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Evaluation of the Danish Growth Fund

Evaluation of activities, 2010–2012

In collaboration with Gordon Murray and Marc Cowling

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Contents

1	Executive summary	6
2	Executive summary DK	9
3	Summary and discussion	12
3.1	DGF Venture activities	12
3.1.1	Direct venture activities	13
3.1.2	Indirect venture activities	13
3.1.3	Selected issues	13
3.2	DGF Loan and guarantee activities	15
3.2.1	Selected issues	16
3.3	Relevance, Efficiency, Effect and Impact	17
3.3.1	Relevance	17
3.3.2	Efficiency	21
3.3.3	Effectiveness and impact	24
3.4	About this report	27
4	Introduction	28
4.1	The Danish Growth Fund (DGF)	28
4.1.1	Objective of DGF	28
4.1.2	DGF's objective to mitigate market failure and increase socioeconomic returns	29
4.1.3	Addressing market failures	29
4.1.4	Different models and contextual structures	29
4.2	Structure	30
4.3	Similar international institutions for comparison of DGF activities	30
5	DGF's venture activities	32
5.0	Introducing VC as a Policy Activity	32
5.0.1	Definitions and Importance of Venture Capital and Private Equity Terms	32
5.1	Ten indicators of 'good practice' in a public-private 'hybrid' VC fund	37
5.2	The Evaluation of Publicly-supported VC Activity	50
5.3	Changes in DGF's VC Activities	51
5.4	DGF's Equity Investment Activities	52
5.4.1	Different modes, different platforms	52
5.5	DGF's activities in an international context	61
5.5.1	Reference countries and programmes	61
5.5.2	EVCA and DGF statistics by key criteria	62
5.7	Five questions of policy relevance	71
5.7.1	Have DGF's activities advanced the development of the Danish VC market?	71
5.7.2	Are <i>pari passu</i> investment terms the optimal structure?	72
5.7.3	Should governments engage in 'direct' venture capital investment activity?	74
5.7.4	Should DGF continue to have a direct VC activity?	77

	5.7.5 Do DGF's activities encourage private VC activity?	79
5.8	The scarcity of 'Business Angels'	80
5.9	DGF as a convenient government 'platform' – comparisons to CfEB	83
6	DGF loan and guarantee activities	86
6.1	Quantitative analysis	86
	6.1.1 Growth guarantees	87
	6.1.2 Get-started-loans	92
6.2	International benchmark	96
	6.2.1 Loan and guarantee schemes in the UK and Denmark	96
	6.2.2 Comparison of companies in schemes	97
	6.2.3 Survival rate of UK companies that received loan guarantees	100
6.3	European comparison of guarantee Schemes	101
	6.3.1 The nature and scale of guarantee schemes	101
	6.3.2 Narrow or broad economic remit?	102
	6.3.3 Scheme administration	102
	6.3.4 Risk assessment	103
	6.3.5 Scheme restrictions and eligibility	103
	6.3.6 Scheme terms	104
	6.3.7 Additionality of lending	104
	6.3.8 Default	104
	6.3.9 Who accesses guarantees?	104
	6.3.10 Summary	105
	6.3.11 Guarantees as a response to economic crisis	106
	6.3.12 Learning from the UK guarantee schemes development	106
6.4	Guarantee schemes and the Danish context	111
	6.4.1 Comparative scheme costs	114
	6.4.2 Selected issues on loan and guarantees	115
7	Literature/references	122
8	Glossary	127
9	Appendix	129
9.0	Appendix A: Interviews	129
9.1	Appendix B: Interview respondents, VC	130
9.2	Appendix C: Interview respondents, loans and guarantees	131
9.3	Appendix D: Institutions for benchmarking	132
9.4	Appendix E: Survey	137

1 Executive summary

With this report, DAMVAD, professor Gordon Murray (UK) and professor Marc Cowling (UK) evaluate the activities of the Danish Growth Fund (DGF) from 2010 to 2012 on behalf of the Danish Ministry of Business and Growth.

The evaluation seeks to address the objective of DGF to mitigate market failure and create socio-economic return in light of the development of DGF over time and international experience in this field.

DGF is a public investment fund that aims to make a significant contribution to innovation and economic growth by co-financing the genesis, growth and development of small and medium sized enterprises (SMEs) with high-growth potential. By providing loans and loan guarantees, DGF aims to alleviate financial constraints on promising entrepreneurs and SMEs which lack sufficient collateral and/or the track record to obtain a bank loan on normal market terms. Additionally, by developing the scale and professionalism of the early-stage venture capital (VC) market, including the related 'entrepreneurial ecosystem', DGF seeks to increase the availability of risk capital to innovative entrepreneurs and SMEs in need of additional sources of external equity to develop and grow their businesses.

This evaluation of DGF takes into account that the debt and equity-related activities of DGF are fundamentally different and therefore need to be appraised separately.

Relevance

The conclusion of the evaluation is that DGF is a relevant public financial institution. Public intervention through DGF in equity and credit markets can be explained by the existence of market imperfections. DGF's equity and debt products are designed to minimise market failures and deadweight loss

from public intervention. As such DGF is highly relevant.

In the case of the **venture activities**, the evaluation shows that DGF's investments attract additional investments, which would not otherwise have been made and there is no sign of DGF's investment crowding out private investments. Furthermore, DGF has supported capacity building among Danish fund managers and the development of a sustainable VC ecosystem, which could ultimately become self-sustaining. Through indirect investments, DGF supports both the development of SMEs and the development of a healthy Danish VC ecosystem. DGF's indirect investments through funds and fund-of-funds (FoF) have helped to attract private investors to the funds and subsequently to develop essential expertise on the various management teams.

However, DGF's management needs to provide a convincing argument to explain why DGF should continue to engage in direct VC activity. It is difficult to see how the small number (six) of annual investments and the total size of DGF Venture's portfolio (approximately 40 companies) have a material influence consistent with the policy and strategic goals of DGF. Additionally, the limited number of investments and their cross-sectorial focus appear to be an obstacle to building and maintaining the relevant and necessary expertise in DGF's secretariat.

Turning to the **loan and guarantee activities** of DGF, it is the conclusion of this evaluation that, given the premium attached to the price of DGF's loans and guarantees, and the fact that there is demand for these in the market shows that DGF is relevant. This is particularly true in relation to the new growth loans in which there is no loss limits. The loan and guarantee activities include mechanisms designed to minimise market imperfections and avoid crowding out private investments.

Efficiency

DGF's operational costs are in line with the "market" and DGF operates efficiently. The evaluation shows that despite the differences in costs between comparable international public financial institutions, it is assessed that DGF's costs – when compared to the level of costs in terms of wage levels, financing activities and the book value of the assets under management – are at the level where they are expected to be relative to the other institutions. This applies both to DGF's investment activities and to DGF's loan and guarantee activities.

However, it is extremely difficult to estimate the costs related to value created (efficiency) from ongoing investment activities. The net value created is apparent only when there is an exit. At this point, the market puts a price on the company/project. Only then is it possible to calculate total investments vs the value created (sale price) and thus determine the net value creation. The implication of this is that efficiency is measured as costs relative to others and not relative to net value creation.

Effect and Impact

DGF has had a positive effect on SMEs' access to both equity and debt financing.

The Danish VC-market has developed positively and in line with the objective of DGF. This is especially the case in relation to its indirect investments, which has supported this process.

The loan and guarantee products have also had a positive effect. There is demand for the products and they are widely distributed throughout Denmark. Loan products are demand-driven and not target specific sectors. Finally, it is encouraging that the instruments used as a contra cyclical policy instrument.

In the case of **VC-investments**, the evaluation shows that DGF has contributed to the development of the Danish VC market. In particular, the increased focus on investments through FoF structures supports the professionalisation and development of the Danish VC ecosystem. This is supported by the interviews conducted as part of the evaluation. Several respondents consider it beneficial when DGF invests in a fund, since DGF's presence can help to attract private investors. As such, DGF has had and continues to have a positive effect on the development of potential high-growth companies. Furthermore, DGF is perceived in the market as a cornerstone investor, meaning that DGF's investments attract private investments that would not otherwise have been made.

In the case of **loans and guarantees**, DGF's loan guarantee scheme serves as a contra-cyclical business-policy instrument and during the recent crisis functioned as such by securing companies' access to financing. Furthermore, the DGF loan guarantee scheme is widely distributed throughout Denmark and there has been no specific sectorial focus in the scheme. In 2011, the growth guarantee was equally distributed between sectors. This illustrates that DGF does not focus on specific sectors or geographical areas when administering the scheme. This is an important conclusion, since too narrow a scope would move DGF away from its justification that is that DGF through its activities minimize market failures. Furthermore, unlike VC investments, the loan guarantee scheme does not require the same specialisation and thus it can be used much more widely as an instrument to help SMEs grow. It is advisable to have the demand for loans drive the scheme and not target it on a specific sector. This gives broader access to the loans and ensures that more firms have the opportunity to access these loans.

Impact in the sense of the broad economic impact of DGFs activities must be measured by the results of DGFs activities. The Danish VC-market has developed positively, but it remains, to be seen if there can be generated a reasonable rate of return and if the VC market becomes self-sustaining. However, as with efficiency, it is difficult to measure the impact of DGF's VC-activities as long as the investments are ongoing.

With respect to the loan and guarantee activities, it is not possible to demonstrate that there are additional jobs created because of DGF activities. Similar businesses without government intervention are performing equally to the Danish businesses. However, it is not clear whether companies who get loans or guarantees through DGF should actually should perform better. Companies that require government backed loans or guarantees do so, because market based financial institutions estimates that they are more likely to fail than others are. However, the fact that the companies get access to financing in itself should improve their position compared to companies that do not get either private or public financial support.

However compared with other countries the survival of Danish businesses who gets access to government loan and guarantee products is higher.

2 Executive summary DK

Med denne rapport evaluerer DAMVAD, professor Gordon Murray (UK) og professor Marc Cowling (UK) aktiviteterne i Vækstfonden (VF) fra 2010 til 2012 på vegne af Erhvervs- og Vækstministeriet.

I lyset af VFs udvikling over tid og de internationale erfaringer på dette område, adresserer evalueringen VFs målsætning, om at afbøde markedsfejl og skabe et samfundsøkonomisk afkast.

VF er en offentlig investeringsfond, som har til formål at yde et betydeligt bidrag til innovation og økonomisk vækst ved, at medfinansiere tilblivelsen, væksten og udviklingen af små- og mellemstore virksomheder (SMVer) med stort vækstpotentiale. Ved at stille lån og lånegarantier til rådighed søger VF at afhjælpe de økonomiske begrænsninger, som lovende iværksættere og SMVer møder, hvis de ikke i tilstrækkelig grad er i stand til, at stille sikkerhed og/eller ikke har eksisteret længe nok til at få et banklån på normale markedsvilkår. Desuden forsøger VF at udvikle og professionalisere det danske marked for risikovillig kapital med fokus på de tidlige stadier i virksomheders udvikling, for derigennem, at øge tilgængeligheden af risikovillig kapital for innovative iværksættere og SMVer, der har brug for ekstern egenkapital for, at virksomheden kan udvikle sig og vokse. Herunder er der fokus på opbygningen af 'iværksætter økosystemet'.

Denne evaluering af VF tager højde for, at VFs aktiviteter i relation til henholdsvis egenkapital- og kreditmarkederne er fundamentalt forskellige, og derfor må vurderes hver for sig.

Relevans

En af konklusionerne af evalueringen er, at VF er en relevant offentlig finansiel institution. Offentlig intervention i egenkapital- og kreditmarkederne kan forklares på baggrund af tilstedeværelsen af markedsfejl. VFs produkter er designet til at minimere disse

markedsfejl og et potentielt dødvægtstab fra den offentlige intervention. Som sådan, er VF yderst relevant.

Hvor der er tale om **aktiviteter i relation til risikovillig kapital**, viser evalueringen, at VF s investeringer tiltrækker yderligere investeringer, som eller ikke ville være blevet foretaget, og der er ikke nogle tegn på, at VFs investeringer fortrænger private investeringer. Ydermere understøtter VFs aktiviteter kompetenceopbygningen hos danske "fundmanagers" og udviklingen af et bæredygtigt økosystem for risikovillig kapital, så dette på sigt kan blive selv-bærende. Gennem indirekte investeringer støtter VF både udviklingen af SMVer og udviklingen af et sundt dansk økosystem for risikovillig kapital. VFs indirekte investeringer gennem fonde og "fund-of-funds" har hjulpet med til at tiltrække private investorer til fondene og efterfølgende til at udvikle den nødvendige ekspertise i de forskellige "management"-teams.

Imidlertid bør VFs ledelse argumentere overbevisende for, hvorfor VF fortsat bør engagere sig i direkte investeringsaktiviteter. Det er vanskeligt at se hvordan det lille antal (seks) årlige investeringer og den samlede størrelse af VFs portefølje af ventureinvesteringer (cirka 40 virksomheder) skulle have en væsentlig indflydelse, der stemmer overens med VFs politik og strategiske mål. Desuden synes det begrænsede antal investeringer og deres fokus på tværs af sektorerne, at udgøre en hindring for at opbygge og fastholde den relevante og nødvendige ekspertise i VFs sekretariat.

Ser man på VFs **udlåns- og garantiaktiviteter**, er det denne evalueringens konklusion, at selv når man tager den overpris i betragtning, der følger med VFs udlån og garantier, så viser det, at der er efterspørgsel efter dem på markedet, at VF er relevant i denne henseende. Dette er især tilfældet i relation til de

nye Vækstlån, som ikke er omfattet af en tabsramme. Låne- og garantiaktiviteterne indeholder mekanismer, som har til formål at imødekomme markedsfejl og undgå at der sker en fortrængning af private investeringer.

