THE HOUSING MARKET AND BUSINESS STARTS

NICHOLAS HORSEWOOD AND KEES DOL

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Business starts have received much attention from policy makers with regard to their possible role as economic stimulants. From the many studies that have attempted to identify drivers of small business formation, it is clear that access to finance is critical. In this respect the present study examines the possible role of home ownership and its potential to serve as a collateral for business starters loans. Using a panel data set for 18 countries over the period 2004 to 2009, which covers both boom and slump years, the study supports findings that home ownership may crowd out other investment because acquiring a home requires a large investment. High levels of mortgage indebtedness appear to be related to low levels of new business formation.

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Introduction

There exists a long tradition in economic theory of linking entrepreneurial activity to growth (Marshall, 1895; Schumpeter 1934; Leibenstein, 1968; Baumol et al 2007). Although there is some debate over the exact mechanism, new business formation is a viewed as a signal of a dynamic economy, which tends to result in greater output. The European Commission has acknowledged entrepreneurship as an economic driver of job creation and actively supports small and medium-sized enterprises. This was once again confirmed in the EC's Small Business Act for Europe of June 2008 but, according to Schmiemann (2012), one of the persistent problems remains that, although a relatively large number of individuals expressed an interest in doing so, few people in member states start a business.

There is a substantial body of literature investigating the factors influencing the number of business starts in each EU economy. The relationship is found to be complex and relates to the economic background being sufficiently attractively to encourage individuals to embark on new ventures. The determinants are numerous, for example the hiring process needs to be relatively simple, exit is straight-forward and the returns from entrepreneurial activities are not highly taxed, and frequently interact with each other (Wiklund *et al*, 2007). This complexity is further added to by a recent line of research focusing on possible cultural determinants of entrepreneurship (Schmiemann, 2012). However, on one thing most studies agree: access to finance is almost always mentioned as one of the constraints (Beck and Demirguc-Kunt, 2006; Aghion *et al*, 2007).

About a third of respondents in a Eurostat 2012 survey stated that lack of collateral or a guarantee was the main reason for a banking loan refusal (Schmiemann, 2012). This proportion also applies to those who were refused for lack of own capital. Indeed, many business starts often do not survive the first five years (see for example Shane, 2009) making financiers cautious. This caution may also be related to the type of small business start-up: according to Shane (2009) venture capitalists are well able to identify new business starts that are potentially profitable, but a large majority of start-ups do not match their criteria. According to the Eurostat 2012 survey only a few start-ups seek equity finance (most often from existing shareholders or other private sources), while the odds of refusal are much larger. Moreover, the survey shows that entrepreneurs have met higher refusal rates during the current crisis as opposed to before the start of the crisis in 2007.

Across advanced economies, underlying these funding problems are a number of common constraints. They can be partly explained by legal institutional factors, because banks and other financial institutions need legal means to enforce repayments (Nofsinger and Wang, 2011). In addition, many business start-ups are a consequence of workers being made redundant and can be considered risky for banks and venture capitalists (Shane, 2009). Although Caliendo and Kritikos (2010) give an example of a relatively successful incentive for German unemployed workers where the government provided grants and a majority survived after two and a half years; additional employment arising from the scheme was very small.

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As the Eurostat 2012 survey indicates, then, many applicants for credit face a lack of collateral in the form of either own capital or a guarantee. Collateral is one major route to overcome credit restrictions set by formal financial institutions, and in this respect having a house, outright owned or with a small outstanding mortgage debt, may be important. This forms the main theme of this paper: given the rising rate of home ownership and the rising value of housing assets across the EU in the decade before the onset of the present crisis, and the subsequent falling rates, what is the relationship between housing equity as collateral and business start-ups?

In the next section we provide an overview of the key factors determining the level of entrepreneurial behaviour in an economy, emphasising the potential relationship between the housing market and the formation of new businesses. In this we also present some of the earlier empirical findings of the role that housing market variables may play in the process of creating a new firm.

Following this, we present our data and hypotheses. As the relation between home ownership and business starts is not always straightforward we focus on possible effects emanating from house price inflation and growth of the stock of outstanding mortgages. House price inflation before the Global Financial Crisis attracted much interest by those who saw the spending potential of these capital gains via (second) mortgages (see Iacoviello and Neri, 2008; Hurst and Stafford, 2004; Boelhouwer, 2002). Such equity release can be used for purposes ranging from holidays, cars, home improvement, old age care and of course providing the initial finance for the start-up of a business. Iacoviello and Neri (2008) estimate that around 15 per cent of economic growth (in the USA) can be attributed to spillovers of house price inflation. We follow work by Balasubramanyan and Coulson (2013) who investigated the relation between house price inflation and (small) business starts in United States regions, our focus is on the European Union countries.

