small firms by assuming that small firms usually are not able to issue shares and owner-managers want to be in control of their business. As a consequence, small businesses are unlikely to use (external) equity. Furthermore, this theory is applicable only in case entrepreneurs have a genuine choice between equity and debt capital in the sense that they have personal equity available and relevant access to credit. The existence of an optimal capital structure is no longer debated in the theory of finance. The remaining issue is essentially an empirical one, i.e. whether, or under which set of circumstances – including the size of the firm – the various determinants are of sufficient economic importance.

In reality, a wide variation in the patterns of finance across small firms is to be expected, due to differences in the life cycle position of firms, size and strategies towards independence and growth (Hughes and Storey, 1994). In fact, the seemingly irrational behaviour of those running small businesses may increase this variation. D'Amboise and Muldowney even state that "The goals of the small business person are vague, inadequately defined, pragmatic and short-ranged" (D'Amboise and Muldowney, 1988, p. 231).

In the literature there is little consensus about the differences in the composition of financial capital between female and male entrepreneurs. Some state that female and male entrepreneurs do not differ with respect to the amount of their

own resources used (Rosa et al., 1994). Others conclude that female entrepreneurs make more use of their own resources and less of debt financing with the exception of money borrowed from family and friends (Carter and Rosa, 1998; Honig-Haftel and Martin, 1986; Neider, 1987; Hisrich and Brush, 1987; Olm et al., 1988; Johnson and Storey, 1993). Moreover, men may have better access to formal sources of debt financing, like banks and private financial institutions (OECD, 1998) and informal financial networks (Olm et al., 1988; Riding and Swift, 1990). In the present study our focus will be on the proportion of bank loans because of the relative importance of bank loans within the total amount of debt finance used by small businesses.

It can be concluded from the literature that female and male entrepreneurs differ with respect to the way in which they finance their businesses. However, there is ambiguity about the determinants and the direction of these differences. To investigate the differences between female and male entrepreneurs and their causes the present paper deals with the following question: "*What is the impact of gender on financial capital?*" We will discriminate between the *amount* of capital and its *composition*. The amount of financial capital refers to total investment in the start-up venture. With respect to the composition of capital a distinction is made between equity and debt. In this paper we will concentrate on internal equity, which is equity provided by the entrepreneur, as we assume that starting entrepreneurs, who are the subject of this study, are hardly in a position to acquire external equity through stock market quotation. Moreover, we also focus on a particular type of debt, namely bank loans. As can be deduced from the literature bank loans are an important source of debt capital for starting entrepreneurs. One has to bear in mind that internal equity and bank loans together do not add up to the total amount of financial capital used to start a venture. Other types of finance include external equity (although this is not very likely) and debt capital provided for by suppliers, other business partners and family and friends (F-capital).

Moreover, the impact of gender on financial capital can be *direct* or *indirect*. The indirect effect refers to differences between male and female entrepreneurs with respect to the type of business

and their type of management and experience. Below, this is referred to as “*the female profile*”. The direct effect cannot be attributed to these differences and can be called a *gender effect*, i.e. female and male entrepreneurs with the same characteristics differ with respect to the way in which they finance their businesses. Both effects are depicted in Figure 1. To our knowledge, this paper represents the first discrimination between direct and indirect effects of gender on the amount and composition of financial capital.

## 2. Differences between male and female entrepreneurs

### 2.1. Introduction

“No two entrepreneurs are the same”. Entrepreneurs differ with respect to the sector they work in, their background and experience, the size of their enterprises, etc. This applies to female as well as to male entrepreneurs. It is interesting to investigate in what way female and male entrepreneurs differ. For instance, they may differ because their societal opportunities are unevenly distributed or as a result of a different upbringing.<sup>2</sup> The present chapter focuses on differences between female and male entrepreneurs with respect to their experience and education, the time they spend on running their business, networking, sector, firm size and entrepreneurial characteristics. Differences between male and female entrepreneurs with respect to these factors will be used to construct the “female profile”. Of course there will be other factors that can be used making up

the female profile. However, this paper deals only with those factors that are most likely to have impact on the amount and composition of financial capital. Moreover, the availability of these factors in the data set is also an important reason for the selection of factors. The present chapter deals with differences between male and female entrepreneurs with respect to these factors. In the next chapter differences with respect to these factors are captured in terms of a set of hypotheses.

### 2.2. Experience and education

Male and female entrepreneurs differ with respect to experience and education (Brush, 1992). The *level* of education of female and male entrepreneurs is roughly identical, whereas the *type* of education differs (Van Uxem and Bais, 1996; Birley, Moss and Saunders, 1987). Male entrepreneurs are more likely to have completed a technical schooling, while the education of female entrepreneurs usually is more economical, administrative or commercial of nature. Moreover, female entrepreneurs usually are more specialised in personal services (Van Uxem and Bais, 1996).