Effektivitet

Evalueringen viser, at på trods af forskellene i omkostninger mellem sammenlignelige, internationale, offentlige, finansielle institutioner, vurderes det, at VFs omkostninger – når man sammenligner niveauet af omkostningerne ud fra lønniveauer, finansieringsaktiviteter og regnskabsværdien af de aktiver, der forvaltes – er på det niveau, de må forventes at være på, i forhold til andre institutioner. Dette gælder både VFs investeringsaktiviteter og VFs udlåns- og garantiaktiviteter. Dette understøtter konklusionen, som går ud på at VFs driftsomkostninger er på linje med "markedet". Vækstfonden drives som sådan effektivt.

Imidlertid er det uhyre vanskeligt at anslå omkostningerne i forhold til den skabte værdi (effektivitet) fra de løbende investeringsaktiviteter. Den skabte nettoværdi kan reelt kun opgøres, når der er foretaget en "exit". På det tidspunkt har markedet prissat virksomheden/projektet, og først da er det muligt at beregne de samlede investeringer sat over for den skabte værdi (salgsprisen), hvorved man kan fastslå nettoværdiskabelsen. Dette betyder, at effektivitet måles som omkostningsniveau i forhold til andre lignende institutioner og ikke i forhold til den faktiske nettoværdiskabelse.

Effekt og indvirkning

VF har haft en positiv effekt på SMVernes adgang til både egenkapital- og lånefinansiering.

Det danske venturemarked har udviklet sig positivt og i overensstemmelse med VFs formål. Det er særligt tilfældet i relation til de indirekte investeringer, som har understøttet denne proces.

Låne- og garantiprodukterne har også haft en positiv effekt. Der er efterspørgsel efter produkterne, og de bredt distribueret over hele Danmark. Låneprodukterne er efterspørgselsdrevet og ikke målrettede specifikke sektorer. Endelig er det positivt, at disse produkter anvendes som et konjunkturudlignende erhvervspolitisk redskab.

I relation til **risikovillig kapital**, viser evalueringen, at VF har bidraget til udviklingen af det danske marked for risikovillig kapital. Især understøtter det øgede fokus på investeringer gennem fonde-af-fonde professionaliseringen og udviklingen af det danske økosystem for risikovillig kapital. Dette støttes også af de interviews, der er gennemført som en del af evalueringen. Flere respondenter anser det for nyttigt, når VF investerer i en fond, da VFs tilstedeværelse kan hjælpe med til, at tiltrække private investorer. Dermed har VF og fortsætter som sådan med at have en positiv virkning på udviklingen af mulige højvækst-virksomheder. Desuden opfattes VF af markedet som værende "Cornerstone"-investor. Dvs. at deres investeringer tiltrækker private investeringer, der ellers ikke ville være blevet foretaget.

I relation til VFs **låne- og garantiprodukter**, viser evalueringen, at produkterne har fungeret som et erhvervspolitisk instrument til at modvirke konjunkturernes, og ordningen har i den nylige krise tjent som sådan ved, at sikre virksomheders adgang til finansiering. Desuden er VFs lånegarantiordning udbredt i hele Danmark, og der har ikke været et sektorspecifikt fokus i ordningen. I 2011 blev vækstgarantierne ligeligt fordelt mellem sektorerne. Dette viser, at VF ikke fokuserer på specifikke sektorer el-

ler geografiske områder i forvaltningen af ordningen. Dette er en vigtig konklusion, da et for snævert anvendelsesområde ville mindske ordningens virkning. Desuden kræver lånegarantiordningen – modsat investeringer i form af risikovillig kapital – ikke samme specialisering, og kan dermed anvendes meget bredere som et instrument til at hjælpe SMVer med at vokse. Det er tilrådeligt, at det skal være efterspørgslen efter lån, der driver ordningen, og ikke et sigte efter en bestemt sektor. Dette giver bredere adgang til lånene og sikrer, at flere firmaer har mulighed for at få adgang til disse lån.

Virkning forstået som de brede økonomiske konsekvenser af VFs aktiviteter, skal måles på resultaterne af VFs aktiviteter. Det danske marked for risikovillig kapital har udviklet sig positivt, men det er stadig uklart, om der kan genereres en rimelig forrentning af investeringerne og om marked for risikovillig kapital bliver selv bærende. Som med effektivitet, er det imidlertid vanskeligt at måle effekten af VFs ventureaktiviteter, så længe investeringerne er i gang.

I relation til låne- og garantiaktiviteterne, er det ikke muligt at påvise, at der skabes yderligere jobs, på grund af VFs aktiviteter. Virksomheder hvor staten ikke intervenserer, klarer sig sammenligneligt med de virksomheder hvor staten intervenserer via VF. Det er dog ikke entydigt om virksomheder der får lån eller garantier bør klare sig bedre eller dårligere. Virksomheder der benytter sig af offentligt støttede låne- og garantiordninger, gør det fordi de markedsbaserede finansielle institutter vurderer, at de er mindre kreditværdige end andre og derfor ikke vil stille finansiering til rådighed. Dog vil det forhold, at virksomhederne får adgang til finansiering, i sig selv forbedre deres position, sammenlignet med virksomheder der ikke har adgang til hverken privat eller offentlig finansiering.

Men sammenlignet med andre lande er overlevelsesraten i Danmark højere når man ser på virksomheder, der får adgang til statslige låne- og garanti-produkter.

3 Summary and discussion

With this report, DAMVAD, professor Gordon Murray (UK) and professor Marc Cowling (UK) evaluate the activities of The Danish Growth Fund (DGF) from 2010 to 2012 on behalf of the Danish Ministry for Business and Growth.

The evaluation seeks to address the objective of DGF to mitigate market failure and create socio-economic return in light of the development of DGF over time and international experience in this field.

The primary challenge in the design of public intervention in the financial ecosystem is to establish a system where the public activities on the one hand maximise the socio-economic return and on the other do not crowd out private investments thereby reducing the efficiency and effectiveness of the markets for entrepreneurial finance.

In this respect, DGF is a legitimate public financial institution that aims to make a significant contribution to innovation and economic growth by co-financing the genesis, growth and development of a greater supply of SMEs into the Danish economy, while promoting the development of a sustainable financial ecosystem.

This evaluation of DGF takes into account that the debt and equity-related activities of DGF are fundamentally different and therefore need to be appraised separately. A distinction is therefore made in the evaluation of DGF between venture activities, and loan and guarantee activities. For the most part they will be treated separately.

3.1 DGF Venture activities

Venture capital (VC) is equity finance provided by external investors to high-potential but high risk, start-up and early-stage companies. Public intervention in the venture capital market is used as a

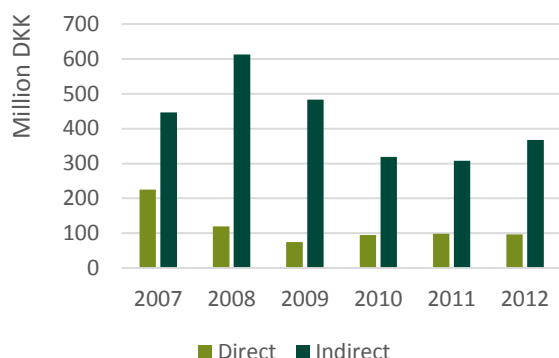
policy instrument for promoting high growth and particularly innovative enterprises. The creation of a successful venture-capital industry has almost universal appeal to governments across both the developed and developing world.

The majority of early-stage venture activity has frequently resulted in very poor economic returns for a majority of early-stage VC investors. In turn this has resulted in a general trend since the early 2000s with many institutional investors moving away from significant involvement in the early-stage venture capital market. Governments have started to realise that a flourishing, long-term venture capital industry requires a range of supporting infrastructure resources including a material public commitment (Wilson and Silva, 2013). Accordingly, there has arisen a growing government focus on developing 'entrepreneurial eco-systems' and building up related capacities.

DGF's venture activities can be divided into direct and indirect investment activities.

Since 2008, the amount invested by DGF through direct investments has been relatively stable, while the amount invested through indirect investments has been more volatile, see Figure 3.1. This indicates that for DGF to be able to do indirect investments, there must be private commitments as well. Due to capital constraints, this was probably more difficult to get in 2009–2011, but recent developments seem to suggest that private investors are returning to the market.

FIGURE 3.1
Amount invested by DGF through direct and indirect investments



Source: DGF and DAMVAD

3.1.1 Direct venture activities

Through DGF Ventures, DGF invests directly in a number of companies. This includes both initial investments and follow-on investments.

By doing direct investments, DGF takes responsibility for active co-ownership. DGF Venture managers are on the board of directors of portfolio companies and are actively involved in strategy development and governance.

By the end of 2012, DGF Ventures portfolio included 39 companies. During 2012, six new investments and 24 follow-on investments were made.

3.1.2 Indirect venture activities

DGF invests in companies indirectly through DGF Funds. DGF invests through funds run by professional managers referred to as general partners (GPs). Here, DGF takes on the role of a limited partner (investor, LP) together with the other institutional investors.

3.1.3 Selected issues

Based on the analysis of DGF's investment activities, including its role in an international context, and the reflections made on five questions of policy relevance (see section 5.7), some general conclusions can be highlighted:

- DGF has supported the ongoing development of a sustainable VC and private equity (PE) ecosystem in Denmark. DGF as a provider of early-stage VC investment activity has the mandate of operating in a very challenging segment of the VC & PE market. In addition, for most of its existence, it has committed funds in an international, risk capital market which is very hostile to new enterprise and to emerging technologies. These difficulties were compounded in 2008 by the advent of the largest global recession since the 1930s. Yet, over time, DGF appeared to work in a manner that shows a high understanding and accommodation of good industry practice. Its later funds and improved fund structures look as though they have a much greater chance of making investment returns attractive to its investors.
- DGF's management needs to provide a convincing argument as to why DGF should continue to engage in direct VC activity. It is difficult to see how the small number of annual investments (4-6 per annum) and the total size of the DGF Ventures portfolio (circa 40 companies) can have a material influence consistent with the policy and strategic goals of DGF. In practice, the number of DGF Ventures investment undertaken annually is relatively small when compared to the number of high growth firms that are likely to exist in the Danish economy. Using either OECD estimates on high growth firms (185 firms) or, say, 5% of the population of firms of ten or more employees (NESTA, 2009) in Denmark (approx. 1,400 firms), in each case

reduced five or tenfold by a further factor to acknowledge that a majority of firms will not wish to seek VC finance, we are likely to arrive at rough estimates between 18 and 280 firms that may wish to use VC finance. The former figure is too low in practice to support a credible and sustainable VC programme. Any major increase in direct investment activity would have to be compared to the alternatives of creating new independently managed funds or enlarging the existing indirect funds supported by DGF. A further move from direct to indirect investments would be in line with the international trend of government funds shifting focus from direct to indirect investments. However particularly the Nordic countries (Finland, Norway and Sweden) seem to continue doing direct investments and compared to these DGFs share of investments that are done as direct investments are relatively small. This however is not in itself an argument that DGF should continue to undertake direct investments. A number of peer funds in these countries have an explicit regional support objective, which is typically not a focus of interest to the most successful commercial GPs. If the argument for maintaining direct investment activities is that DGF engages in direct investment activities in order to mitigate the consequences of Denmark not having sufficient government supported Business Angel (BA) activities, then it could be argued that it would be advantageous to revisit DGFs strategy in order to accommodate this focus. Direct government investing is not a substitute for a well developed BA market.

- The facility to do both pari passu and asymmetric incentives increases the flexibility of the government VC provider. It also allows the government to experiment, a facility less available to the private sector. Thus whether pari passu investment terms are the optimal investment

structure for governments depends on the nature of the specific investment, and its objective. However, pari passu investment activities have an inherent sunset clause, because when the market failure they address is no longer present, the demand for government investments will be automatically reduced.

- Denmark is too small to have a fully diversified VC industry. Its future will be linked to the nurturing of excellent young growth companies and the finding of good international partners. The maintaining of credibility and status of DGF is important in this nurturing of international networks and clusters. This will enable Danish companies and Danish funds to better access international specialised VC financing.
- Given that DGF cannot invest in companies located outside Denmark, DGF must be careful not to take disproportionately large shares of funds, which in effect would prevent funds from investing outside Denmark and developing in line with the international market. The more Denmark is international in its portfolio firm investments and receipts of LP funds, the more credible is its VC industry. A viable Danish VC industry cannot exclusively invest in Danish or even Nordic originated businesses.
- DGF has articulated its ambitions to be an 'evergreen fund'. In simple terms this means that the organisation seeks to generate sufficient surplus from its successful investment activities over time to become its own funder of continued investment activity. This ambition was in part held by Australia which ensured that a proportion of investment surpluses after all costs was ring-fenced for future IIF investment activity. In the difficult times post 2008 during the global financial crisis, these sequestered surpluses

helped to finance a further round of the IIF programme. However, to self-fund an activity which is recognised as unattractive to professional investors, specifically because of the high risks and low returns, is very challenging.

- Based on numerous interviews and survey data, there is no indication that the current VC activities of DGF crowd out private investments. On the contrary, the consensus among the representatives of the VC environment and recipients of DGF financing is that DGF's involvement attracts additional private financing in the early stages.
- VC is necessary but not a sufficient factor for the promotion of an innovative and entrepreneurial Denmark. Establishing a benign ecosystem for its entrepreneurs is critical. Issues of industry/university linkages, supportive tax policies and the active promotion of an entrepreneurial culture among Danes remain key foundations for supporting the supply of attractive new businesses. Ultimately, for a successful VC industry, access to world-class deal-flow through a dense reciprocal network of opportunities is crucial.
- VC financing should be seen in a wider financial context and be aligned accordingly. VC should not be perceived as an independent policy instrument. VC is only one step on the financial escalator. The term 'financial escalator' is widely used to illustrate the desired policy outcome of 'joined up' markets for capital for new firms and small and medium-sized enterprises (SMEs). The escalator is made up of various sources of financing such as family loans, Crowd-funding, business angels (equity) and banks (debt).