As indicated we will only focus on the possible relation between home ownership and new business formation. As such we will not venture in the debate on the actual impact of small business starts on the wider economy, i.e. the possibility to generate employment or function as an economic stimulant. The literature on this subject provides mixed results and is still debated by academics as well as policy makers (see for example Shane, 2009 or Haltiwanger *et al*, 2010).

In the third section the findings are presented. The final section concludes the analysis and the policy implications, focussing on the role of home ownership, are considered.

1. Entrepreneurship, business formation and the housing market: Theory and findings

There is a vast, diverse literature on entrepreneurship and the formation of new businesses, some of which attempt to explain the cross-country differences. The general factors explaining entrepreneurial activity, covering both theoretical and

empirical studies, will be discussed and then the focus switches to the role that the housing might play on influencing the number of new firms in an economy.

a) Entrepreneurship: An eclectic approach

The key question to focus on is "Why do people start new companies?". The act of starting a company can be seen as the product of the opportunities available to the entrepreneur. If the prospects are poor then it would not make economic sense to consider embarking on a new challenge. There is the relatively new domain of strategic entrepreneurship, where strategic management and entrepreneurship merge to generate competitive advantage (Levie & Autio, 2011; Schendel and Hitt, 2007). An entrepreneurial venture is the outcome of when an individual decides to invest human capital and social capital to embark on a project. From an economic perspective, an entrepreneur will start a new business if the benefits from the expected sum of future discounted profits exceeds the returns from remaining in the current employment. However, other factors may come into play, for example the desire to become their own boss or being the masters of their own destiny. It must be noted that there exists a much larger population of so-called nascent entrepreneurs but they are unobservable as they never reach the stage of actual firm formation. In simple terms people are making an optimising decision, weighing the marginal benefit from going it alone compared to the marginal cost, such items may be the various regulations placed in the costs may be. The institutional context affects the trade-off between the various forms of employment, which differ between member states in the European Union.

There have been three approaches employed to explain why some individuals decide to embark on entrepreneurial activity. The classical view tends to ignore the institutional context and has the individual as the decision maker, with the key factors being the person's psychological traits (Gartner, 1988). Only those who are highly motivated and possess a preference for risk will opt to start up a business. An alternative literature uses sociological research to explain entrepreneurship, particularly emphasising how individuals deal with the institutional pressure to conform (Hwang & Powell, 2005; Sorensen, 2007; Thornton, 1999). Non-economic factors are believed to be important, with individuals responding to their social and behavioural background when making decisions. According to this approach, differences in entrepreneurial activity are a result of the various compositions of social groups between populations. The economics explanation of entrepreneurship is based on occupational choice and depends upon the quality and quantity of human capital, social capital and financial capital that an individual possesses (Blanchflower & Oswald 1998; Douglas & Shepherd 2002). The institutional context influences the endowment of the various forms of capital in an economy.

Entrepreneurial activity is determined by a combination of institutional and cultural influences, resulting in cross-country differences in the quantity and quality of nascent enterprises (Stephen et al. 2005). A large amount of research has gone into identifying the key factors influencing the number of new businesses formed in a country. The

traditional approach focused on four underlying driving forces: opportunity, necessity, preference, and industry dynamics. The OECD-Eurostat Entrepreneurship Indicators Programme (2009) has proposed the following as being important reasons for the establishment of new enterprises: market opportunities, regulatory framework, access to finance, research and development expenditure and new technology, entrepreneurial capabilities and culture.

i) Market opportunities

Since costs are associated with the birth of a firm, entrepreneurs will only undertake the required investment if it is believed that the market conditions are suitable for the nascent company. These circumstances differ from industry to industry but the general condition is that the market is large enough to generate the required profit. The size of the potential demand will depend upon the structure of the industry, in particular the behaviour of competitors and how they respond to new firms. If the market structure is viewed as oligopolistic, then there is more likely to be a strategic response to a birth of a company, in particular driving out the new entrant. Rather than providing a general good or service, it may be better aiming for a niche market where the competition is less.