The *length* and *type* of experience of women and men in the labour market vary considerably. Men are more likely to have been employed prior to the start-up of their business and tend to have more working experience (Van Uxem and Bais, 1996; Welsch and Young, 1982). Differences in type of experience are related to differences in type of education. Female entrepreneurs are more likely to be experienced in fields like teaching,

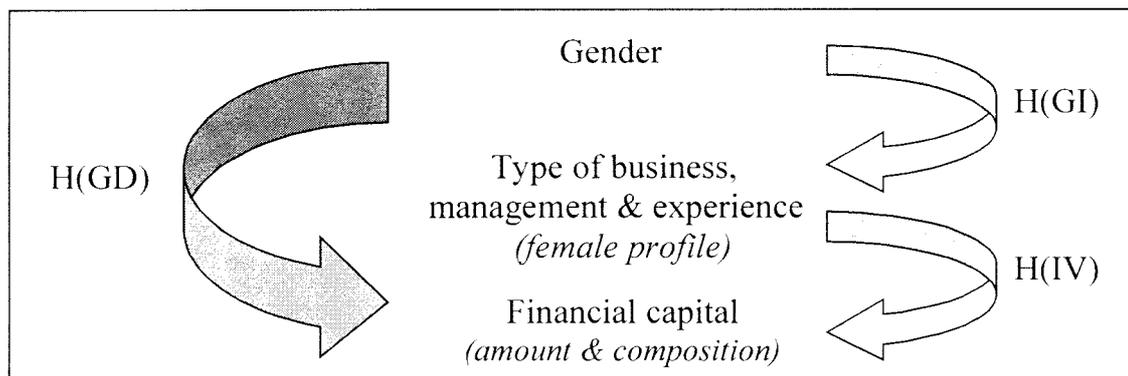


Figure 1. Direct and indirect impact of gender on business finance and hypotheses.

sales, administration and personal services (Hisrich and Brush, 1983; Scott, 1986; Neider, 1987; Welsch and Young, 1982) as opposed to management, sciences and technology (Watkins and Watkins, 1983; Stevenson, 1986). Men are also more likely to have earlier entrepreneurial experience (Fischer et al., 1993, Kalleberg and Leicht, 1991). Additionally, they have more industry experience and experience with human resource management, financial management and the application of modern technologies (Fischer et al. 1993, Van Uxem and Bais, 1996).

### 2.3. *Part-time entrepreneurship*

Male entrepreneurs work more often on a full-time basis when compared to their female counterparts (OECD, 1998). More than half of the enterprising women carry out other activities besides running their own business, like being employed or taking care of their family (Stigter, 1999). Of those female entrepreneurs who work part-time in their business, approximately half is part-time entrepreneur due to household activities, whereas only a small percentage of the male part-time entrepreneurs have similar obligations (Van Uxem en Bais, 1996). Male entrepreneurs work more often on a part-time basis in their own business as a result of having another enterprise or having other employment (Stigter, 1999). Female entrepreneurs have “double assignments”; i.e. they are running an enterprise and a household at the same time. These “double assignments” may limit the time female entrepreneurs spend on their businesses (Loscocco, 1991; Tigges and Green, 1992).

### 2.4. *Networking*

Only recently female entrepreneurs started acknowledging the importance of networking activities (Moore and Buttner, 1997). There is a general feeling that in the past women wanted to prove they could “do it on their own”. There are several ways in which networking activities can be measured (Aldrich et al., 1987; Birley et al., 1991). Indicators proposed are (1) the tendency to network, (2) the size of the network (number of people), (3) the composition of the network and (4) the time spend on networking.

The tendency to network does not differ sig-

nificantly between female and male entrepreneurs. Women understand the importance of using a network (Hansen and Allen, 1992). The size of the networks used by male is similar to that used by female entrepreneurs (Cromie and Birley, 1990). However, in a discussion on the differences in network compositions and size, Brush refers to Aldrich (1989) who states that women usually engage in smaller networks consisting primarily of women (Brush, 1992). Men spend more time developing and maintaining networks (Cromie and Birley, 1990). Household activities of women (“double assignments”) and other social obligations may lead to more isolation than men usually experience (Moore and Buttner, 1997). This implies that women spend less time on networking. Moreover, the members of both formal and informal networks are not always open to accepting women.

### 2.5. *Sector*

Male and female entrepreneurs work in different sectors. Female entrepreneurs are overrepresented in the retail- and service sectors, in particular in personal services (OECD, 1998). Male entrepreneurs are overrepresented in manufacturing, wholesale trade and financial services (Van Uxem and Bais, 1996). Within sectors, female entrepreneurs are often found in supporting jobs or occupations. The businesses of female entrepreneurs can be characterised as “supporting services”, like secretarial, translation and processing activities (Van Uxem and Bais, 1996).

### 2.6. *Size*

By and large, female entrepreneurs have smaller businesses than men. The smallness of female entrepreneurial activity can be related to the sector of their business, e.g. sectors with low barriers to entry, high competition and low profit margins, and the relatively high proportion of part-timers among female entrepreneurs. Their smallness becomes manifest in several ways, like low returns, a small workforce (if any) and a small amount of start-up capital (Van Uxem and Bais, 1996). The main business objective of male entrepreneurs is growth so that they can reap the fruits of increasing returns. However, growth is

merely a secondary objective for female entrepreneurs (Van Uxem and Bais, 1996). This can be related to the situation where their business is not the only means of earning a living. Most female entrepreneurs have an earning partner.