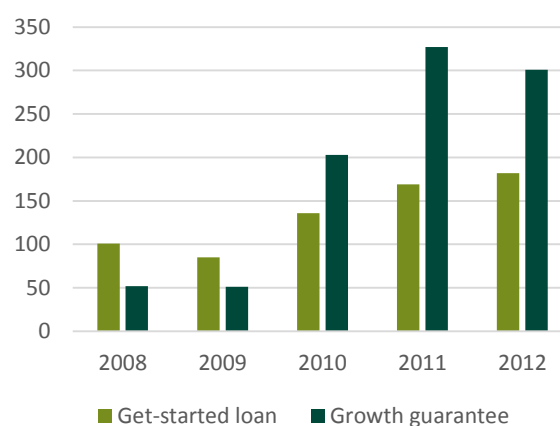
3.2 DGF Loan and guarantee activities

By providing loans and guarantees, DGF aims to alleviate the credit constraints for entrepreneurs and SMEs who lack sufficient collateral and/or record of accomplishment to obtain a bank loan on normal market terms due to market failures.

Thus, the aim of DGF must be to take higher risks than normal banks or financiers are willing to, because the socioeconomic effects are considered sufficiently high. Otherwise, the investments will or should be made by private entities on market terms alone.

In 2008 and 2009, Danish financial institutions granted considerably fewer growth guarantees and get-started loans compared to subsequent years, see Figure 3.2.

FIGURE 3.2
Number of growth guarantees and get-started loans



Source: DGF and DAMVAD

Two factors probably explain the pronounced shift in activity from 2008–2009 to 2010–2011. The primary explanation of the increase in activity is that a lack of traditional financing led to an increase in the demand for financial instruments supplied by DGF.

From 2009 to 2010, the Danish Government raised the lending capacity of DGF from DKK 100m to DKK 1.6bn. In addition, the get-started loan scheme was expanded as part of the business package in 2010 and the credit package from 2011. The sharp increase in guarantees and loans following these packages underlines the demand for contra-cyclical expansions of the schemes. This follows the lines from the UK, the US, Canada and Japan, where the schemes have been expanded to counteract the lack of capital provided by private banks.

A secondary but none the less important reason for the pronounced shift in activity is that the financial crises led to increased insecurity and lower liquidity in the loan market in general. This prompted the financial institutions to limit the issuing of loans, which in itself had a dampening effect on the supply of growth guarantees and get-started loans.

Furthermore, information campaigns can be assumed to have contributed to an increase in awareness of the growth guarantee scheme among the financial institutions in Denmark. In turn this could have had a positive effect on demand.

3.2.1 Selected issues

Based on the analysis of DGF's loan and guarantee activities, the analysis of DGF's activities in an international context and the reflections on four questions of policy relevance (see section 6.4), some general conclusions can be highlighted:

- The economic/financial literature tells us that government loan guarantee schemes play an important role in helping small firms to gain access to financing from private financial institutions. Direct financing from a government has the challenge that the government lending firm must do its own due diligence. This is very

costly and demands a high level of skill and experience from the staff. Furthermore it also raises important issues around entrepreneurs' perceptions of what direct government funding is compared to a private bank loan in terms of moral hazard (switching to riskier projects) and the requirement to repay. Equally, the direct investment model raises political questions concerning whether the government is prepared to take legal action against its own citizens in the event of default. However, direct financing can have a positive effect on small firms, especially in periods of credit crunch. It does not rely on private banks' willingness to provide capital and is therefore a useful instrument in times of credit restraint from banks. Additionally, DGF's schemes only guarantee up to 75% of the loan amount under DKK 10m, 65% of the loan amount between DKK 10-25m. This should reduce the incentive for banks and firms to take too high a risk, thus avoiding moral hazard problems.

- The academic literature is broadly supportive of the use of financial engineering instruments to correct for (a lack of) collateral issues in debt markets and the lack of a "track record". Loan guarantee schemes have the advantage of being simple to design and administer and typically require that investment appraisal is conducted on a commercial basis, thus minimising deadweight loss. Instruments of this type are most effective when the entrepreneurial population and talent are more widely distributed than the wealth throughout the general population. This gives loan guarantee schemes the potential to have disproportionately high and positive effects in countries and regions where (a) collateral based lending is the norm, and (b) a significant proportion of the entrepreneurial population is not rich in assets.

- DGF has conducted its own due diligence since 2003 due to high losses prior to 2003. This has proven very efficient and led to a high level of competency among the staff when evaluating the potential risk on loans. This is not in line with the economic literature, but shows that there may be differences between theory and practice. The default rate of the growth guarantee loans has been very low (5.6%) compared to the UK SFLG scheme¹ (17%), the UK EFG scheme² (8%) and the Canadian Small Business Finance Program (10%). Thus it seems that the decision to do due diligence in-house proved very successful. Though this principle of conducting in-house risk assessment has made DGF's administrative costs very high compared to other schemes that let the banks do the risk assessment, it has the advantage of minimising costs related to defaults, thus stretching the public funding made available for the scheme further to benefit more firms.
- The pricing and coverage of DGF's loan guarantee scheme seems to be reasonably priced and follows the international standard of coverage. Most schemes in the developed countries with a 70–80% guarantee and 2–3% interest premium. Evidence from the UK Enterprise Finance Guarantee evaluation suggests that firms are sensitive to interest rate margins above 5% over base which represents an effective price ceiling for guaranteed loans. Above this 5% ceiling, 85% of total issued loans would not have been taken up by the SMEs who received them. The DGF scheme follows these general guidelines with guarantees of 75% and a premium of 3% when the loan is obtained on get started loans. For growth guarantees, the premium is typically 2% when the loan is optioned and 1.25% a year. The premium reflects that the DGF is a subordinate lender and as such carries a higher risk.
- The companies in the growth guarantee scheme have a higher survival rate compared to both similar Danish companies, and the British EFG and SFLG schemes. The companies in the get-started-loan scheme have close to the same survival rate as similar Danish companies, with the exception of the 2007 treatment year, and the companies in the two British schemes. Given that there are no loss limits, this indicates that the loan and guarantee schemes are well managed.

3.3 Relevance, Efficiency, Effect and Impact

3.3.1 Relevance

The relevance of the DGF is assessed by its justification due to market failures, its ability to address these failures, and its role as a business cycle instrument and cornerstone investor.

Existence of market imperfections

The relevance of DGF is most importantly a question of whether we can explain and justify public intervention in equity and credit markets on the grounds of economic theory on market imperfections. It is widely accepted that imperfections in loan markets exist. The most common imperfections/failures are:

- Credit rationing
- Information asymmetry
- Lack of experience among fund managers

¹ The Small Firms Loan Guarantee (SFLG) scheme guarantee from government helping small firms lacking security to access loans from banks and other lenders.

² The Enterprise Finance Guarantee (EFG) is a UK loan guarantee scheme to encourage additional lending to viable small and medium-sized enterprises.

In the Innovation Union Scoreboard 2013 (European Commission 2013), Denmark is classified as an 'innovation leader'. However, the linkage between research and the creation of marketable products from such research is cited as a weak point in relation to Denmark's direct competitors (European Commission 2012a, 2012b, 2013; OECD 2014b). This apparent gap between research activities and marketable products can be seen as an indication of a market failure and as such supports the relevance of DGF's activities.

DGF's activities address market failures

The relevance of DGF is furthermore a question of whether DGF actually designed its products for equity investments and loans and guarantees in a manner to minimise market failures and dead-weight loss from public intervention.

In the case of the **venture activities**, DGF demonstrates a very clear understanding and use of aligned incentives in the employment of agents as general partners and investors. Its commitment to using a *pari passu* investment model is encouraging as it represents a lesser level of influence on or interference with the market. However, its commitment is pragmatic. The use of 75% loan guarantees to institutional investors and the asymmetry of risk with syndicated loans show that the organisation is willing to find appropriate asymmetric incentives where necessary.

- Through its indirect investments, DGF manages to support both the development of SMEs and the development of a healthy Danish VC ecosystem. DGF's indirect investments through funds and fund-of-funds has helped to attract

private investors for the funds and subsequently to develop competencies in the various management teams who manage the funds which are supported by DGF. DGF thus supports both capacity-building among Danish GPs and fund managers and the development of a sustainable VC-ecosystem.

Given the limited life span of funds, there is an inherent exit strategy in investments through funds and funds of funds. As seen with DGF's investments in Sunstone Capital's first three funds, DGF's commitment is reduced for each new fund raised. Thus, Sunstone will eventually prove to the market that they are able and competent fund managers and they will be able to raise new funds without DGF's commitment. Thus, DGF's commitment is automatically phased out.

As mentioned previously, DGF's management needs to provide a convincing argument as to why DGF should continue to engage in direct VC activity. The whole venture creation process within a successful market economy is based on a large number of individual entrepreneurial 'experiments' (i.e. business start-ups). The vast majority of these investments will not make a material impact on the economy. These enterprises will not employ anyone, will remain 'sole-traders' and their growth will be negligible. A majority of such start-ups will not survive five years.

However, a relatively small number of 'outliers' of approx. 5%³ of all start-ups are likely to become at some stage of their lives high growth firms and have a significant impact on the economy's future success and direction. Thus, an efficient entrepreneurial ecosystem is predicated on several potentially

³ Percentages vary but a relatively strong consensus of research suggest that the number of fast growth businesses in the start-up populations is

around 4-6%. These firms are fast growth for a period of their lives and this is not a permanent state. See Cowling et al 2014.

successful businesses gaining access to various forms of risk capital. It is a 'numbers game' as we have little evidence that venture capitalists or business angels will spot winners easily from the mass of new start-ups. For many professional investors in young enterprises, an industry 'rule of thumb' suggests that circa 20% of portfolio companies will generate 80% of net returns to the fund or investor.

Using either OECD estimates on high growth firms (185 firms) or, say, 5% of the population of firms of ten or more employees (NESTA, 2009) in Denmark (approx. 1,400 firms), in each case reduced five or tenfold by a further factor to acknowledge that a majority of firms will not wish to seek VC finance, we are likely to arrive at rough estimates between 18 and 280 firms that may wish to use VC finance. The former figure is too low in practice to support a credible and sustainable VC programme.

In 2012 DGF made direct initial investments into 6 new firms. As such, the impact on the market by DGFs direct investments are arguably non substantial even though DGFs direct investments amount to a relatively large proportion of the total number of Danish VC investments made each year. However, this is not to say, that individual investments may not be healthy and profitable.

Combined with the risk that DGF assumes in relation to these, it will arguably be more appropriate to use these funds to support the creation of more specialised funds operating on market terms and managed by focused professional fund managers. However, the fact that there are projects that do not get funding entails a risk, but conversely, the increased investment activity through funds will secure financing for other projects. It is unlikely that DGF through its current direct investment activities is able to cover the market not currently covered by private funds.

Turning to the **loan and guarantee activities** of DGF, these also include mechanisms designed to minimise market imperfections and avoid the crowding out of private investments.

In the evaluation period, DGF provided growth guarantees and get-started loans to Danish companies. In both cases, DGF provides guarantees to private financial institutions that cover 75% of individual loans up to DKK 10m, 65% on loans from DKK 10-25m and the get-started loans also had a maximum and 20% of loss coverage on the total portfolio in the individual bank. Both DGF and private financial institutions are obliged to conduct due diligence. These requirements aim to assure that the lender is exposed to the markets' mechanisms and therefore contributes to minimising imperfections. Furthermore, the fact that DGF only covers 75% of the individual loan also provides incentive to minimise risk transfer from financial institution to DGF.

In the case of growth guarantees, DGF also requires a premium of 1.25%. The premium covers the additional risk taken by DGF but also provides financial institutions the incentive to consider a loan on regular market terms in the first place. The idea is that the higher the interest rate of the loan, the higher the probability that the lender will default, leading the institution to lose money.

Finally, the growth guarantee scheme has been expanded to include agriculture. Making the loan and guarantee activities available to as many businesses as possible ensures that viable companies are not excluded in favour of less viable companies due to sector restrictions. In other words, deciding whether a company should qualify for loan and guarantee schemes should be based on objective criteria on the company's ability to create a successful business and not whether the company operates within a restricted business sector or segment. This implies that aiming loan and guarantees schemes to

specific sectors or business segments should also in the future be avoided if the intention is to minimise market failure.

Business cycle instrument

In nervous markets averse to risk, young high-potential enterprises, particularly growing, innovative or internationalising businesses are less likely to receive the levels of debt or equity finance they need. In these circumstances, the support of entrepreneurial finance by government and its agencies is a critical resource to sustain economic development. Therefore, public loan guarantee schemes are relevant as a counter cyclical instrument in periods of financial crisis where banks are liquidity constrained.

In Denmark, loan and guarantee schemes were used as a counter cyclical instrument in the wake of the financial crises. In 2010, the Danish parliament agreed a business package, which considerably expanded the volume of both growth guarantees and get-started loans. In 2011, the Danish Parliament expanded the schemes further with the credit package.

Keeping in mind that the financial crisis was initiated in September 2008, one could argue that counter cyclical elements of loan and guarantee schemes were employed rather late. However, this would be an erroneous conclusion, since the schemes are only a small part of the overall effort by the Danish government to normalise financial markets and the economy in general.

The use of public loan guarantee schemes as a counter cyclical instrument also implies diminishing the schemes in periods of boom. There is an inherent exit clause in the Danish model, because the Danish parliament needs to agree on the budget frame for DGFs loan guarantee each year as part of

the agreement on the government budget. This is what happened in 2010 when it was decided to expand the scheme and this is the reason for the new scheme in the end of 2012. Thus the Danish model has an inherent sunset clause that makes it possible to use the loan guarantee scheme as a countercyclical instrument.

The new scheme from ultimo 2012 restructured the entire guarantee scheme and all except small guarantees of less than DKK 2m where replaced by a new loan type, the so-called growth loans. As opposed to the guarantee schemes, Growth loans are non-subsidized, subordinated loans and prized with an interest rate premium of typically 2-3 percentage points compared to ordinary loans from bank. Thus the structure of the loans imply that a company would not wish to enter into a growth loan unless no ordinary funding option is available.