Macroeconomic stability and increased household prosperity provide the environment for firm formation. From the mid-1990s to roughly 2007, the markets in the European Union were characterized by unusual macroeconomic stability, the Great Moderation. However, the patterns of growth differed between the various member states in the European Union. In particular Germany and France did experience some problems in the early 2000s, partly due to the difficulties of joining the euro and their labour markets adjusting to maintain competitiveness in the new environment.

ii) Regulatory framework

The burdens of regulatory are frequently cited as a barrier to the birth of establishments. Entrepreneurs tend to be concerned with the big ideas and so are poorly equipped to deal with the various rules associated with setting up a business. The size of the obstacle differs over time and between countries, with certain member states attempting to reduce the amount of red tape in the hope of developing a more dynamic economy. Furthermore, due to its "fixed-cost" nature, the burden of regulation appears to be disproportionately larger for small firms as the administrative expenditure associated with compliance does not rise in relation to the size of output. In most situations there is an initial fixed cost to comply with the regulation, with the remainder following a sliding scale, based on the firm's size. The initial cost may relate to the knowledge or the experience to satisfy any statutory regulation.

iii) R & D expenditure and new technology

While the idea for a new business can come from realising that there is a gap in the market, a number of new projects are a consequence of advances in technology, which

is related to research and development expenditure. Innovations that lead to the development of new goods and services provide the impetus for people to set out on their own, Wennekers *et al* (2002). One of the criticisms levelled at researched-based entrepreneurs is that they lack the business acumen and the marketing skills to successfully take the product.

There are variations in the pace of technological change over time and between countries. The cross- country differences could be a result of the focus of scientific research in universities and educational achievements of the population. Historically, technological change has tended to be uneven, with nations experiencing periodic technological explosions and this leads to corresponding explosions in entrepreneurship activity. An example of such a pattern is the dot com bubble observed in the late 1990s as a result of the advances in the ICT industry.

Key for the new technology driver of business start-ups is intellectual property protection (Autio and Acs, 2010). If changes in technology become a public good then the incentives to innovate and market the new product are greatly reduced. It is only when the ownership of the innovation or product development remains private that the returns are sufficient to encourage entrepreneurship. Consequently, the legal framework is an important determinant of the number of new businesses created in a country. Equally it must be recognised that if the legal system is too arduous or opaque then individuals might not embark on a business venture as the barriers are too high.

iv) Entrepreneurial capabilities and culture

One of the requirements for entrepreneurs to embark on a new venture is that they have required business skills. Entrepreneurs need to be able to come up with the idea and follow it through, making sure that product reaches the market. Such determination is not something that can be taught in a business school but is a quality deeply engrained in the culture of a nation.

The speed of growth and the survival of any new businesses depend translating the initial drive to set up the firm into an action strategy in the form of continuing to deliver the product or service as various problems are encountered. This may require motivating employees and making sure that communication channels operate effectively. There may be the recognition that skilled labour needs to be hired, especially the area of finance, to complement the entrepreneurial spirit.

v) Access to finance

Even when all of the above conditions are met, the project might not go ahead if there is no funding in place. The majority of entrepreneurs will seek external sources of funding for the business start ups. Financial institutions view new enterprises as being inherently more risky as they have no history or reputation, which makes banks wary

of lending to them. As a consequence banks will charge higher interest rates to nescent firms than to bigger companies in order to compensate for the higher costs of acquiring information, the smaller amount of external financing and the higher risk of failure.

The connection of collateral and bank lending is based on asymmetric infomation between the lender and the borrower. The borrower has superior infomation on the likely probability of sucess of the project and on the effort of the entrepreneur, indicating that capital markets are subject to adverse selection and moral hazard (Stiglitz and Weiss, 1981; Bernanke & Gertler, 1989). One potential solution to these capital market failures is to insist on borrowers putting up some asset as a form of surety in the case of default. The idea is that entrepreneurs will only be prepared to use their wealth as collateral if the level of risk associated with the project is relatively low (Bester, 1983). Furthermore, the potential loss of wealth should encourage entrepreneurs to focus on the new business and to maximise its probability of success. It must be noted that the use of collateral only acts as a partial solution to capital market failure.