### 2.7. Entrepreneurial characteristics

Men and women have different values. This is concluded in a study by Sexton and Bowman-Upton (1990) about the extent to which men and women possess entrepreneurial characteristics, like perseverance, autonomy, propensity to take risks and readiness to change. Although the differences with respect to entrepreneurial characteristics are rather small, it is reported that men put a higher value on perseverance and risk and a lower value on autonomy and change than women do. Moreover, women value their own entrepreneurial characteristics lower than men (Van Uxem and Bais, 1996). This is the case especially with regard to taking risk, industry knowledge and technological knowledge. The lack of confidence of female entrepreneurs in their own entrepreneurial capabilities may be attributed to a relatively negative self-perception. Social and cultural factors play an important role in maintaining this negative self-image of women, like the subordinate role of women in large parts of the world and internalised gender specific images and values (Hofstede, 1991).

## 3. Hypotheses

Hypotheses can be formulated relating differences between male and female entrepreneurs to the amount and composition of financial capital. The manner in which these hypotheses are formulated is displayed in Figure 1. Hypotheses of type H (IV) refer to the impact of the intermediary variables on financial capital in terms of differences between male and female entrepreneurs. Hypotheses of type H (GI) refer to the relation between gender and the intermediary variables. Hypotheses of type H (GI) and H (IV) together make up the indirect effect of gender on financial capital, while hypotheses of type H (GD) reflect the direct effect of gender on financial capital.

Hypotheses have been formulated regarding the effect of gender on the total amount of financial

capital, the proportion of equity, which in this paper refers to internal equity, and the proportion of bank loans. One has to bear in mind that internal equity and bank loans do not necessarily add up to the total amount of financial capital. This indicates that equity and bank loans are not entirely complementary and there is another effect of gender on the residual category of financial capital, including for instance F-capital.

The hypotheses formulated below are coded using abbreviations. These abbreviations are clarified in Table I.

### *Financial management experience and financial capital*

Female entrepreneurs are more likely to have less experience with financial management than male entrepreneurs because women usually have less opportunity to accumulate management experience due to the vertical segregation of the labour market. Prospective entrepreneurs with little experience of financial management maybe assumed to be unaware of the way in which they can acquire financial capital and of whom they can contact for help and advice. Entrepreneurs with financial management experience are assumed to be able to use their earlier experience to convince credit managers of banks to invest in their venture. This might also be valid when attempting to convince business angels and venture capitalists. Moreover, tax shields can be an incentive to use bank loans for financing the business. Entrepreneurs with financial experience may be

TABLE I  
Abbreviations used

Abbreviation	Description
IV	Intermediary variables
PT	Part-time entrepreneurship
S	Services
FM	Financial management experience
RA	Risk attitude
N	Networking
GI	Indirect effect of gender
GD	Direct effect of gender
A	Amount of financial capital
E	Proportion of equity
B	Proportion of bank loans

better informed about these tax incentives. Financial management experience may also involve knowledge about the importance of free cash flows for entrepreneurs. Constraints on financial resources may hinder a flexible response on market fluctuations. Interest payments on bank loans corrode free cash flows. In that case entrepreneurs will be inclined to use personal resources for financing their business. Finally, financial management might be associated with a sufficient amount of personal savings based upon success in earlier jobs and investments. The following hypotheses are formulated:<sup>3</sup>

- H (GI=FM) Female entrepreneurs have less experience with financial management than their male counterparts
- H (IV=FM, A) Experience with financial management leads to a higher amount of financial capital
- H (IV=FM, E) Experience with financial management leads to a higher proportion of equity in the total amount of financial capital
- H (IV=FM, B) Experience with financial management leads to a higher proportion of bank loans in the total amount of financial capital

#### *Part-time entrepreneurship and financial capital*

Female entrepreneurs are more likely to work on a part-time basis than male entrepreneurs. Women often try to combine work- and household responsibilities. Part-time entrepreneurship usually goes together with a smaller business involving relatively few investments and requiring a small amount of financial capital. Part-timers are supposed to bring in a high proportion of equity, because they are able to, having resources out of their other activities, and they are willing to, having their risks spread among various activities. Additionally, banks may have a limited inclination to support part-timers. Part-time entrepreneurship can have a signalling effect. By working part-time, the entrepreneur gives a signal that the business is not important or successful enough to merit all the entrepreneurs resources. This means that outside parties, like banks, can be expected to be

more cautious when deciding whether or not to invest in the venture. This leads to the following hypotheses:

- H (GI=PT) Female entrepreneurs work on a part-time basis more often than their male counterparts
- H (IV=PT, A) Part-time entrepreneurship leads to a smaller amount of financial capital
- H (IV=PT, E) Part-time entrepreneurship leads to a higher proportion of equity in the total amount of financial capital
- H (IV=PT, B) Part-time entrepreneurship leads to a smaller proportion of bank loans in the total amount of financial capital

#### *Networking and financial capital*

Having contact with other entrepreneurs can lead to the exchange of relevant information. Female entrepreneurs spend less time networking than their male counterparts, which may deprive them of important information concerning the acquisition of finance. Network activities are assumed to improve the entrepreneur's view on his or her goals and future activities and hence his or her capital requirements. Network activities are assumed to lower barriers when acquiring bank loans. We have no a priori hypothesis about the influence of networking on the proportion of equity in the total amount of financial capital. The following hypotheses are formulated:

- H (GI=N) Female entrepreneurs more often spend less time networking than their male counterparts
- H (IV=N, A) Networking leads to a higher amount of financial capital
- H (IV=N, E) No a priori hypothesis
- H (IV=N, B) Networking leads to a higher proportion of bank loans in the total amount of financial capital