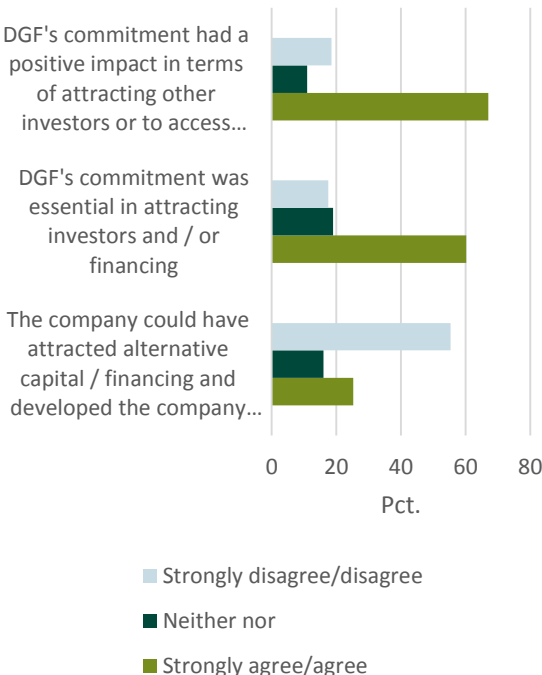
Cornerstone investor

In a significant number of interviews conducted with key stakeholders in the Danish VC industry, the interview respondents have highlighted that DGF plays an important role as “cornerstone investor” and that DGF’s investments in the market help to attract institutional and private investors and additional funding. DGF (government) intervention in the market thus increases the available capital beyond the capital DGF provides. This supports the fact that there might be a more appropriate use of DGF funds to fully focus its investment activities on indirect investments. However, a lack of capital in the market was not mentioned during the interviews as a current problem. But that is not to say that some start-ups may not experience access to funding as being challenging.

That DGF plays an important role as a “cornerstone” investor is supported by the survey among recipients of financing from DGF that was done as part of the evaluation. In the survey, the respondents were

asked to answer questions concerning the impact of DGF’s capital injection into the company – both equity (direct) and debt. More than 60% of respondents (recipients of both direct and indirect funding) answered that they strongly or very strongly agree that DGF had positive impact on their ability to attract other investors and that DGF’s commitment was essential in attracting other investors and/or financing, see Figure 3.3.

FIGURE 3.3
What was the impact of DGF’s capital injection into the company?



Source: DAMVAD
 Note: N=103

3.3.2 Efficiency

The efficiency of DGF is assessed by its ability to utilise resources efficiently to achieve the desired results in a cost-effective way.

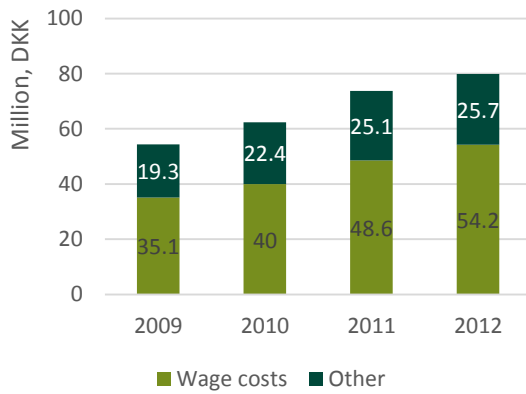
⁴ Se section 4.4.1.

Administrative costs

The administrative costs rose from DKK 55m in 2009 to DKK 80m in 2012. Wage costs in particular rose sharply from DKK 35m in 2009 to DKK 54m in 2012, or by 54%, see Figure 3.4. However, the cost relative to the book value of the assets under management, have fallen from 2.4 percent to 1.6 percent.

The cost increase is attributable to increases in both administrative expenses and salaries as a result of recruitments in connection with the enlargement of growth guarantee activities. In the period from 2009-2012 the number of growth guarantees six doubled and the number of get-started loans doubled. Since DGF conducts its own due diligence this naturally affects the administrative costs substantially. Furthermore, the establishment of a secretariat for Danish Growth Capital⁴ (DGC) in 2011 and 2012 affected the administrative costs of DGF.

FIGURE 3.4
DGF's administrative costs



Source: DGF

In spite of the difference in volume of the activities over time, other costs did not increase at the same rate as wage costs. This is partly attributable to the

fact that a more efficient use of fixed assets, offices and administrative functions could presumably be attained.

Cost of direct vs indirect VC activities

The part of DGF administrative costs that are directly attributable to VC was relatively stable between DKK 40–45m in the period 2009–2012 with the exception of 2010 where the cost of indirect investments dropped. In 2012, 34% of administrative costs related to VC activities were attributable to direct investment activities (DGF).

When comparing directly, one could reach the conclusion that it is cheaper to invest through funds than directly in companies. However, investments in funds are not necessarily more cost-effective than direct investment, when the total cost is calculated (DFGs costs and the cost of the fund manager). It is therefore difficult to assess whether VF Ventures actual investment cost is lower or higher than VF Funds.

In the end, the most interesting comparison to make is costs related to value created. If higher costs are related to better management, then the overall net economic effect could be positive. This is what we see in relation to DGF's in-house risk assessment of growth loans which reduced losses. However, it is extremely difficult to estimate the costs related to value created from ongoing investment activities, because the real value created is apparent only when there is an exit. At that point, it is possible to calculate total investments vs value created and thus determine the net value creation. This means that a fund has to be fully invested and exited before the total value creation can be estimated. As such it is problematic to compare the performance of DGF vis-à-vis other market actors.

Cost of loans and guarantees

The administrative costs of the DGF growth guarantee are very high, which for the most part is attributable to the fact that DGF conducts its own due diligence. Therefore DGF has more staff than in schemes where banks alone do the risk assessment. This in-house risk assessment demands that more people are employed by DGF. In 2012, DGF had 21 people employed compared to the UK scheme that only had 4 people employed and the number of loans is substantially higher in the UK compared to DGF. By conducting its own risk assessment, DGF reduces the risk of moral hazard that can arise from the lower risk taken by firms and banks. The in-house risk assessment was chosen because of high default rates prior to 2003, where due diligence was made by the banks. For DGF there was a trade-off between a high default rate and high administrative costs related to proper due diligence. This trade-off resulted in low default rates compared to the UK's SFLG and EPG schemes and the Canadian Small Business Finance Programme.

The total cost pr. loan including losses is in the high end compared to the three international loan guarantee schemes. This can partly be attributed to size of the growth guarantee scheme, which is small compared to the other schemes and thus have higher fixed cost per loan. The total cost as to the amount guaranteed is lower compared to the international schemes. This is a result of the lower default rates and because DGFs guarantees are larger compared to the other schemes, which makes the cost pr. million DKK guaranteed lower.

Comparison to similar institutions⁵

By looking at DGF's costs compared to other similar financial institutions, it is possible to assess whether DGF has unreasonably high operating costs, and if they are in line with the "market". Compared to the average cost per employee in the period 2009–2012 for DGF and similar institutions, DGF's costs are on level with Almi (SE), EKF (DK) and FII (FIN), but well below those of Industrifonden (NO) and Investinor (NO).

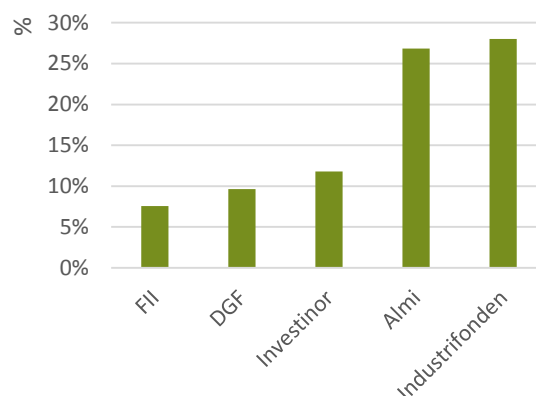
Given that there are national differences in wage levels, etc., relative differences are to be expected. This particular source of differences can be eliminated by comparing DGF with the Danish Export Credit Fund (EKF), which is on level with DGF. When looking at their product portfolio DGF and EKF are not very similar, but their employees are comparable.

The rather substantial difference in relation to the Norwegian institutions is partly attributable to differences in cost structures. As an example, Investinor has other costs per employee of approx. DKK 1.1m, while other costs in DGF amount to approx. DKK 0.4m. Other costs includes the use of external consultancy and advisory assistance.

Another way to look at the costs is by comparing them to financing activities. DGF's costs constitute approx. 10% of total financial activities, while it is about 7% for FII and about 28% for Industrifonden, see Figure 3.5.

FIGURE 3.5

Costs compared to financing activities, 2009–2012



Source: DGF

Note: The data provided by DGF is based on available financial statements from the individual entities.

Finally, it is interesting to compare the costs in relation to the book value of the assets under management. Both DGF and FII have relatively lower costs than Investinor and especially Almi.

These differences are also to be expected given the differences in activities. For instance Almi, in addition to financing, provides advisory and consultancy services which will increase costs compared to the same parameters.

Despite the differences in costs between the institutions, it is assessed that DGF's costs compared to the level of costs in the other institutions are where they are expected to be relative to the others. This means that as far as it is possible to estimate, DGF is utilizing its resources in an efficient manner.

⁵ Data for this section was provided by DGF and based on available yearly reports from the various organizations/institutions.

3.3.3 Effectiveness and impact

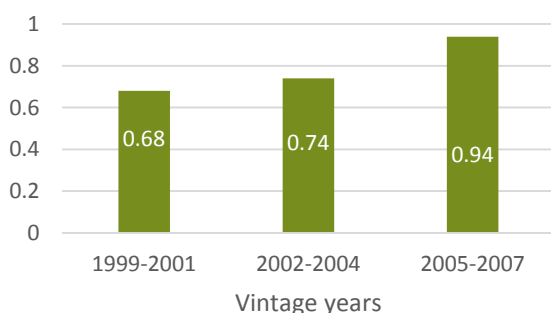
The effectiveness of DGF is a question of whether DGF is able to provide Danish companies with a healthy Danish VC ecosystem, loans and guarantees.

Danish VC ecosystem

A sustainable VC ecosystem is an ecosystem that manages to provide funding for the development of new companies, while generating income for the investors.

The data shows that there is positive development in total value paid-in⁶ (TVPI) over time (see Figure 3.6), but that Danish VC funds still have to prove that they can generate real value-added for their investors (TVPI > 1). This is arguably the greatest challenge the Danish VC industry faces in coming years.

FIGURE 3.6
TVPI by vintage year, Danish VC funds



Source: DGF

Note: TVPI (the ratio of the current value of remaining investments within a fund plus the total value of all distributions to date to the total amount of capital paid into the fund to date).

The challenges in regard to poor (and often negative) private financial returns on VC investments have had a significant *substitution* effect. Namely,

private institutional investors have moved away from investing in venture capital, especially in the very early stages. Those institutions that have stayed in the asset class have significantly redirected investment to later-stage Private Equity (PE) funds (Cumming et al., 2009). Accordingly, the government's role as a supporter of VC has necessarily grown rapidly to the extent that governments are now the biggest single investor in early-stage VC funds across Europe (EVCA, 2013). And there seems to be a particular role for governments to play in relation to the early stages.

However, the development in TVPI for Danish VC funds indicates that the Danish VC ecosystem is maturing and nearing a point where the Danish venture funds as a group generate surplus value for their investors.

If the Danish VC market becomes profitable, this will to some extent be the merit of DGF which has patiently supported the development of and capacity-building in the Danish VC environment and helped to attract private investors.

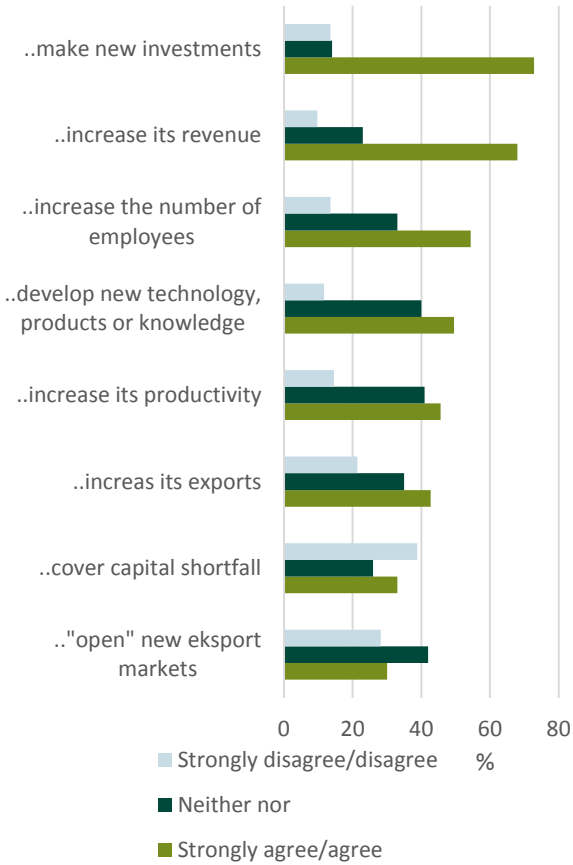
DGF seems to have contributed to the development of the Danish VC market. In particular, the increased focus on investments through FoF structures has and will eventually support the professionalisation and development of the Danish VC ecosystem.

This is supported by the interviews conducted as part of the evaluation. Several respondents see it as an advantage when DGF invests in a fund, since its presence can help to attract private investors. DGF is thus effective in supporting the development of a functioning VC ecosystem.

⁶ TVPI = Investment Multiple = (All fund distributions + the value of unrealized investments) / (All fund contributions by LPs)

The fact that DGF is effective is supported by the survey conducted in relation to this evaluation. The survey respondents were asked how DGF's capital injection affected the development of the company. More than 50% of respondents answered that they strongly or very strongly agreed that DGF had helped them to make new investments, increase their revenue and/or increase the number of employees, see Figure 3.7.

FIGURE 3.7
 How does DGF's capital injection affect the development of the company in the short term?



Source: DAMVAD
 Note: N=103

In this respect, DGF can be perceived as having an effect on the development of Danish companies.