For most entrepreneurs the majority of their wealth is in the form of housing and so house prices and new business formation are believed to intrinsically linked:

"Housing prices fell dramatically over the 2007-2009 period and concurrently business starts declined dramatically indicating a link between housing prices and business starts" (Balasubramanyan & Coulson 2013).

  b)   The housing market and business start-ups

It is possible that the causal effects between home ownership and small business formation can be in either – or both – directions. On the one hand, self employment may not always facilitate home ownership, because banks may consider the possible future income streams unstable, in comparison with those who have employment with fixed incomes. Those who have only recently started a business may experience problems accessing the mortgage market because banks in general are aware that newly-started businesses often do not survive beyond the first two years, which may lead to mortgage payment problems. In short, banks are generally hesitant to provide mortgages to (newly) self-employed persons. Equally, those thinking about starting a business may fear the risk, should the business fail, of creditors and creditors repossessing their home. A study by the European Commission (2012) shows that the risk of losing property is among the greatest fears when starting up a business.

In this study, however, we focus on the possible positive effects of home ownership on business starts. Many studies have pointed out that banks are normally reluctant to provide loans to business start-ups because of the risk: bankruptcy of the business and an unstable income stream (see *inter alia* Black *et al*, 1996; Elston and Audretsch, 2010; Nofsinger and Wang, 2011). However, when the potential entrepreneur can provide collateral in the form of a home, banks may be more willing to provide business loans. In this, home ownership as such cannot always be considered as collateral: mortgage debt on the home may also adversely affect banks willingness to take the home as collateral. With regard to outstanding mortgage debt on the home, there may also be a

temporal effect on the use of the home as collateral: those who have lived in their home for a longer time may have repaid substantial amounts of debt or experienced value increases on their housing asset. In this respect, house price rises, such as those many countries experienced after 2000 could positively impact on the provision of business starter loans. Price falls on many international housing markets after 2007 may have had a negative impact on the provision of business starts.

A general set of ideas about such relationships from home ownership to business-starts ownership has been studied empirically and comprehensively tested in only a few studies, but some recent studies by Bracke *et al* (2012), Corradin and Popov (2012) Balasubramanyan and Coulson (2011) and Fairlie (2010) give promising perspectives. However, these studies are based solely on US or English data.

In general, credit constraints for potential business starts have been at the core of many studies (Bracke *et al*, 2012 for an overview), but the role of homeownership as a possible collateral has been under investigated. In the 1990s, research started in the UK about the possible role of housing as collateral for business starts. Studies by Robson (1993), Black *et al* (1992 and 1996) established a positive relation between business starts, as measured by new VAT registrations, and home ownership, although Robson played down this relationship in a later study (1996). Fairlie (2010) finds some evidence in USA data that home ownership and housing equity are related to business starts, while a study in the Netherlands (Blumberg and Letterie, 2007) found that homeowners have a smaller chance of business loans being fully (or partly) denied. Furthermore, the study by Schmiemann (2012) provides some recent empirical proof that small business owners do actually experience lack of collateral as a barrier to credit, even though it does not make explicit what type of collateral this is.

In a recent study (Bracke *et al* 2012) the role of mortgage debt when accessing home ownership was emphasised, but concluded that high leverage restricts access to further credit. Overinvestment in housing by households has been found in some way by Brueckner (1997) as well as Flavin and Yamashita (2002). Bracke et al. (2012) find that those who accessed home ownership in the last few years, have significantly lower odds of becoming an entrepreneur. Corradin and Popov (2012) also find that high home equity increases the probability of business starts. In this respect house price increases could play a role: Balasubramanyan and Coulson (2011) found support for the proposition that house price rises were followed by leaps in very small and small business starts. However, this finding is not consistent with other, older research in the USA by Hurst and Lusardi (2004) who found no relation between housing wealth changes and business starts. Bracke *et al* (2012) do not find a relation between house price volatility and business starts. One possibility may be that large real estate booms are a direct generator of small business creation, as many small companies are started with direct links to such booms (see Doling *et al*, 2006), not only builders and their subcontractors, but also real estate agents and movers' transport companies. It is possible that the Spanish and Irish construction boom of the 2000s may be considered examples of such effects.

The study by Hurst and Lusardi (2004) rejected many previous research findings on the relation between household wealth and business creation. They concluded that only the wealthiest American households have higher chances of starting a business, while for the other households the relation is non-linear, ie lower incomes have the same chances as the upper middle classes. These results are in line with the higher tolerance for risk among the most wealthy households (see also Moskowitz and Vissing-Jorgensen, 2002 in Hurst and Lusardi).