#### *Sector and financial capital*

Female entrepreneurs are more likely to work in the service sector. This sector is characterised by relatively small initial investments requiring a

small amount of financial capital. The service sector is generally associated with low investments in tangible assets, like machines and buildings and high investments in intangibles, like human capital and customer relations. In case of bankruptcy, the former have a high value in second hand markets, the latter a low value, if any. Investment in the service sector is less attractive for banks. Therefore the service sector is associated with a low proportion of debt (bank loans). We have no a priori hypothesis about the influence of the service sector on the proportion of equity in the total amount of financial capital. The following hypotheses are formulated:

- H (GI=S) Female entrepreneurs work in the service sector more often than their male counterparts
- H (IV=S, A) Entrepreneurial activities in the service sector require a smaller amount of financial capital
- H (IV=S, E) No a priori hypothesis
- H (IV=S, B) Entrepreneurial activities in the service sector lead to a smaller proportion of bank loans in the total amount of financial capital.

#### *Size and financial capital*

Enterprises of female entrepreneurs generally are smaller than those of male entrepreneurs. A smaller amount of financial start-up capital is assumed to make equity financing more likely compared to debt financing. An analysis of the financial structure of small businesses indicates that the bulk of their funds are personal savings of the owner-manager and retained profits from business operations (Kotey, 1999). This corresponds with the views of Weston and Brigham who state that small firms tend to start out using only owners' resources (Weston and Brigham, 1981). Several reasons can be brought forward for the reliance of owners of small businesses on personal resources for the financing of their business. First, the availability of equity is not likely to vary considerably between entrepreneurs. Generally, as the scale of the business increases, the amount of personal resources will not suffice and the use of bank loans and other types of external finance will have to be taken into consideration. Thus, equity decreases with size,

because banks require some sort of buffer capital and this buffer decreases proportionally as size increases. Second, autonomy is an important motive for starting up a business (Van Uxem and Bais, 1996). Entrepreneurs are reluctant to loose control of the business in an early stage by pursuing a bank loan. However, as the business starts to grow the need for debt capital will increase, eventually leading to the acquisition of external capital and a loss of control. A third reason is related to Myers' Pecking Order Theory. According to this theory the financing of projects is undertaken first by using internal resources, then debt and finally external equity (stock market). The Restricted Pecking Order Theory by Holmes and Kent can be applied to small businesses assuming that small businesses are rarely in a position to issue shares to acquire external capital. In case of start-ups there is no basis for a stock market quotation. It has also been noted that entrepreneurs starting a business set great value on being in control of their business, thereby partly minimising their need of external financial capital (debt as well as equity). Moreover, internal resources, in the shape of retained earnings, play an important role in the Pecking Order Theory. However, these funds are by definition not available for starting firms. Accordingly, starting entrepreneurs will have to finance their business with other internal resources: personal resources, i.e. internal equity. Finally, there is a supply side reason for the capital structure of small firms. Banks are reluctant to lend to starting small businesses, because they do not possess audited financial statements, they do not have many business assets that can be easily evaluated or used as collateral and have little repayment history or records of profitability (Berger and Udell, 1998). Moreover, the fixed cost element of transactions puts small businesses at a disadvantage in raising external finance (Chittenden et al., 1996). The impact of the leverage effect on small businesses is not clear and no evidence has been found in the literature. The following hypotheses are formulated:

- H (GI=A) Female entrepreneurs generally have smaller businesses than their male counterparts
- H (IV=A, E) A small amount of financial

capital leads to a higher proportion of equity in the total amount of financial capital

- H (IV=A, B) A small amount of financial capital leads to a smaller proportion of bank loans in the total amount of financial capital

#### *Risk attitude and financial capital*

Women are assumed to be more risk averse than men and risk aversion implies a reliance on equity instead of bank loans. This is confirmed by Kotey and Meredith who state that risk aversion of entrepreneurs leads to dependency on personal equity as a source of finance (Kotey and Meredith, 1997) and Carland who claims that a higher risk taking propensity and a better understanding of the risks inherent in investments leads to the use of more debt finance (Carland et al., 1989). Debt financing increases the financial risk of the firm because interest payments on debt are to be paid when due, irrespective of the firms' profitability or liquidity levels. Moreover, debt financing involves the risks of fluctuating interest rates, redemption and liability. The following hypotheses can be derived:

- H (GI=RA) Female entrepreneurs have a lower propensity to take risks than their male counterparts
- H (IV=RA, A) The propensity to take risks leads to a higher amount of financial capital
- H (IV=RA, E) The propensity to take risks leads to a smaller proportion of equity in the total amount of financial capital
- H (IV=RA, B) The propensity to take risks leads to a higher proportion of bank loans in the total amount of financial capital

#### *Direct effect*

The direct effect of gender on financial capital cannot be explained using intermediary variables. However it can be interpreted in the following way. Female entrepreneurs may have less confidence in their entrepreneurial capabilities than male entrepreneurs, leading to the start-up of smaller enterprises. Moreover, it is possible that female entrepreneurs have other ambitions than

male entrepreneurs or set more value on "quality" instead of "quantity". They serve a niche market or focus on customer satisfaction rather than strive after growth of their business through diversification. A possible supply side reason for the smaller firms of women is the conservative attitude of male businessmen and entrepreneurs or, more important, that of bankers.