It is a tell-tale sign of an inexperienced government when the considerable challenges of financing young and growing enterprises are seen as fully accommodated by the introduction of a government co-financed VC program. This does not appear to be the case with DGF, since the purpose of DGF is to build up a well-functioning, sustainable, and (ultimately) primarily privately funded VC ecosystem.

This is further supported by the fact, that DGF's equity operations are structured and managed in a fashion, which would not discriminate them from any other professional and private VC provider. Their structures meet international standards of practice as demanded by institutional investors and international VC partners.

Against this background, it seems as if DGF's increased focus on investing through FoF structures in the long term will support the realisation of DGF's goals to support growth and job creation in Danish SMEs.

VC Denmark vs abroad

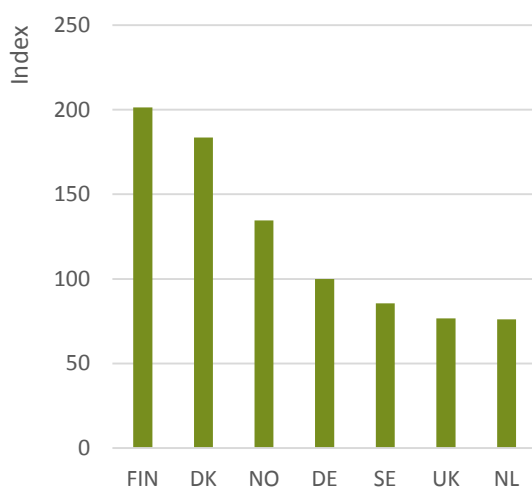
In spite of the positive perception of DGF in the market and the positive development in the Danish VC industry, there are still some challenges ahead.

Looking at the Danish venture market in comparison to the reference countries,⁷ the analysis shows that the number of established funds in Denmark is well below that of the reference countries in absolute terms and measured by number of established funds relative to GDP, and that there is a rather narrow sectorial focus on ICT and the life sciences. The

⁷ Finland, Germany, the Netherlands, Norway, Sweden and the UK.

average size of comparable VC funds in Denmark are larger than in the other countries except for Finland when comparing funds measured by funds size relative to GDP (see figure 3.8), further indication of higher specialisation.

FIGURE 3.8
Average fund size relative to GDP, 3 yr. average 2010-2012, Index DE = 100



Source: DAMVAD calculations og EVCA 2013 and Eurostat
Note: GDP is calculated as a 3 yr. average (2010-2012) and the size of newly established VC funds (early and later stage) is equally calculated as a 3 yr. average (2010-2012). DE (Germany) is set at index 100.

A larger share of funds raised in Denmark appear to be sourced from private financing and the funds are more internationally oriented in their investments. The average size of comparable VC investments in Denmark is larger. The higher share of private funding in Danish funds may be partly due to the Danish funds are focused on sectors that are VC suitable. As such, the focus on VC suited sectors is perceived in the market as an advantage and strengthens the development of a durable healthy VC environment in Denmark.

Loans and guarantees

The DGF loan-guarantee scheme is widely distributed throughout Denmark, most of the guarantees from 2010–2012 were given to firms west of the

Great Belt, 78% of the growth guarantees, and 67% of the get-started loans were granted to firms west of the Great Belt. Furthermore there has been no specific sector focus on the scheme. In 2011, the growth guarantee was equally distributed among four sectors: retail and wholesale (21%), agriculture (25%), business and other services (24%), and production (22%). Eight% of the guarantees were given to companies in other sectors than these. This illustrates that DGF does not focus on specific sectors or geographical areas when giving guarantees. This is an important feature since too narrow a scope would minimise the impact of the scheme. Furthermore, unlike VC investments, the loan guarantee scheme does not require the same specialisation and can be used more widely as an instrument to help SMEs grow. It is advisable that the demand for loans drives the scheme and that it does not target a specific sector. Prior to 1 April 2008, only a few banks were allowed to offer get-started loans which could have distorted the scheme geographically and sectorially. After April 1st, all banks could enter into an agreement with DGF to offer get-started loans. This widens the access to the loans and ensures that more firms have the opportunity to access them.

DGF should continue carrying out information campaigns to heighten the awareness of the schemes. In so doing, they ensure broad knowledge of the scheme and an equal opportunity to apply for the guarantees.

Socioeconomic impact

Regarding short-term effects, we know from previous studies that DGF and DGF-backed funds have invested DKK 6bn in the period 2000–2012. This implies a total short-term effect – both direct and indirect – of a DKK 4.5bn increase in GDP and the creation of 7,236 jobs (DAMVAD 2013).

Additionally, CEBR estimated in a 2012 study that the issuance of a DKK 1m loan led to a GDP increase of DKK 1.5m and the creation of 1.2 jobs in the short term, when including the effects of the additional loan capital obtained by the target group based on the DGF-backed loan. In the medium term (three-year period), the effects per onem DKK of loans issued are a GDP increase of DKK 3.4m and the creation of 4.1 jobs in the medium term (three-year period) (DAMVAD, 2013).

3.4 About this report

The evaluation is based on a combination of quantitative and qualitative analyses and methods. As part of the qualitative analysis, a series of interviews were conducted with industry experts and insiders, and a survey was carried out among companies that received funding (both equity and debt) from DGF. Both the qualitative and the quantitative analyses were substantiated by extensive desk research. Finally, professors Gordon Murray and Marc Cowling have provided abundant academic knowledge and experience for the evaluation.

This evaluation does not use empirical data on portfolio firms that received DGF debt or equity support. Accordingly, it is not possible to look at performance outcomes and the value added in quantitative terms.

In order to evaluate DGF, it is necessary to compare it to similar institutions in other countries. For that purpose, a number of comparable institutions in other European countries were identified and benchmarked against DGF wherever possible.

4 Introduction

4.1 The Danish Growth Fund (DGF)

Entrepreneurs and small and medium sized enterprises (SMEs) are essential to job creation, innovation and overall economic growth. However, market failures such as credit rationing, learning cost and knowledge externalities can lead to credit constraints and ultimately to a socially sub-optimal level of investment.

The Danish Growth Fund (DGF) is a public investment fund that aims to make a significant contribution to innovation and economic growth by co-financing the genesis, growth and development of small and medium-sized enterprises (SMEs) of high growth potential. By providing loans and loan guarantees, DGF aims to alleviate financial constraints for promising entrepreneurs and SMEs, which lack sufficient collateral and/or the track record to obtain a bank loan on normal market terms. Additionally, by developing the scale and professionalism of the early-stage venture capital (VC) market, including the related 'entrepreneurial ecosystem', DGF seeks to increase the availability of risk capital for innovative entrepreneurs and SMEs in need of additional sources of external equity to develop and grow their businesses rapidly.

Since 1992, DGF has co-financed more than 4,500 Danish enterprises with a total commitment of around DKK 12bn. From 2000 to 2012, DGF guaranteed loans for almost DKK 6bn to Danish SMEs, and invested more than DKK 4bn in high-risk, knowledge-based companies either directly or indirectly through fund investments.

In this report, DAMVAD collaborates with professors Marc Cowling and Gordon Murray to evaluate the

activities of DGF from 2010 to the present (2013). The evaluation seeks to address:

- the objective of the Danish Growth Fund (DGF) to mitigate market failure and create socio-economic returns
- DGF as a contra-cyclical instrument
- different models and contextual structures

This is done by keeping in mind the four criteria concerning the performance and relevance of DGF. The four criteria are:

- relevance
- effectiveness
- efficiency
- impact

Additionally, the evaluation report seeks to answer a number of policy questions related to the success and ability of DGF to fulfil its objective.

One caveat is necessary. This evaluation does not use empirical data on portfolio firms that have received DGF debt or equity support. Accordingly, it is not possible to look at performance outcomes and value-added in the quantitative terms familiar to econometricians. Thus, the observations made in this evaluation are better seen as indicative of the current state of DGF and the identification of areas of importance regarding its future operations.

4.1.1 Objective of DGF

DGF is a government-backed, regulated fund, which was established in 1992 with the statutory purpose "to promote innovation and development of the business sector in order to achieve a higher socioeconomic return".⁸ To achieve this objective,

⁸ Executive order implementing the Vækstfonden Act (Consolidated Act no. 549 of 01/07/2002).

DGF provides risk capital to SMEs in the early stages from pre-seed to expansion and buy-out, and debt finance to start-ups and established companies. The strategy of DGF supports its present vision of making a significant contribution to innovation and growth in Danish companies.

In 2001, DGF refocused its original strategy to making equity investments in order to be able to finance a larger number of companies. The 2010 evaluation of DGF focused on these activities. In 2009, the Danish Government increased DGF's activities more than tenfold with the addition of debt financing through the loan-guarantee scheme. Accordingly, this present evaluation also includes an evaluation on the debt-finance instruments and the composition of instruments in DGF compared to similar institutions in the UK, Finland, Germany, Sweden, the Netherlands, Norway and the European Investment Bank/Fund.

4.1.2 DGF's objective to mitigate market failure and increase socioeconomic returns

Although the level of VC finance provided by government co-financed (or 'hybrid') programmes is relatively small in relation to the totality of VC and PE finance available, its focus at the earliest and riskiest stages of enterprise formation and growth confers a policy importance larger than the sums of finance involved. In the absence of public support, the supply of venture capital at seed or start-up stages is likely to have reduced to negligible sums in a majority of countries with open and competitive markets for capital. The continued presence of these programmes ensures that high potential but financially rationed enterprises do get a chance to enter markets with new goods and services. Access to venture capital is linked to high growth for those surviving and successful businesses. Many of these businesses will be based on new and innovative

products and services. They are also more likely to internationalise early and extensively (Burgel and Murray, 2000). This report will seek to evaluate these desired outcomes within the context of DGF and the Danish economy, and given the data available.

4.1.3 Addressing market failures

The primary challenge in the design of public intervention is to establish a system where the public-sector activities on the one hand maximise the socioeconomic return and the other do not crowd out private investments thus reducing the efficiency and effectiveness of the markets for entrepreneurial finance.

This balance will vary during different periods of the economic cycle for both debt and early-stage equity supply. In cyclical periods of low economic activity where the market is often more adverse to risk, like the economic crisis from 2008 onwards, we also see a large increase in the publicly-funded loan and guarantee initiatives in growth financing.

This evaluation will also compare whether the same contra-cyclical development is apparent in the countries mentioned and assess whether the instruments are designed to reduce public involvement when economic growth returns. In addition, the evaluation assesses whether the institution is solely designed to be contra-cyclical in its scope within debt financing instruments and whether it is expected to generate sufficient Returns on Investments (ROI) to self-finance its investments and losses both within VC and debt financing.

4.1.4 Different models and contextual structures

Across a number of different countries, we identify principles or investment models in the approach to supplementing the market for innovation capital.

The first is the pari passu model, where a public and private partner(s) invest on equal terms and assume the same risks and rewards in direct relation to the sums invested. This model is used in Denmark by DGF in the venture capital market.

In the second model, the public takes a larger risk but also a higher price according to the increased risk and absence of collateral. Hence, this model is also market based, and is used in Denmark in the Growth loan scheme. This model is also used in Sweden.

The third model is subsidy based and occurs where the public sector finances any losses incurred. This has previously been used in Denmark for debt finance. This 'down-side protection' model has not been used in Denmark in VC market.

This evaluation compares the pros and cons of the different investment models adopted in different countries in Europe. The evaluation and benchmark of DGF includes these perspectives in drawing its own conclusions as to DGF activity.

Finally, the evaluation also contains an informed comparison between countries taking into account the contextual differences under which similar policy instruments are employed. If these differences are not taken into account, the conclusions drawn could be misleading or erroneous. The benchmarks therefore take into account known and systemic differences between countries.

4.2 Structure

The evaluation of DGF takes into account that the various equity and debt activities of DGF are fundamentally different and therefore cannot be meaningfully considered as one. A distinction is therefore

made in the evaluation of DGF with venture activities on the one hand, and loan and guarantee activities on the other.

One of the primary reasons that DGF's equity and debt operations are treated separately in the evaluation is that the products/services of DGF target different segments of Danish business and there is little overlap.

Venture activities

DGF provides capital to entrepreneurs either through direct equity investments or through indirect equity investments managed by other funds or via fund of funds (FOF) investments. The common denominator is that DGF takes an ownership position in the firms and the funds supported. Accordingly, DGF also takes part in any potential upside or downside.

Loan and guarantee activities

By providing loans and loan guarantees, DGF provides capital for entrepreneurs and SMEs which lack sufficient collateral and/or a track record to obtain a bank loan on normal market terms.

Based on the analysis of the two business areas, a general discussion of the relevance, efficiency, effectiveness and impact of DGF is presented.

A short glossary of terms is included in chapter 8.

4.3 Similar international institutions for comparison of DGF activities

In order to evaluate DGF, it is necessary to compare it to similar institutions in other countries. For that purpose, a number of comparable institutions in other European countries have been identified

based on publicly available knowledge. A list of the institutions is found in Table 4.1.

TABLE 4.1
Institutions for benchmark

Country	Institution
Germany	High-Tech Gründerfonds
	ERP-EIF Dachfonds
	KfW Mittelstandsbank
Sweden	Industrifonden
	Almi
Norway	Investinor
Finland	Finnerva
	Finnish Industry Investments (FII)
United Kingdom	Capital for Enterprise Ltd (CfEL)
Netherlands	Innovation Fund SME+
International	European Investment Bank

Source: DAMVAD

For more detailed information on these institutions, see Appendix D.

Given Australia’s commitment to a major FoF venture-capital programme since 1997, observations where relevant are also made on their Innovation Investment Fund scheme. Comments will be made on these organisations or their mode of behaviour, as they are relevant to the current actions of DGF.

5 DGF's venture activities

5.1 Introducing VC as a Policy Activity

5.1.1 Definitions and Importance of Venture Capital and Private Equity Terms

It is important that we use the terms venture capital (VC) and private equity (PE) consistently and accurately. Very often, the two terms are used confusingly as a generic category conflating both early-stage and later-stage activities. The glossary found in chapter 8 contains the most common terms. However, a number of key terms need to be described immediately. The European Venture Capital Association's (EVCA) literature is used as a guide.