The literature, then, does not provide definitive evidence of a direct relation between home ownership and small business starts. Rather, a more complex relation might exist where the equity in the home plays a role and where recent buyers actually have much lower odds of starting a business. Recent research from the USA points towards the possible impact of house price leaps, although such leaps often appear to go hand in hand with an increased indebtedness of home owners in general. In this article we explore such patterns on the macro level for EU-countries.

2. Model and data

The above discussion has highlighted that the factors involved in entrepreneurial activity and starting a new business are complex, with housing market variables being one of a number of potential determinants. The general framework to analyse the formation of new businesses is given by

$$\ln NFirms_{it} = \beta_{0i} + \beta_1 \Delta \ln Ph_{it} + \beta_2 \Delta \ln M_{it} + \beta_3 U_{it} + \beta_4 \ln(G/Y)_{it}$$

$$+ \beta_5 Rnb_{it} + \beta_6 \Delta \ln Y_{it} + \beta_7 \ln(Assets/Y)_{it} + \beta_8 \ln(Loans/Y)_{it} + \varepsilon_{it}$$

where $NFirms_{it}$ denotes the number of new firms in country i at time t.

Based on the literature, the possible effect of home ownership on new firm formation is examined through two aspects: the proportionate growth of house prices and the proportionate growth of the stock of outstanding mortgages, given by $\Delta \ln Ph_{it}$ and $\Delta \ln M_{it}$ respectively.

The effect these two housing variables might have on new business formation is unclear. On the one hand, for a given level of housing debt, an appreciation of house prices would mean that households have more housing collateral, which should enable them to access capital markets more easily. This argument assumes that individuals are credit constrained and that banks are not behaving in a competitive manner, a description that does not fit with events in the 2000s. An alternative view is that $\Delta \ln Ph_{it}$ represents the returns that can be gained in the housing market. An increase in house prices diverts entrepreneurship activity away from the business sector and encourages speculation in the housing market. Consequently, the sign of the coefficient on $\Delta \ln Ph_{it}$ will indicate whether expansion of the housing sector acts as a restriction on the future growth of the economy.

In a similar way, the coefficient on the growth of the stock of outstanding mortgages, which is equivalent to the net new lending, could either be positive or negative. Conditioning on house price inflation, an increase in net new lending indicates that

households are becoming more indebted. As a consequence they are less able to take on more debt and start up a new business, or more accurately banks are less prepared to lend them money to fund the scheme. An argument that suggests the growth of the mortgage stock would have a negative influence on the on the number of new firms established. However, if the increase in mortgage lending was part of an equity release scheme, with the funds being used to finance the business start-up, then the influence would be positive. The estimated coefficient on $\Delta \ln M_{it}$ will be determined by the net strengths of the two competing effects.

Beyond these housing variables, we include measures of possible determinants of new business formation commonly identified in the literature. The state of the economy may be an important factor of the annual number of new firms in a country, such as unemployment (U_{it}) . A number of variables attempt to capture the conditions for new business, although, again, there is some uncertainty as to the direction of the effect. An increase in the unemployment rate might deter an entrepreneur from putting plans into practice and starting up a firm. In a recession aggregate demand is low and it may be difficult for a new establishment to gain a foothold in the market. An alternative view is that the recession is a good time to launch a business as firms will have time to learn the business before demand takes off. Additionally becoming unemployed may provide the impetus for the person to follow their dreams and start out on their own. Similar conjectures exist for the growth rate.

The interest rate for new businesses, denoted *Rnb*, should have a negative effect on the number of new firms established as this captures the cost of any loans that are taken out. However, it is unlikely that this effect will be statistically significant as the probability of starting a business will depend upon whether the general business sentiment is optimistic or pessimistic. Even though the interest rate, business people may not consider setting up a firm as they are pessimistic and believe the probability of succeeding is low.

In an economy with a large government sector, denoted *G/Y*, the opportunities for setting up firms are limited as the profit motive has been suppressed in favour of a more collectivist provision of goods and services. When the state sector shrinks, private industry will expand into the vacated area, giving the opportunity for entrepreneurs to create new firms. As a consequence, the coefficient on the ratio of the government sector to income is believed to be negative.

The financial position of the household sector will affect the birth of new firms. The greater the stock of assets owned by residents the greater the possibilities of setting up new firms, which can occur via a number of routes. Firstly, households can use their wealth directly to finance new projects. Secondly, the stock of wealth could be used as collateral for bank loans, encouraging banks to provide the funding to set up new firms. The asset side of households' balance sheet is given by the asset-income ratio, provided by the OECD.