Female entrepreneurs may have less personal financial resources than male entrepreneurs. For instance this is due to discontinuity of past labour relations, leading to a smaller proportion of equity within the total amount of financial capital. Finally, female entrepreneurs may experience difficulties acquiring bank loans for instance due to discrimination based on images of women not being adequately equipped for entrepreneurship. The remaining hypotheses are:

- H (GD, A) Gender has a negative direct impact on the amount of financial capital
- H (GD, E) Gender has a negative direct impact on the proportion of equity within the total amount of financial capital
- H (GD, B) Gender has a negative direct impact on the proportion of bank loans within the total amount of financial capital

## **4. Empirical analyses**

### *4.1. Data source*

To investigate the impact of gender on financial capital and to test the hypotheses dealt with in the previous chapter, use is made of a panel of 2,000 Dutch firms that have started their business in the first quarter of 1994. Approximately 1,500 are male and 500 are female. This is a reasonable representation of the average distribution of female and male entrepreneurs in most OECD-countries (OECD, 1998). The panel is set up and implemented by EIM Business and Policy Research in Zoetermeer. The data consist of questions concerning the process of starting-up, the period prior to the start-up phase and the shape of the prospective business. The focus is on the background of the entrepreneur (education and

experience), the motives for starting up a firm, financial data and investments, management bottlenecks and expectations. The panel is set up in the year 1994. For the present analyses the results are used of the first questionnaires sent out in 1994. Follow-up questionnaires were distributed to map developments in the years after start-up.<sup>4</sup>

The national character of the data set limits the extent to which the conclusions can be generalized

since the financial support of start-ups, the operating procedures of financial institutions and other institutional barriers to entry may differ between countries.

#### 4.2. Description of variables

From the data source described in the previous paragraph, the following variables are selected for the empirical analyses. The dependent variables

TABLE II  
Description of variables

	Description	Variable name	Measurement	Average	Std. deviation
1	Amount of start-up capital	Start-up capital (A)	Observations are given one out of 7 different amounts in thousands of Dutch guilders <sup>a</sup>	48.51	93.36
2	Proportion of equity in total amount of start-up capital	Proportion equity (E)	Observations are ordered according to classes 1 to 12 <sup>b</sup>	8.40	4.38
3	Proportion of bank loans in total amount of start-up capital	Proportion bank loans (B)	Observations are ordered according to classes 1 to 12 <sup>b</sup>	3.62	3.68
4	Whether the entrepreneur works in the service sector or in non-services	Services (S)	Dummy variable: services = 1 and elsewhere = 0	Percentage (dummy variable = 1) = 25	
5	The extent to which an entrepreneur is willing to take risks	Risk attitude (RA)	Observations are ordered according to classes 1 (very weak) to 5 (very strong)	3.81	0.79
6	Whether the entrepreneur is engaged in other activities besides the own business	Part-time (PT) <sup>c</sup>	Dummy variable: part-time = 1 and full-time = 0	Percentage (dummy variable = 1) = 50	
7	The extent to which an entrepreneur has contact with other entrepreneurs	Networking (N)	Observations are ordered according to classes 1 (never), 2 (sometimes) and 3 (regularly)	1.57	0.71
8	The extent to which an entrepreneur had previous experience with financial management	Financial management (FM)	Observations are ordered according to classes 1 (no experience) to 4 (much experience)	2.06	0.98
9	Whether the entrepreneur is male or female	Gender	Dummy variable: female = 1 and male = 0	Percentage (dummy variable = 1) = 27	

<sup>a</sup> The following amounts in thousands of Dutch guilders have been selected: (1) 5, (2) 17.5, (3) 37.5, (4) 75, (5) 175, (6) 375 and (7) 500.

<sup>b</sup> Classes 1 to 12 refer to the following percentages: (1) 0%, (2) 1–10%, (3) 11–20% . . . (11) 91 < 100% and (12) 100%.

<sup>c</sup> In the present empirical analyses part-time entrepreneurship is defined by performing other activities besides running a business. This is in contradistinction to many other studies where usually someone is considered to be a part-time entrepreneur when working less than 40 hours per week. This is a time-based definition. As a rule, entrepreneurs who engage in other activities besides entrepreneurship work less than 40 hours a week. However, exceptions have to be taken into account.

are the amount of start-up capital, the proportion of equity and the proportion of bank loans in the total amount of start-up capital. The amount of financial capital is both a dependent variable and an explanatory variable when explaining the composition of financial capital. The description and measurement of the variables is presented in Table II.

The correlation between the explanatory variables is presented in Table III, as a test of multicollinear distortions. Generally, the correlation coefficients are low. The highest absolute value of the Pearson correlation coefficients of Table III is that of the start-up capital and part-time entrepreneurship, being 0.20. One may conclude that, although most values are significantly differing from zero, this is not relevant considering their small values. Furthermore, experiments omitting variables in a pseudo stepwise fashion did not reveal any suspicion of multicollinear distortions.

#### 4.3. Analyses

The hypotheses formulated in the previous section are tested using multiple regression analyses to determine the direct and indirect impact of gender on the amount and composition of start-up capital. Single bilateral correlation is used to test whether there is a connection between gender and the other explanatory variables of start-up capital.