Venture Capital relates to seed, start-up and early growth activities. Seed and much of start-up activity concerns newly formed enterprises that are not yet selling a product or service. Venture capitalists are only interested in supporting firms with high potential and very ambitious growth plans which are often sited in novel or innovative markets. These young companies may not be generating profits until sometime after their formation. VC usually involves *new* money into *new* (or at least relatively young) enterprises. A majority of the firms supported are unlikely to become commercially successful. If a VC fund makes positive returns, it is usually the result of a small minority of portfolio companies creating exceptional value. While some VC funds may make very attractive returns when portfolio companies are finally sold or floated, this activity is both very risky and highly uncertain. In recent years, disappointing financial returns to venture capital industries worldwide have resulted in many institutional equity investors abandoning VC investments for later-stage, less risky and more profitable PE deals.

Private Equity relates to later-stage investments in companies with an established product or service, and which have already generated revenue. They may not be making a profit (or sufficient profit). These companies may need additional capital to

grow or expand. The most popular PE activity is the management buy-out (MBO) which is a form of corporate restructuring by professional investors. The size of the largest MBO targets firms bought and taken private by PE investors in association with debt providers can be measured in billions of dollars. Since the collapse of the technology bubble in 2000, PE has attracted considerably larger funds and generated significantly better and more stable returns for investors compared to VC. Given that fees are often based on a proportion of funds under management, managing larger PE funds, has also been far more profitable than VC for the general partnerships. The potential of a share in the capital gain ('the carry') is also more attractive in PE. Importantly, PE funds are also able to accommodate much larger investments by institutional funds given the much greater value of both deals and PE funds under management.

Why government is interested in VC

Venture capital as a policy instrument for promoting high-growth enterprises has almost universal appeal to governments across both the developed and developing world, regardless of political colour (Lerner, 2009). The reason for their enthusiasm is simple: venture capital is seen as a critical component of a modern enterprise economy. It is particularly associated with the identification and support of young new-knowledge/new-technology firms with the potential to bring about major disruptive changes to markets and their users (Hellmann and Puri, 2000; Lerner and Khortum, 2000).

Silicon Valley casts a long shadow on policy makers wishing to emulate the USA's premier position as a technological and entrepreneurial innovator. Accordingly, no government with a serious interest in enterprise and innovation – and committed to becoming globally competitive in areas of new knowledge – can afford not to have a clear policy for

the supply of risk capital available to its entrepreneurs. Countries with a high public R&D spending are particularly likely to show a strong correlation with VC activity (Da Rin et al., 2006).

Why VC is 'difficult'

PE deals with established companies working in known industries producing 'mature' products and services both widely purchased and understood by their customers. In extremis, PE is primarily the financial re-engineering of the target business, frequently with the addition of considerable debt to facilitate 'geared' returns to the equity holders. For the early-stage VC investor, little of the above is true. VCs commonly support new enterprises in 'new knowledge-based' areas of science and technology where the returns to successful companies can be extraordinarily high. In order to exploit such novel and emerging opportunities the investors and the supported entrepreneurs and managers have to operate in markets and sectors with enormous levels of uncertainty regarding the technology, and the feasibility and attractiveness of the novel products and services produced.

Even successful products may quickly become obsolete as a result of rapid technological advances. Many of the entrepreneur founders involved may be commercially untested despite their exceptional technical skills. The experienced venture capitalist has to be skilled at both recognising opportunity and being able to nurture young enterprises, which includes coaching their founders and managers to achieve a successful, valuable commercial entity (Sapienza 1992). Such commercial, analytical and mentoring skills leading to a successful venturing track record are scarce human capital resources, even in the most advanced economies.

Market failures in early-stage VC markets

Liberal western economies seek to leave markets to their own devices unless there is clear evidence of serious and harmful market failure (Rigby and Ramlogan, 2013).

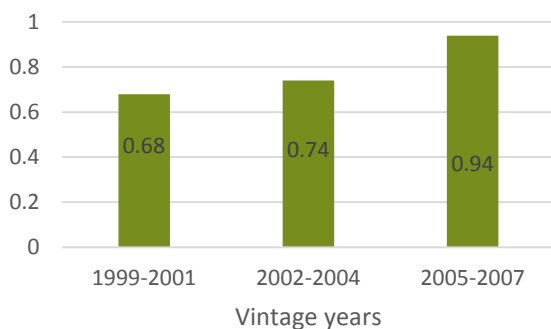
As Gilson (2003) notes, the VC market demonstrates a trinity of problems, i.e. uncertainty, information asymmetry and opportunism. The resulting agency costs and 'moral hazard' problems increase the difficulty of the entrepreneurial transaction. While venture capitalists can reduce agency costs by the imposition of clear governance procedures designed to accelerate the commercialisation process (Cornelli and Yosha, 2003), inherent conflicts between the interested parties still remain.

These problems stem from the reality that much early-stage VC activity is associated with emerging and immature technologies and the new opportunities they (might) signal. However, these signals are often noisy, frequently misleading and their communication is problematic. Technology entrepreneurs may know more than the professional investors in their projects. This disparity can produce serious information asymmetries. Entrepreneurial owners' partial disclosure is likely to be influenced by their own interests. Venture capitalists will wish to protect their economic position as an intermediary against both the providers of their finances (institutional investors) and the entrepreneurial founders of the ventures which they back.

Profound levels of uncertainty are coupled with the critical fact that the majority of early stage venture activity – and particularly venture activity in new technologies – has frequently resulted in disastrous returns for many early-stage VC investors. In turn, this has prompted a general trend since the early 2000s with many institutional investors moving away from significant involvement in such a highly speculative asset class (EVCA 2013).

Figure 5.1 shows the development in TVPI for Danish VC funds by vintage year. Total value as a percentage of investment (TVPI) is an interim measurement. It does not indicate the final returns (or loss) for the investor. It merely tells the investor the current value of his/her commitment with reference to the monies invested. This gives little indication of final or terminal value as this depends on future cash flows. The data shows that there is positive development over time, but that Danish VC funds still have to prove that they can generate sufficient value for their investors commensurate with the levels of risk and illiquidity of VC investment. Such performance information is better conveyed as 'cash to cash' Internal Rates of Return (IRR) but such a metric needs a full investment cycle to be available or meaningful.

FIGURE 5.1
TVPI by vintage year, Danish VC funds



Source: DGF and DAMVAD

In this respect, Danish investors are not under greater or less scrutiny than the rest of the VC community in Europe. The returns over time, if measured on a five-year rolling average of net annualised IRRs, have not been above zero since 2002, see Figure 5.2. This is not to argue that some funds have not achieved very attractive returns to their in-

vestors. However, they remain a minority and disappointing average and median figures overwhelm these exceptions.

FIGURE 5.2
Annualised net pooled IRR by vintage years from inception to 31.12.2012



Source: EVCA (2013) and DAMVAD

Government responses

This industry-wide migration of investors from early-stage VC to later stage and less risky Private Equity (PE) since the late 1990s (Cumming et al., 2009) has reduced a critical supply of growth capital to young technology and/or 'new knowledge' based firms. For such firms in their early days of development, bank finance with its requirement for predictable cash flows is not relevant or helpful (Bettignies and Brander, 2007; Keuschnigg and Nielsen, 2002). High-growth firms will also rapidly outgrow the financing of family and friends and often the limited availability of Business Angels (BA) finance (Ruhnka and Young, 1987).

Governments with a strong commitment to economic growth via R&D investment facilitating greater enterprise and innovation activity are faced with a direct choice. They must find means to ensure that early-stage VC finance remains available to high-potential, young firms or risk a reduction in the new commercialisation opportunities stemming from national investments in science and technology. In a world of international scoreboards in innovation, enterprise, etc., few advanced economies wish to see VC disappear from their borders to the detriment of their highest potential firms (Wilson and Silva, 2013). They are likely to lose their best firms to countries with a more benign environment for start-ups and early growth firms.⁹

These concerns have seen the government's role as a provider of VC grow rapidly to the extent that the government is now the biggest single investor in early-stage VC funds across Europe (EVCA, 2013). These actions are not designed to permanently replace private VC firms by public investment. Rather, the actions of the government and the support they give the sector via specialist funding agencies are there to 'pump prime' the supply of VC by both sharing risk and incentivising investors to re-examine and re-enter this sector of the equity markets. However, this aspiration to *temporarily* pump-prime or act as a catalyst in the VC market before withdrawing in favour of private actors may be an ambition rather than a commitment in the absence of private market substitution of the state's commitment (Luukkonen et al., 2013).

How does government engage in VC activity

Government has to determine the nature and degree of its intervention in the VC sector. It has to

decide on the type of involvement it wishes to make in the actual entrepreneurial process or VC cycle of enterprise investment, nurturing and exit.

Essentially, on an inverse scale of commitment, it can become directly involved as a venture capitalist by undertaking direct investments. Conversely, it can take one step back and recruit one or more venture managers, usually structured in a general partnership (GP), to invest public money in young firms on its behalf. In effect, the government becomes a limited partner (LP) in one or more funds managed by its commercial agents or general partners (GPs). The third common option is for the government to promote a Fund of Funds (FoF) structure whereby a range of investors are sought to create a large fund that itself invests in several VC funds, which in turn invest in portfolio companies. DGF engages in all three activities at present.

The pros and cons of each level of intervention can be summarised as follows:

- Direct Investment requires government to recruit or train government employees or contractors in the appropriate skill-sets of early-stage VC investment. Government is unlikely to be able to offer the autonomy and personal rewards demanded by the most successful VC practitioners in the long term. Indeed, through its own programmes, the government will occasionally help to train new VC managers who, once they have the reputation of ownership of an attractive track record, may leave to set up their own VC funds.¹⁰ The international trend has been away from government directly running a VC activity. Critics have argued that this

⁹ One Australian policymaker observed meeting young Australian companies that had started in the USA rather than Australia because of its closer links to both customers and resources. Many French entrepreneurs have

migrated to London in recent years given the disparity in policies supporting new enterprise in France and the UK.

¹⁰ This training of new VC managers was an explicitly planned outcome of Australia's IIF and the UK's ECF programmes.

activity does not lie within government's remit or competencies, and investment should be delegated to commercially motivated investment professionals acting as agents of the state. However there is a strong tradition of direct engagement in the Nordic countries and this includes direct VC activity. In the academic research literature, there is quite a lot of hostility to direct investment by government. The main concerns are the levels of investment competencies available and the non-commercial goals often imposed on 'nominally' profit-oriented, public VC funds. Many of these goals are social and can result in VC funds being placed in inappropriate areas (i.e. little attractive deal flow available), given conflicting goals (i.e. both social returns to the community and commercial returns to the investors), and run by managers with a public service background strongly out of kilter with the context of severely competitive, equity markets. However, both direct and indirect, government supported VC programmes can suffer from agency and moral hazard problems. All such structure require strong and informed oversight, rigorously defined, and applied evaluation criteria.

- Publicly-supported VC funds, where the government provides a significant proportion of the funds under management, recognise the need to contract professional investors to realise the government's policy goals. The government is not the sole investor but normally requires the VC managers (GP) to also attract other institutional investors (LPs) to the fund. The ability of the GP to attract other investors to realise the cumulative finance necessary to launch the

fund becomes a condition of competence imposed by government on its agent. This structure does not have government civil servants acting as venture capitalists. However, government has to structure its funds and the related incentives in a manner attractive to professional VC investors. In structuring such funds and their incentives, governments have had to learn industry standards. Early fund structures were often poorly designed and managed at a direct cost to government – and potential firm clients.¹¹ Again, less experienced GPs are likely to have more incentive to accept government co-financing than GPs with an already established reputation and track record. The GPs' ability to attract investors will condition the size of funds it seeks to raise. This in turn will influence the number and type of LPs that may wish to be involved with the fund.

- Fund of funds allow government to take a position as an LP in a range of individual VC funds. It allows government to leverage highly each dollar of government commitment. It can both diversify its investments as well as creating a range of VC funds with specific goals, e.g. co-investing with business angels, supporting women entrepreneurs etc. Investment managers like the large exposure of private LPs as this can limit government's opportunity to use the fund for social rather than commercial ends. However, this private interest may also constrain the opportunity of government to focus the FoF direct to the problem. The FoF structure also allows very large financial institutions, such as pension funds, sovereign funds or insurance companies, to be involved in the asset class without taking a large percentage of the funds

¹¹ The UK's Regional VC Fund was unsuccessful in part because of the negative influence of regional specificity on the quality of deal flow.

raised in one VC fund. Institutional investors need sufficient fund committed to have an effect on the performance of their total portfolio. But at the same time, they rarely wish to have an exposure greater than 10% in any one fund. A FoF structure allows them to achieve both goals. From the government's perspective, FoF structures give policy makers considerable flexibility in engaging in entrepreneurial finance while not directly intervening in market activities or firm level investment decisions.

5.2 Ten indicators of 'good practice' in a public-private 'hybrid' VC fund

Governments, international agencies such as the OECD, The World Bank and the European Commission, and academic and industry researchers have over time built up a substantial body of empirical and theoretical knowledge on the practice and performance of venture capital. Research has also addressed the various roles that government may effectively play in supporting entrepreneurial and innovative actions. The following list of 'good practice' is compiled on the basis of a review of the academic literature.¹² Statements of good practice have also been tested and examined in conversations with leading industry practitioners across a number of countries. Economists have uniformly articulated the importance of the influence of information asymmetries in the VC process and its consequences in adverse selection (Akerlof, 1970). An uneven distribution of skills, knowledge and experience can allow agency costs and moral hazard to occur and to be material problems (Arrow, 1974; Jensen and Meckling, 1976; Stiglitz and Weiss, 1981). Practitioners expressed such concerns more in terms of

governance and performance given their executive interests.

The development of the 10 indicators (see table 5.1) seeks to address the nature of public investment in VC and to explore the means by which government may sensibly and effectively engage on some basis of equality with its commercially motivated VC industry agents. These indicators may likewise be similarly useful in looking at the practices and future options of DGF and its Danish Growth Fund activities. NB. The list (below) of ten indicators does NOT imply a ranking.