The accumulation of debt will act as a borrowing constraint on households. As the ratio of the stock of loans increases in relation to GDP, the households become more indebted and cannot set up any new firms even if they are likely to be profitable. They are unable to get a bank loan as their current position is viewed as too precarious, with

an adverse shock resulting in the inability to service the debt and repay the loan. Such a view assumes that banks are adopting relatively careful lending policies. As has become well known, credit markets were relatively lax in applying regulations in the early 2000s, which may be reflected in the coefficient on the ratio of loans to income being statistically insignificant.

As has already been referred to, expectations play an important role in the formation of new businesses. In a turbulent time period entrepreneurs will tend to adopt "a wait and see" approach rather than committing to a particular project. The decision depends upon the irreversibility of the business decision and ability to switch the plans, going into another business if things do not work out. Although it is difficult to quantify the degree of uncertainty in a country at any period of time, a number of measures exist in the investment literature, ranging from the variance of a high frequency variable to ARCH-based techniques. A number of different measures of uncertainty were considered as potential explanatory variables.

The model is estimated using an unbalanced panel data set comprising 18 countries (Austria, Belgium, Czech Republic, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Luxembourg, the Netherlands, Poland, Portugal, Slovenia, Slovakia, Sweden, the UK), where the selection was determined by data availability. The time period covered 2004 to 2009, although the majority of countries only had data for the last two years of the sample.

3. Results

Due to the variation in the annual observations on the number of new firms in each country, the model was estimated for each year rather than estimated over five year averages.

a) New firms as a proportion of GDP

The results are presented in Table 1, where the dependent variable is the logarithm of the number of new firms divided by GDP. Changes in data definitions meant that using the total number of firms in each economy as the denominator, giving the proportion of firm births, should be viewed with caution, although results are given in Table 2.

Table 1: The number of new firms

Dependent variable: ln(*NFirms/Y*)$_{it}$

	1		2		3		4	
	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
C	-7.257	-2.265	-5.881	-1.760	-10.194	-4.094	-7.568	-3.784
ΔU_{it}	-0.031	-1.281	-0.027	-1.227	-0.030	-3.359	-0.027	-4.387
$\Delta \ln Ph_{it}$	-0.004	-1.697						
$\Delta \ln(M/Yn)_{it}$	0.004	1.869			0.005	1.528		
$\Delta \ln(Ph/M.Yn)_{it}$			-0.003	-3.183				
$\Delta_2 \ln(Ph/P)_{it}$					-0.006	-2.260	-0.003	-1.752
$\ln(A/Yn)_{t-1}$	0.784	2.090	0.828	2.419	0.718	1.941	0.732	2.533
$\ln(G/Yn)_{t-1}$	-0.518	-1.674	-0.371	-1.184	-0.857	-3.418	-0.581	-2.764
$\Delta \ln(Pe/P)_{it}$	0.002	2.663			0.002	2.460		
$\Delta \ln(Pe/P)_{it-1}$	0.001	1.272						
$\Delta_2 \ln(Pe/P)_{it}$			0.002	2.278				
$\Delta_3 \ln(Pe/P)_{it}$							0.002	3.820
$\ln(Loans/Y)_{t-1}$	0.484	0.524	0.477	0.507				
Country dummies	Fixed		Fixed		Fixed		Fixed	
Time dummies	Fixed		Fixed		Fixed		Fixed	
Obs	86		86		84		84	
Adjusted R^2	0.961		0.962		0.963		0.963	

List of variables: See Data Appendix for data sources

NFirms = Number of new firm; *U* = unemployment; *Ph* = House prices; *M* = Stock of outstanding mortgages; *Yn* = Nominal GDP; *Y* = Real GDP; *P* = GDP deflator; *A* = Stock of assets; *G* = Government spending; *Pe* = Stock market index; Loans = Stock of loans.