In Table IV the correlation between gender and the intermediary variables is presented. All hypotheses of type H (GI) are supported at a 5% level of significance. The following profile can

be constructed of the female entrepreneur in comparison with the male entrepreneur: female entrepreneurs are more likely to work part-time, more likely to work in the service sector, they are more averse to risk, have less experience with financial management, spend less time on networking and start smaller businesses.

Regression analysis is used to determine the direct and indirect impact of gender on the total amount of start-up capital and the proportion of equity and bank loans in the total amount of start-up capital. The results are presented in Tables V, VI and VII, respectively. A distinction is made between taking into account all explanatory variables, the intermediary variables (the female profile) or just the gender dummy variable.  $\beta$ 's refer to the coefficients of the explanatory variables. The number of observations is smaller in case the intermediary variables are taken into account because they are not always available.

From the intermediary variables column in Table V we conclude that the amount of start-up capital is lower if firms are operating in the service sector, if entrepreneurs are risk averse, if they operate on a part-time basis, if they do not indulge in networking and if they have no earlier experience with financial management. All these effects are significant at the 5% level. Hence, this implies that all hypotheses are supported. From the gender column we conclude that women start their business with a smaller amount of start-up capital than men. From the all variables column we conclude that in a joint analysis the intermediary variables effect and the gender effect remain present. This implies that a negative effect of

TABLE III  
Pearson correlation between explanatory variables

	Start-up capital	Services	Risk attitude	Part-time	Networking	Financial management	Gender
Start-up capital	1.00	-0.12**	0.08**	-0.20**	0.09**	0.16**	-0.13**
Services	-0.12**	1.00	-0.03	0.07**	-0.07**	-0.11**	0.14**
Risk attitude	0.08**	-0.03	1.00	-0.06*	0.06*	0.15**	-0.09**
Part-time	-0.20**	0.07**	-0.06*	1.00	0.01	-0.03	0.08**
Networking	0.09**	-0.07**	0.06*	0.01	1.00	0.13**	-0.10**
Financial management	-0.16**	-0.11**	0.15**	-0.03	0.13**	1.00	-0.15**
Gender	-0.13**	0.14**	-0.09**	0.08**	-0.10**	-0.15**	1.00

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

TABLE IV  
Correlation between gender and the intermediary variables

Intermediary variables	Direction of correlation	Hypothesis
Services	Positive	H (GI=S)
Risk attitude	Negative	H (GI=RA)
Part-time	Positive	H (GI=PT)
Networking	Negative	H (GI=N)
Financial management	Negative	H (GI=FM)
Start-up capital	Negative	H (GI=A)

gender on the amount of start-up capital can be separated in a direct and indirect effect. The direct effect can be found in the all variables column, whereas the indirect effect can be inferred from the results of the correlation between gender and the intermediary variables (Table IV) and the effect of the intermediary variables on the amount of start-up capital. The indirect effect can also be associated with the difference between the  $\beta$ 's of the total and the direct effect of gender on the amount of start-up capital. The indirect effect can be explained using the intermediary variables, i.e. the female profile. The direct effect cannot be explained by the female profile. The following interpretation can be given. Female entrepreneurs may have a lack of confidence in their entrepreneurial capabilities when compared to male entrepreneurs. Moreover, women may have less equity than men or they fear that they will meet with discrimination when they apply for a bank loan. Below, the composition of the start-up capital will be discussed.

The regression results of the analysis on the

proportion of equity are presented in Table VI. From the intermediary variables column we conclude that the proportion of equity in the total amount of start-up capital is higher if entrepreneurs are risk averse, if they work on a part-time basis, if they have networking contacts with other entrepreneurs and if they have a smaller amount of start-up capital. The only effect not significant at the 5% level is that of networking for which no a priori hypothesis was formulated. No a priori hypothesis has been formulated with respect to the effect of services on the proportion of equity and no significant effect has been found in the analysis. From the gender column we conclude that gender has no significant effect on the proportion of equity. From the all variables column it can be concluded that in a joint analysis the intermediary effects remain present and a gender effect appears. The total effect of gender on the proportion of equity, which is not significant, can be separated in a direct and indirect effect. The direct effect can be found in the all variables column, whereas the indirect effect can be inferred from the results of the correlation between gender and the intermediary variables (Table IV) and the effect of the intermediary variables on the proportion of equity. The indirect effect can also be associated with the difference between the  $\beta$ 's of the total and the direct effect of gender on the proportion of equity. Neglecting the intermediary variables one is inclined to conclude that gender has no influence on the proportion of equity. However, when the female profile is taken into account, it can be concluded that female entrepreneurs are less able to acquire equity than their

TABLE V  
 $\beta$ - and  $t$ -values in a linear regression analysis on the total amount of start-up capital

	All variables		Intermediary variables		Gender		Hypothesis
	$\beta$ -value	$t$ -value	$\beta$ -value	$t$ -value	$\beta$ -value	$t$ -value	
Services	-16.77	-3.32	-18.76	-3.73	0	0	H (IV=S, A)
Risk attitude	4.67	1.67	5.34	1.91	0	0	H (IV=RA, A)
Part-time	-36.54	-8.41	-37.56	-8.64	0	0	H (IV=PT, A)
Networking	9.47	3.09	10.11	3.29	0	0	H (IV=N, A)
Financial management	11.84	5.20	12.71	5.60	0	0	H (IV=FM, A)
Gender	-16.84	-3.34	0	0	-27.11	-5.69	H (GD, A)
$R^2$	0.09		0.085		0.017		
$N$	1757		1757		1913		