¹² Academics including Josh Lerner, Marco Da Rin, Karen Wilson, Marc Cowling, Ronald Gilson, James Brander, Gary Bruton, Markku Maula,

Erkko Autio, Ari Hyttinen, Thomas Hellman, Douglas Cummings and Christian Keuschnigg.

TABLE 5.1

Ten indicators of good practice in a public-private ‘hybrid’ VC fund

#	Indicators
1	Existence of an entrepreneurial ecosystem’s complementing VC activity
2	Understanding ‘competitive advantage’ in determining VC fund’s deal-flow
3	Global perspective in funding and investing
4	Employment of profit seeking ‘agents’ as GPs
5	Aligned incentives between government and its GP agents
6	Planned redundancy of programme intervention over time
7	Adoption of administrative and legal norms of VC activity
8	Long-term perspective from government as to evaluation and impact
9	Transparency of programme to the public
10	Experimentation, learning and adaptation by programme managers

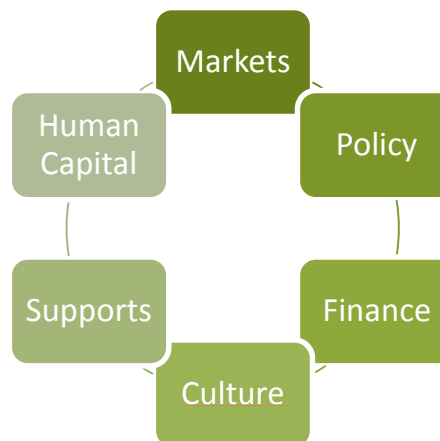
Source: Gordon Murray and DAMVAD

Entrepreneurial Ecosystems

In order to engender a viable and sustainable entrepreneurial ecosystem, the provision of early-stage venture capital finance to identify, nurture and exploit exceptional entrepreneurial opportunities should be recognised as a ‘necessary but not sufficient’ condition. The ‘entrepreneurial ecosystem’ (Napier and Hansen, 2011; OECD, 2013) also needs to ensure the presence of a complementary range of related conditions (Lerner and Tag, 2012) including supportive legal structures, education, fiscal and cultural environments, see Figure 5.3.

FIGURE 5.3

Entrepreneurial ecosystem



Source: Isenberg (2010), Gordon Murray and DAMVAD

It is a tell-tale sign of an inexperienced government when the considerable challenges of financing young and growing enterprises are seen as fully accommodated by the introduction of a government co-financed VC programme.

This naïve view of goals and conditions is not seen in DGF. One of DGF’s core objectives is to build up a well-functioning, sustainable, and (ultimately) primarily privately-funded VC ecosystem.

Work by the Kauffman Foundation and academics (Isenberg, 2010) shows that a VC programme can only operate effectively if the environment encouraging and supporting new and growing enterprises exists and is active. Legal structures (Cumming et al., 2010; Yong et al., 2012), fiscal incentives to entrepreneurs and investors, education, the communication effects of networks and clusters, and the popular cultural view of entrepreneurs each play a role in what is increasingly and widely termed the ‘entrepreneurial ecosystem’.

While the OECD's 2013 country report acknowledges the excellence of public administration in Denmark, and the Innovation Union Scoreboard 2013 classifies Denmark as an 'innovation leader', the linkage between research and the creation of marketable products from such research is cited as a weak point in relation to its direct competitors (OECD 2013). This identified gap between the research laboratory and the market supports the relevance of DGF's remit.

It is perhaps fair to note that while the component parts of an Entrepreneurial Ecosystem certainly exist in Denmark, their effectiveness and impact could be improved. While formal financial provision is high, informal finance in the form of Business Angels is low. The OECD also notes that "the supply of entrepreneurial skills and capabilities remains a barrier." Denmark in 2013 ranked 25th among OECD countries in terms of its self-perception of entrepreneurial capabilities. (OECD, 2014, p.73).

Understanding 'Competitive Advantage'

Venture capital can be defined as the identification and realisation of exceptional (i.e. world class) businesses nurtured and grown from their young enterprise roots. VC is also strongly associated with new knowledge/technologies and novel scientific applications applied to goods and services with international, if not global, market appeal. In summary, VC selection is about excellence and meritocracy. Usually the best managers and the best technologies win in competitive markets. Accordingly, the VC programme needs to identify critical and internationally competitive clusters of resources of innovation and intellectual human capital present in and/or accessible to the target economy. Such inputs form the basis of exceptional business opportunities and ultimately the creation of excellent new enterprises. In essence, the existence of a high quality deal flow is

pivotal in the success of any (and every) VC programme.

In the language of business schools, and supported by the work of Harvard's Michael Porter (1990), nations, like businesses, need a 'sustainable competitive advantage'. Finance and technology are two of the most globally mobile factors, and the worldwide search for opportunities for capital or technology attests to this fact.

In this respect, it is fruitful to ask the question as to 'why Denmark should have a venture capital industry?'. This question can be rephrased as: what goods and services does – or could – Denmark produce to nurture world-class enterprises from its universities, laboratories and workplaces. The point to be made is that successful VC industries have to date been based on economies that have been able to transmute a continued stream of innovative ideas into highly valuable and competitive businesses. An accomplished science base entrenched in companies and academia has been instrumental in the VC successes of the US, Israel, the UK and other western economies. It is difficult to envisage the next generation of Apples, Googles, Skype, Facebook or the advance of the human genome and other medical applications being based on 'average' technological competencies. The sectors, services and technologies in which Denmark will necessarily have to choose to compete is not a trivial question. *Given the global mobility of capital, the reason for investors to be attracted to Denmark cannot remain assumed or unspoken. The policy ambition of a viable long-term VC industry itself implies a belief in the existence of deep resources of world-class technology(ies), intellectual property and/or other forms of exceptional knowledge or expertise resident in an elite cadre of Danish enterprises. There needs to be a consensus as to the identity, nature and value of these exceptional resources, and thus opportunities*

if venture capital and DGF are to be the instruments by which their values are realised.

Global perspective

Programmes involving the investment in ‘new knowledge/technologies’, in small economies necessarily need to be international in their perspective and execution. It also needs to be recognised that the host country may only be credible as a partner and one of multiple conduits or network nodes for the creation of high-growth enterprises focused on international impact and market coverage. The proper safeguarding of public monies should not frustrate or restrict opportunities for international growth among recipient enterprises. Many exceptionally fast growing businesses are now ‘born global’ (Burgel and Murray, 2000; Oviatt and McDougall, 2005).

Given that internationalisation is a feature of many high-growth companies, and indeed is necessary in relatively small economies, Denmark does appear to have a weakness compared to its Nordic peers in the impact of high-growth companies, aka ‘gazelles’, see Table 5.2.

TABLE 5.2

Gazelles in Nordic Countries

	DK	NO	SE	FIN
Number of Gazelles as share of enterprises with more than 10 employees (2009)	0.43	0.87	0.70	0.56
Share of Gazelles that grow to have more than 50 employees (2009)	20	38	25	48

Number of jobs created by Gazelles (2006-2009)	2,800	10,594	8,447	7,617
Number of Gazelles (2006-2009)	84	214	206	93
Average no. of jobs created by Gazelles (2006-2009)	33	50	41	83

Source: Nordic Innovation Centre (2012): “The Nordic Growth Entrepreneurship Review”, Report no. 25.

Note: Gazelles are defined as enterprises that have been employers for up to five years, with average annualised growth in number of employees greater than 20% a year over a three-year period and with ten or more employees at the beginning of the observation period.

Those Danish firms that do internationalise are also challenged as being still too European in focus. ERAC (2012) recommends in a peer review that Danish firms ‘raise their game’ beyond European markets. An implicit reference is made by ERAC to the international successes of German Mittelstand companies in niche markets across the world.

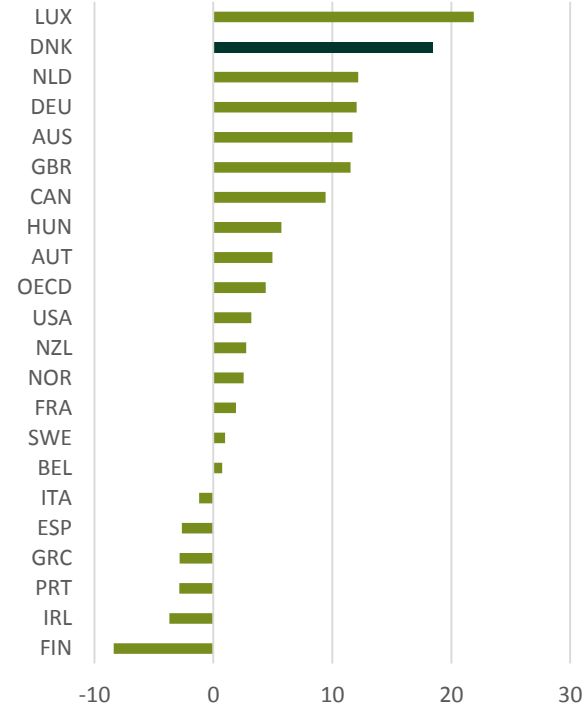
The question is easily put. How does a small nation in Northern Europe forge and maintain a global perspective in its chosen areas of excellence? The US – particularly Silicon Valley and Greater Boston – are global melting pots for ideas and people (Kenney and von Burg, 1999). Work by Wadwha et al. (2007) shows that there was at least one immigrant key founder in 25.3% of all engineering and technology companies established in the US between 1995 and 2005.

The polyglot nature of entrepreneurial activity is also seen in the UK at both world-class centres of excellence such as the University of Cambridge or in the new ambience of London’s Tech City. Perhaps Silicon Valley’s greatest triumph is that it is common-

place for British, Israeli, Chinese or Indian entrepreneurs *first* to travel to Southern California in order to start their entrepreneurial careers. Similarly, the UK, and particularly London, is becoming a magnet for entrepreneurs across Europe and beyond. The rapid growth of Berlin as an entrepreneurial hub is becoming a similar magnet for new enterprise in Germany and will attracting entrepreneurs from beyond its borders.

How does Denmark present itself as an attractive location for new knowledge workers born or working beyond its borders? It is unlikely that a sustained competitive position in products and services of interest to the VC industry can be maintained by exclusively relying on its five million citizens. In practice, as OECD figures show, Denmark has performed relatively well with its Green Card system in the last decade in efforts to attract highly educated immigrants, see Figure 5.4.

FIGURE 5.4
Change in the proportion of highly educated immigrants among recent immigrants between 2000–2001 and 2009–2010, percentage points



Source: OECD Economic Surveys: Denmark 2013 (OECD 2014a)
Note: Data available at <http://dx.doi.org/10.1787/888932980773>

The international perspective of Denmark is seen by virtue of its location and small size as a national economy. An ambitious and growing company or investor has to quickly cross borders. This is well illustrated in the three funds raised by DGF in 2010–2012. (SEED Capital Denmark with an exclusively domestic focus raised the fourth fund.). For the other three funds, 15 of the 23 investments were in firms of non-Danish origin. DGF’s own figures identify the international role of its three most important funds: Between 2007 and 2013 (Q1), the three funds (Sunstone Capital, Seed Capital and North-Cap Partners) invested DKK 468m in foreign portfolio companies, see Table 5.3.

Just over half of the amount is invested in IT companies, while the remainder is invested in life science companies. During the same period, foreign investors invested DKK 2.6bn in the three funds. Life science companies in the period received DKK 1.5bn, which constituted approx. 60% of total international capital injected. Overall, throughout the period, foreign funds have invested more than five times more in Danish companies than Danish funds invested in foreign companies.

TABLE 5.3

The international role of the three most important funds for DGF

2007–2013 (Q1)	ICT	Life sciences	Clean-tech	Total
Capital invested in foreign companies, EUR m	34	28	0	63
Capital attracted from foreign investors to Danish portfolio companies, EUR m	95	206	45	346
Attracted capital compared to capital invested abroad, ratio	2.7	7.3	-	5.5

Source: DGF and DAMVAD

While this international logic can produce challenges for politicians, effective VC investing is increasingly cross-border in nature. A system based on parochial support for Danish companies alone ignores the valuable reciprocity of cross-border VC investment. This reality and its political challenges appear well recognised by DGF’s management and fund managers.

Profit-seeking agents

Executive programme activity, i.e. the selection of and investment in young enterprises with high potential should be directed and driven by private sector agents incentivised to invest in their own best commercial interests within the constraints of agreed policy directions (i.e. early-stage technology finance). It is the programme managers’ role to ensure that the private-sector incentives employed are effective, timely and proportionate (i.e. provide value for money to both public and private stakeholders.).

A noted trend in publicly-supported VC programmes is the recognition that public servants should not be the primary means by which investment finance is allocated. The ‘animal spirits’ of private, rent seeking investors (i.e. venture capitalist general partner are seen as better able to identify and successfully exploit new business opportunities (Murray and Lingelbach, 2009; OECD, 2013).

Accordingly, the government has largely withdrawn from directly investing (into recipient portfolio forms) in several countries. Increasingly, it has preferred to take on the role as a co-investor/LP in VC fund and FoF structures. The creation of the UK’s CfEB in 2008¹³ was an explicit recognition that in taking on VC investment responsibilities, or even the selection of GPs, the British government and particularly its civil servants were operating beyond their remit and areas of expertise.

This change to private agents is not universal. In Germany, the High-tech Grunderfond (i.e. seed funds) at over DKK 3.7bn (EUR 500m) committed funds are direct investments. In additional several

¹³ At this time, CfEB also took on the responsibility for managing the UK government’s Loan Guarantee Schemes in England.

states also offer programmes directly managed by state government employees.¹⁴

This view of a limited role for government employees also supported the growing importance of FoF structures in the substantial UK public supported VC activity. For those activities that assume a role for publicly-funded programmes, we would expect that the persons involved in such programmes would also be incentivised in a manner equivalent to private VC agents, i.e. a direct participation in the 'carry', i.e. the share of net capital gain created by the investment. Such results-based rewards exist for investment staff in, for example, HTGF, CfEB Finnish Industry Investment as well as in DGF.