Model 1 indicates that there is some evidence of the housing market influencing the formation of businesses in the European Union, with the growth of house prices and the growth of the ratio of the mortgage stock to income being significantly different from zero at the ten per cent level. The effect of housing returns is negative, which suggest that resources are diverted away from industry and people following their dreams of running a business. The ratio of assets to income has a positive effect on the formation of firms. As the wealth of households increases they have the funds available to finance the setting up of a company. It should be noted that the coefficient on the loans-to-income ratio is not statistically significant, which is consistent with the conjecture that the impact of loans on entrepreneurial activity will have two competing effects. On a positive level, part of the effect of an increase in loans will be from households gaining funds to finance their various businesses. The opposing influence is that increases in loans, especially if they are used to fund consumption expenditure,

will lead to households becoming more indebted and so less able or less willing to start out on their own. The number of opportunities for private businesses is proxied by the government expenditure-GDP ratio. Although the coefficient is correctly signed, it is not statistically significant but it does suggest that economies with a large government sector experience fewer new firms being established.

The state of the economy is captured by two variables, the rate of unemployment and stock market returns. The unemployment rate and its lags were included in preliminary regressions and this led to the restriction of coefficients, suggesting that it is the change of the unemployment rate that discourages business start-ups. Such a view is consistent with the increase of the unemployment rate indicating that it may not be the best time to form a company. However, it may give those who have lost their jobs the incentive to gamble on their business ideas, especially if the redundancy pay is sufficient for them to cover the start-up costs. The positive effect of stock market returns is less ambiguous but can be interpreted two ways. Firstly, increases in the proportional growth of real share prices could be capturing optimistic expectations in an economy and this will have a positive effect on new business formation. Secondly, for those household who hold wealth directly, they will have more funds available to finance their entrepreneurial activities. Equally they will have greater collateral and should find access to bank lending easier.

Equation 2 is a restricted version of the previous model with the housing variables being combined to give a measure of the growth of housing equity in relation to income, which has a negative effect on the number of new firms and is highly significant. Households face a portfolio choice as where to hold their wealth and whether to withdraw equity from the housing market. An increase in housing equity indicates that households keep more of their assets in the housing market, maybe believing the net tax returns are higher and the risk lower, rather than investing in their business idea. The other difference in the inclusion of variables is that the growth of real equity prices is considered over a two-year period. The rationale for the transformation is that sudden swings in stock market returns are not going to have immediate effects and households and banks are going to adopt a more cautious view. The main effect of these restrictions on the other variables is the reduction in the significance on the share of the government sector.

The impact of the growth of the stock of outstanding mortgages is examined in equation 3, along with longer lags of house price inflation, and the coefficients suggest that the effect increases in magnitude but that the coefficient is not as well determined. However, the negative role of the growth of real housing returns over two years is found to discourage the formation of new businesses. The growth of the unemployment rate and the government's share of the economy are discovered to be negative but now statistically significant.

The final equation in Table 1 attempts to show that considering the growth of stock market returns over a long time period increases its impact on the number of new firms in a country. However, the influence of nominal gains from home ownership is only significant at the 10 per cent level. It is likely that some of the impact of house price inflation will be due to expectations and not be due to changes in the value of household wealth.

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b) Proportion of new firm births

The results presented in Table 2 have taken the conventional measure of firm births, *NFirms/TFirms* with *TFirms*$_{it}$ denoting the total number of firms in country *i* at time *t*, as the dependent variable. While the general pattern of results is similar, the magnitude of the influence of certain variables differs between the two tables.

Table 2: The number of new firms
Dependent variable: ln(*NFirms/TFirms*)$_{it}$

	5		6		7		8	
Variable	Coeff	*t*-stat	Coeff	*t*-stat	Coeff	*t*-stat	Coeff	*t*-stat
Constant	-11.4325	-2.4636	-11.3780	-2.4300	-6.8465	-1.3684	-9.4946	-1.8231
ΔU_{it}	-0.0302	-4.5595	-0.0355	-3.0566	-0.0270	-2.2788		
$\Delta \ln(PH/M{\cdot}Yn)_{it}$	-0.0024	-1.5755	-0.0025	-1.9364				
$\Delta \ln(PH/M{\cdot}P)_{it}$					-0.0028	-2.0898		
$\Delta \ln(M/P)_{it}$							0.0031	2.0782
$\Delta \ln Y_{it-1}$					0.0296	3.2274	0.0265	5.6617
$\ln(A/Y)_{it-1}$	0.7938	3.0658	0.7949	3.1721	0.9202	3.0191	0.8790	2.5646
$\Delta_2 \ln(Pe/P)_{it}$	0.0011	2.3495	0.0012	2.4236	0.0010	2.6053	0.0008	3.3385
$\ln(G/Y)_{it-1}$	-0.9132	-1.8582	-0.8837	-1.8663	-0.3669	-0.7106	-0.6926	-1.2528
$\ln(LOANS/Y)_{it-1}$			0.4053	0.7991	0.7184	1.9256		
Country dummies	Fixed		Fixed		Fixed		Fixed	
Time dummies	Fixed		Fixed		Fixed		Fixed	
Obs	72		72		72		72	
R^2	0.739		0.734		0.741		0.749	

List of variables: Same as Table 1.