TABLE VI  
 $\beta$ - and  $t$ -values in a linear regression analysis on the proportion of equity in the total amount of start-up capital

	All variables		Intermediary variables		Gender		Hypothesis
	$\beta$ -value	$t$ -value	$\beta$ -value	$t$ -value	$\beta$ -value	$t$ -value	
Services	-0.11	-0.45	-0.17	-0.69	0	0	H (IV=S, E)
Risk attitude	-0.57	-4.27	-0.55	-4.12	0	0	H (IV=RA, E)
Part-time	1.36	6.47	1.47	6.37	0	0	H (IV=PT, E)
Networking	0.01	0.69	0.12	0.80	0	0	H (IV=N, E)
Financial management	0.37	3.40	0.40	3.67	0	0	H (IV=FM, E)
Start-up capital	-0.01	-9.69	-0.01	-9.52	0	0	H (IV=A, E)
Gender	-0.57	-2.36	0	0	-0.05	-0.23	H (GD, E)
$R^2$	0.108		0.105		0.000		
$N$	1627		1627		1760		

male counterparts. The gender effect that female entrepreneurs have a smaller proportion of equity may be caused by relatively little personal resources as a means of financing the business.

The regression results of the analysis on the proportion of bank loans are presented in Table VII. From the intermediary variables column we conclude that the proportion of bank loans in the total amount of start-up capital is lower if entrepreneurs are risk averse, if they work on a part-time basis, if they do not engage in networking activities, if they have experience with financial management and if they have a small amount of start-up capital. Apart from the effect of financial management and networking all effects are significant at the 5% level: hypotheses H (IV=FM, B) and H (IV=N, B) are not supported. Moreover, hypothesis H (IV=S, B) has not been supported

in the analysis: no significant effect of the service sector on the proportion of bank loans has been found. As with the proportion of equity, on average, gender has no impact on the proportion of bank loans. This can be read from the gender column. From the all variables column we conclude that in a joint analysis the intermediary variables effect remains present and a small gender effect, significant at the 10% level, appears. This implies that the total effect of gender, which is insignificant, can be divided in a direct and indirect effect. The direct effect can be found in the all variables column, whereas the indirect effect can be inferred from the results of the correlation between gender and the intermediary variables (Table IV) and the effect of the intermediary variables on the proportion of bank loans. The indirect effect can also be associated with the

TABLE VII  
 $\beta$ - and  $t$ -values in a linear regression analysis on the proportion of bank loans in the total amount of start-up capital

	All variables		Intermediary variables		Gender		Hypothesis
	$\beta$ -value	$t$ -value	$\beta$ -value	$t$ -value	$\beta$ -value	$t$ -value	
Services	-0.27	-1.14	-0.24	-0.10	0	0	H (IV=S, B)
Risk attitude	0.70	5.29	0.67	5.12	0	0	H (IV=RA, B)
Part-time	-1.09	-5.20	-1.07	-5.14	0	0	H (IV=PT, B)
Networking	0.02	0.11	0.01	0.07	0	0	H (IV=N, B)
Financial management	-0.15	-1.36	-0.16	-1.51	0	0	H (IV=FM, B)
Start-up capital	0.01	7.39	0.01	7.27	0	0	H (IV=A, B)
Gender	0.43	1.79	0	0	-0.20	-0.85	H (GD, B)
$R^2$	0.121		0.12		0.001		
$N$	1169		1169		1269		

difference between the  $\beta$ s of the total and the direct effect of gender on the proportion of bank loans. Neglecting the intermediary variables one is inclined to conclude that gender has no influence on the proportion of bank loans. However, when the female profile is taken into account, it can be concluded that female entrepreneurs have a higher proportion of bank loans in the total amount of start-up capital. This can be interpreted in the following way. Female entrepreneurs may be more successful in convincing credit managers of banks of their ideas and capabilities than male entrepreneurs. Here one has to bear in mind that the data do not allow for women entrepreneurs who did not succeed in acquiring bank loans or for the "price" of bank loans to be included in the analysis.

The distinction between a direct and indirect effect appears to be vital for understanding the impact of gender on the composition of the start-up capital. In the case of the total amount of start-up capital, leaving out the separation between direct and indirect does not lead to incorrect conclusions about the impact of gender. However, it does cover up the reasons why female entrepreneurs use less start-up capital than male entrepreneurs.

## 5. Summary and conclusions

The focus of this study is on the differences between female and male entrepreneurs with respect to the amount and composition of financial capital. Using a panel of 2000 Dutch start-ups (1994) we find that female entrepreneurs have a smaller amount of start-up capital than their male counterparts, but that they do not significantly differ with respect to the composition of financial capital. On average the proportion of equity and the proportion of bank loans in the businesses of female and male entrepreneurs is the same. This does however not imply that gender has no impact on the composition of financial capital. When investigating the impact of gender on the size and composition of the start-up capital a distinction is made between an indirect and direct effect. The indirect effect is represented by the way women differ from men in terms of type of business and management and experience. The profile of female entrepreneurs differs from that of male entrepreneurs:

female entrepreneurs are more likely to work part-time, more likely to work in the service sector, they are more averse to risk, have less financial management experience and spend less time networking. The direct effect cannot be attributed to these differences and is called a gender effect. When corrected for the indirect effect, i.e. the female profile, the direct effect tells us that female entrepreneurs have a smaller amount of start-up capital, a smaller proportion of equity and a higher proportion of bank loans. This direct effect can be interpreted as follows. The smaller amount of financial capital of female entrepreneurs may be attributed to a lack of confidence in their own entrepreneurial capabilities, which discourages female entrepreneurs to start with a large amount of financial capital. Moreover, female entrepreneurs may have different ambitions and objectives than male entrepreneurs. For instance, female entrepreneurs are more likely to attach value to "quality" instead of "quantity" aspects of life. Female entrepreneurs may have more problems acquiring financial capital, i.e. equity and debt capital. The smaller proportion of equity may be attributed to female entrepreneurs having less personal resources they can use to finance their business with. For instance this may be due to discontinuity of past labour relations. Contrary to what is generally assumed, our investigation suggests that women are able to acquire a larger proportion of bank loans. Here one has to bear in mind that the data do not allow for women entrepreneurs who did not succeed in acquiring a bank loan or for the "price" of bank loans to be included in the analysis.

It can be concluded that when separating the total impact in a direct and indirect component gender has impact on the amount as well as the composition of financial capital. Consequently, merely focusing on the total impact of gender on financial capital can lead to misleading conclusions. The impact of gender on the amount of capital is likely to be overestimated because part of the negative total effect can be attributed to the female profile. When controlled for the female profile a smaller negative (direct) effect remains. In case of the proportion of equity and bank loans, when not controlled for the female profile there is no significant effect of gender on the composition of capital. However, when properly controlled

for the effect of gender on equity is negative, whereas the effect on bank loans is positive.

Clearly, the present study is based on Dutch data and cannot be easily generalized to other countries. To improve knowledge of female entrepreneurship future studies should focus on international data that enable a comparison of gender issues in different countries. Moreover, the empirical analysis can be expanded to include more (and other) explanatory variables of start-up capital. Factors that could provide additional information are the age and marital status of the entrepreneur, the number of previous businesses owned (entrepreneurial experience), motives for starting up a business and self-confidence. The latter variable may be difficult to measure and can probably only be captured through self-rating. Additionally, the study should focus not only on businesses that are in the first phase of the (business) life cycle. Next to start-up ventures established businesses should be taken into account because these businesses have a track record that is important for the acquisition of debt capital from financial institutions. Recent spectacular changes in the European stock exchange landscape (the advent of specialized stock exchanges for smaller and high-risk ventures and the merger activities) are not thought to affect the reach of our conclusions. In the present study we deal with very small firms with an average start-up capital of less than 50,000 Dutch guilders. The entrepreneurial climate however may change in Europe due to the extension of venture capital type markets. This long-term effect may also influence the ability of very small start-ups to attract capital.

Research on the impact of gender should not be confined to financial capital. The impact of gender on organizational issues may even be more illuminating than that on financial capital. Female entrepreneurs are often considered to have a different organizational approach than male entrepreneurs. Moreover, organization can be a variable that intermediates between gender and financial capital. In this sense there will be an indirect effect of gender through organization on financial capital.

Differences between male and female entrepreneurs can also express themselves through other aspects of entrepreneurship like the use and composition of labour, the use of knowledge

related factors (input factors) and growth rates and survival rates of the firm (output factors). When taking into account output factors, it can be expected that female entrepreneurs use their smaller amount of capital more effectively, i.e. they use less capital for given output levels. Thus, female entrepreneurs have a smaller amount of financial capital when compared to male entrepreneurs and this may imply that they make more efficient use of their relatively scarce resources.

Extending the analysis of the impact of gender to other input factors than financial capital, and taking into account output factors as well will result in a better understanding of differences in the way male and female entrepreneurs operate. Moreover, expansion of the number of intermediary variables in the analysis will create better insight in the gender-based differences and the specific nature of female entrepreneurship.

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### Notes

<sup>1</sup> Female entrepreneurship is not only important because of the need for diversity. Entrepreneurship is an important opportunity to combine work- and household responsibilities (OECD, 1998). Moreover, female entrepreneurs can play an important role in the fulfilment of contemporary needs, because they often start in relatively new and experimental industries.

<sup>2</sup> Adherents of "liberal feminism" believe that women differ from men due to unevenly distributed opportunities in society caused by numerous forms of discrimination. Adherents of "social feminism" believe that women and men differ as a result of a different upbringing (socialisation). Boys and girls are being taught different values leading to different life styles and ideals. See Mills and Voerman, 1997 and Fischer et al., 1993.

<sup>3</sup> One has to bear in mind that in this paper a distinction is made between internal equity (equity provided for by the entrepreneur) and bank loans. This leaves a residual category of capital, including mainly *F*-capital. Equity and bank loans are not entirely complementary. The implication of hypotheses H (IV=FM, E) and H (IV=FM, B) is that experience with financial management may lead to a lower proportion of *F*-capital. In case of the impact of financial management experience on the use of *F*-capital it can be said that financial experience is associated with a touch of professionalism, making the use of *F*-capital less likely.

<sup>4</sup> Further information on the data set used in the empirical analysis can be obtained through EIM Business and Policy Research, Zoetermeer, The Netherlands (+31 79 3413634).

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