Model 5 shows that the state of the economy is reflected by the change in unemployment and the proportion of government spending. The influence of the housing market comes in via growth of the house prices to mortgage stock, which is normalised by nominal income. A booming real estate market leads to resources being diverted away from business start ups as households use the tax advantages of owner occupation to speculate on making capital gains in housing. However, the stock of assets, which does include residential housing, has a positive impact on the birth of firms across the EU, as does the two-period growth of real stock prices.

Model 6 includes the ratio of the stock of loans to GDP as an additional variable. Although not statistically significant, its inclusion results in the impact of the housing market approaching significance. One explanation is that there is a high correlation

between the mortgage market and other loans to the household sector and the addition of $(Loans/Y)_{it-1}$ as an additional variable enables the true effect of the housing market on business formation to be observed.

The next variant of the general model is less restrictive and has separate effects for the growth of housing wealth and the growth of GDP, which is lagged one period to overcome endogeneity issues. There are certain changes in the impact of some of the other variables, in particular the insignificance of the government spending-GDP ratio and the rise in importance of the loans-GDP ratio.

The final equation considers the opportunities for new firms being captured solely by lagged growth, which becomes highly significant. A booming economy encourages entrepreneurs to put their business ideas into practice and have a go at running their own business. There is some support for the conjecture that the funds for such a project come from the housing market with home owners increasing the size of the mortgage to finance it.

Conclusions

The growth in the number of new firms is often considered to be a key element in the general growth of economies. It reflects the dynamic process of economic development and measures the response of entrepreneurs to the current business opportunities. In the climate of the global financial crisis, identifying factors that would help to encourage economic growth is important information for the economic recovery of the European Union, for the business environment and thereby for the number and type of jobs in 2020 and 2050.

Our findings are consistent with those of many other studies in demonstrating the importance of general features of economies and their labour markets. Thus, increasing unemployment rates appear negatively related to new business formation, this being consistent with a proposition that it will reflect a reduction on overall demand in an economy which, in turn, will not generally provide the most buoyant basis for starting new enterprises. In contrast, increases in stock market returns are positively related perhaps reflecting both increased optimism about the future, and increasing the amount of household wealth that can be put into funding new businesses.

The main focus in this paper, however, has been on the potential impact of home ownership on new business formation. It provides evidence that the housing market plays an important role in new business formation. High returns from home ownership appear to discourage households from starting a new business. Effectively, policies encouraging people to become home owners and house prices to rise may be having the impact of diverting funds away from industry and encouraging speculation in the housing market.

The findings also provide evidence that high levels of mortgage indebtedness may act to encourage new business formation. This effect is not completely clear since increases in loans may reflect at least some households taking or increasing their mortgage in order to finance their business objectives, but they may also mean that high leverage in

the housing market reduces the ability of people to borrow additional money to support those objectives.

These factors are however closely linked. In general, it could be expected that higher rates of home ownership and higher house prices are fuelled by expanding mortgage market activity. Insofar as collectively these contribute to a downward shift in new business formation, it would suggest that governments should act to reduce incentives to expand mortgage lending. And, insofar as mortgage lending is diverted into small business formation and expansion, it would suggest that the appropriate response would be to promote lending to entrepreneurs.

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Data Appendix

	Variable	Unit	Source
Nfirm	Number of new firms		Eurostat
Tfirm	Total number of firms		Eurostat
U	Unemployment rate	%	OECD
Ph	House price index	Index	EMF
M	Stock of outstanding mortgages	Billions euros	EMF
Yn	Nominal GDP	Billions euros	OECD
Y	Real GDP	Billions euros (2005 Prices)	OECD
P	GDP deflator	Index	OECD
A	Stock of assets	Billions euros	OECD
G	Government spending	Billions euros	OECD
Pe	Stock market index	Index	OECD
Loans	Stock of loans	Billions euros	OECD

Countries:

Austria, Belgium, Czech Republic, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Luxembourg, the Netherlands, Poland, Portugal, Slovenia, Slovakia, Sweden, the UK

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