These examples illustrate and stress the need for *aligned* incentives for all participants in the VC process, including entrepreneurs, venture capitalists and (direct and indirect) investors. The need for alignment also lends some support for the *pari passu* model and the refocusing of DGF towards indirect investments through FoF structures run by private entities.

DGF's increasing and now predominant use of indirect investment via private agents follows common government practice. The continued but limited use of direct investing via DGF Ventures is the one contradiction to this overall organisation trend.

Aligned Incentives

The combined social and economic returns to government of a successful investment programme are likely to be greater than the financial returns captured exclusively by private investors. These investors cannot capture or monopolise the valuable externalities or spillover effects that can occur with

major innovations. Therefore, they are likely to provide or support a lesser supply of new goods and services than government would see as socially optimal. Accordingly, it is appropriate that programmes can structure incentives that design preferential returns to private investors to ensure their continued interest and engagement, i.e. asymmetric rewards.

The crafting and implementation of incentives to attract all parties to engage in early-stage VC activity is central to a well-designed programme (Jääskeläinen, Maula and Murray, 2007). There are no absolute rules, and a wide spectrum of opinions is held regarding the role of incentives to both investors (LPs) and VC fund managers (GPs).

At one end of this spectrum is the view that all dealings should be *pari passu*. That is, all investors are treated equally in all aspects of capital commitment and profit distribution. There are no greater (or lesser) incentives for private as opposed to public investors. For those holding this view, the *preferential* incentivising of private investors introduces a flaw into any programme. Such beneficiaries are likely to act in part because of the additional or bonus incentives offered regardless of the underlying quality of the firms in which they are asked to invest. Here, preferential or asymmetric investments are believed to bias an investment decision which should be made exclusively on the economic merits and business potential of the portfolio company.

The contrary view put forward by its advocates is that the difficulties of early-stage investing are legion. Accordingly, it may be entirely rational for private investors *not* to undertake any seed or early stage VC activity. Indeed, several VC firms specifically note that they will not do start-up investment or

¹⁴ I am indebted to Alexander von Frankenburg, CEO of HTG, for these observations on Germany.

make initial investment under a certain size. These boundaries usually preclude most early-stage deals.¹⁵ The paucity of seed, start-up and early-stage VC activity across Europe and beyond over the last ten years supports their concerns.

Supporters of skewed rewards argue that government has a legitimate role in improving incentives to private investors by adjusting the distribution of rewards from successful investments asymmetrically to reward private investors. Such a preference recognises that the government gains additional spillovers and externalities (Jaffe, 1989), such that the social and economic returns to an enterprise investment may be significantly larger than the private returns that LPs are able to capture (CBER, 2010; Griliches, 1992). The fact that spillovers are important lends support to the case that the government can preferentially reward the private sector while still providing sufficiently attractive social and economic returns to the government investor.

Those in favour of *pari passu* challenge the above and state that asymmetric rewards are in danger of producing 'soft' and therefore unreliable investors. The asymmetries also allow investment managers not to have to strive as hard as when such incentives are not present. It is argued that the managers, like the investors, become beguiled and seduced by unearned benefits. A frequently cited example is of government-supported VC funds that allow the managers (GPs) to earn an attractive living from the fee income earned in managing the fund regardless of the success or failure of the enterprises financed.¹⁶ Their argument is that anything that makes a programme investment different (i.e. easier) than such an investment without government

help will not help nurture and 'battle-harden' an industry that will eventually have to succeed competitively on its own merits and without government support.

Both *pari passu* and asymmetric rewards have their place depending on the circumstances and the context. HTGF managers in Germany support the *pari passu* model. They do not wish to appear to be different from the private VC investors who are their partners. In contrast, the policy architects of the VIGO programme¹⁷ in Finland see the need for an asymmetry of benefits as central to their ability to intervene in the seed market and to promote the funding by private investors of very risky new-technology enterprises. They stress that the rewards of asymmetry are only realised when a real profit is generated.

Dutch seed and pre-seed VC schemes structure a capped return to the state and a bias in favour of the private investor. However, if the investment goes on to make excellent returns, the third stage of the funding commitments seeks to move the rewards back towards a *pari passu* structure. However, in practice, asymmetry of distribution is the normal outcome.

CfEL managers in the UK like the clarity of *pari passu* but also recognise that the state's capping of its own returns (i.e. a form of asymmetry) has a powerful leverage effect on the returns of private investors. Although an insufficient sample, it is interesting to observe that those managers recruited from the private sector appeared to be more keen on a *pari passu* model which stressed that government-assisted funds should work exactly like private agents.

¹⁵ See the members' register in the documentation of the British Venture Capital Association and other country-based VC associations.

¹⁶ This criticism has been made of SBICs, and several VC programmes associated with regional funding.

¹⁷ VIGO is an accelerator programme for start-up companies. VIGO supports high-quality, internationally focused companies by connecting promising start-ups with experienced entrepreneurs and funding. Finnvera is part of the steering group for VIGO.

One interesting point made by a CfEL manager in the UK is that *pari passu* allows the public architects of a VC programme to move more quickly.¹⁸ Asymmetric schemes are much more likely to be held up in the approval process at EU level because of their potential conflict with equity and competition regulations.¹⁹

An interesting observation from Australia noted that many institutions would prefer government to lower its asymmetric rewards if it would also provide a guarantee against investment losses. Such a 'downside' guarantee still exists in a number of German schemes when losses are greater than 50% of funds invested. Many observers suggest that while de-risking would be highly attractive to institutional LPs and generate greater fund growth, this incentive also removes culpability from the GPs for poor investment decisions. Guarantees also leave government with an open liability.

Overall, DGF demonstrates a very clear understanding and use of aligned incentives in the employment of agents as general partners and investors. Its commitment to pari passu is encouraging as it represents a lesser level of influence on or interference with the market. However, its commitment is pragmatic. The use of 75% loan guarantees to institutional investors and the asymmetry of risk with syndicated loans²⁰ show that the organisation is willing to find appropriate asymmetric incentives where necessary.

Planned Redundancy

The purpose of having a publicly-supported VC fund is to improve the entrepreneurial environment, to

train practitioners and users as to the advantages of risk capital, and to act as a catalyst in identifying and overcoming hurdles to successful and profitable investment. The purpose of the state's involvement is not to substitute for commercial providers of risk capital in the long term. Accordingly, over time, there should be clear evidence of a reduction in the relative commitment of public finance as a maturing market become colonised by fully commercial providers. Co-financing schemes should (at best) only temporarily condone public financing being greater than 50% of total programme funds committed. The ultimate aim of publicly-supported enterprise finance programmes should remain that of a planned redundancy of state intervention.

The concept of 'pump priming' implies appropriate and *temporary* intervention. It further assumes identifying operational barriers (e.g. experience, skills, networks etc.) that can be addressed and then overcome. Yet, the reality is that for programmes of sufficient size to have a material effect on the markets in which they intervene, governments are likely to become long-term participants rather than temporary visitors. This 'white knight' situation of temporary intervention, correction and then retirement of the programme appears extremely rare. The most commonly cited example of a successful temporary intervention by government is the famous Yozma programme (1994–1997) in which eight of the ten publicly-co-financed Israeli VC funds were rapidly sold to their VC managers at a USD 100m profit to the Israeli exchequer in less than three years (Avnimelech and Teubal, 2004; Erlich, 2001). Yozma is repeatedly cited particularly because such a successful and brief public intervention into VC is so rare.

¹⁸ I am indebted to Rory Earley and Ken Cooper, both formerly of CfEB, as well as Tom Honeyman and Justin Hill ex DIISTR, Canberra for their experience, insight and analytical observations.

¹⁹ Regulation from the EU and particularly competition and financial regulation in the form of the Alternative Investment Fund Managers Directive

are material to any discussion of VC activity. However, this report is not the place for such a discussion. SEE EVCA 2013 *AIFMD Essentials*.

²⁰ It is not possible to comment meaningfully on the syndicated loan activity which was only introduced by DGF in 2013.

There is a real danger that pump-priming by the state translates into a permanent arrangement with private investors happy to leave the onus and challenge of early-stage investing to the public exchequer. Mindful of this danger, the UK's Capital for Enterprise Board was legally prevented by its statutes from becoming a cornerstone investor. CfEB could only invest *after* private investors had provided sufficient monies to make the new fund a viably sized entity with CfEL's assistance. Such a prescription has the effect of ensuring that government does not colonise part of the capital market where there is no commercial interest from private and commercial interests in creating or sustaining such an activity. In the protracted absence of private investors, governments do need to be very sure as to why their own intervention is justified. A 'market failure' argument may not be credible. That professional investors do not choose to invest in enterprises that will not return a profit commensurate with risk and illiquidity incurred cannot *per se* be seen as a market failure.

There is little evidence of planned redundancy in any of DGF's current programmes other than possibly its DGF Ventures programme which has been scaling down. The private sector is likely to continue to wish for public co-investment. Offering the totality of DGF's activities to the market would only result in a private substitution of DGF's activities in the (unlikely) event of very attractive investment returns. But DGF is working in difficult areas precisely because, although of critical economic importance, the required returns are not recouped by private investors.

In the current and foreseeable future, it is unlikely that DGF will be able to move from its market support role. Such an action would almost inevitably result in a major drop in the supply of venture capital to start-up and early-stage Danish companies. The

term 'pump-priming' is attractive given its suggestion of limited and temporary involvement. However, the terms used, including 'catalyst', are, ultimately, a misinterpretation of DGF's true role which is one of a long-term co-investor and complement to the private sector motivated by public policy rather than investment returns.

Adoption of Administrative Norms

In order to attract domestic and international finance from private institutional investors to the programmes, fund and management structures should conform closely to internationally-accepted legal, financial and operational norms of the international venture capital industry.

While the adoption of unfamiliar legal structures was initially seen as a barrier in a number of European countries and Australia, this battle is largely over. The dominance of the US VC industry with its focus on the Limited Liability Partnership's (LLP) tax transparent structure, has meant that the US industry has created a *de facto* industry standard which has been adopted widely across the world. Kaplan, Martel and Stromberg (2007) show that in Europe the most experienced VCs use US-style legal contracts, independent of their legal environment.

Emerging VC industries have acknowledged institutional investors' intolerance and suspicion of non-standard legal structures. Similarly, domestic policymakers have recognised the difficulties of attracting international capital to an unproven VC industry

without adding the additional hurdle of imposing unfamiliar legal structures.²¹

In this regard, DGF's equity operations are structured and managed in a fashion which would not distinguish them from any other professional and private VC provider. Their structures meet international standards of practice as demanded by institutional investors and international VC partners.

Long-term Perspective from Government

Given the sensitivity of early-stage venture capital programmes to the volatility and uncertainties of economic and technological cycles, it is reasonable to withhold final judgments of programme performance and related policy objectives until a sufficient period of operation has elapsed. There was a consensus among practitioners interviewed (see full list of interview respondents in Appendix A) that a period of approximately fifteen years of sequential fund investment and realisation was appropriate before a fund or GP's performance could reasonably be appraised.

For better or for worse, the policy process has to recognise the influence of political necessities on its calculations. In an ideal world, the responsible departmental minister wishes that the policies and programmes that he/she has promulgated and supported should be realised quickly in material and unambiguously positive outcomes. In the case of public programmes to support early-stage VC investment, the minister is likely to be disappointed.

A ten-year fixed early-stage fund is likely to take at least the full period to produce stable and finalised results – be they good or bad. Indeed, it is common

for fixed-term funds to allow contractually for significant extensions of the term in order to allow for the eventual sale of portfolio companies beyond the planned period of the fund. For example, there are only recent signs of the IPO market starting to re-emerge in the USA and Europe (*The Economist* 11 Jan 2014). IPOs are a major exit route for VCs, and their absence can have severe consequences on the longevity and performance of fixed-term funds.

We also know that there are strong 'experience effects' in VC investing (Gompers et al., 2009; Kaplan et al., op. cit.; Lerner and Hellman, 2012). Subsequent funds may benefit from the now more experienced and tested VC managers. Fund specialism may also pay dividends. Against this, as noted, the timing of business cycles can overwhelm and confound the best prepared plans of the best management teams at both portfolio firm and fund levels.

As a result of this volatility, fund managers should not be judged on short-term results. A perspective over the evolution of a VC management team's handling of perhaps three contiguous funds becomes reasonable. In calendar terms, this is likely to require a duration of at least fifteen years of activity. Clearly, governance systems need to be in place to monitor the totality of the investment activity and ensure effective due process. But such systems will not tell whether or not the chosen managers (GPs) can ultimately produce attractive commercial returns.

Given the peculiarity of VC investing with its 'hockey stick' curve (i.e. failures normally come before investment successes), all the first few years are likely to show is the predominance of early portfolio selection mistakes resulting in premature firm deaths.

²¹ This point was made by Morten Westh Naldal, Head of Legal at DGF, acknowledging that full conformity to internationally accepted standards was a critical condition of fundraising for a VC.

There is also evidence of an experience effect for VC fund managers. Accordingly, for DGF with a major restructuring in 2006 and the development of its important FoF activity starting in 2011, it is not yet meaningful to seek investment performance details for a significant part of its current VC activity. None the less, the early indications of an increase in TVPI over successive funds are to be welcomed, particularly given the poor performance of earlier investment activities prior to 2005 (see section 2.5.4.).

Transparency

The evaluation of programme performance, including the metrics used and the methodologies employed, should be made explicit and accessible to all programme stakeholders, ideally at the time of programme inception. The evaluation process should be made public, including the planned date of future evaluations. Informed parties independent of the examined institution should conduct formal evaluations of the programme.

While it is difficult not to agree with the above aspiration, the evidence does not support the inevitability of informed and independent evaluation. The OECD is currently looking at how collective experience may best be leveraged to ensure that policymakers have access to best practice in evaluation methodologies (OECD, 2014). Here, the production of reliable metrics is essential. 'What is collected from whom and how' underpins good evaluation practice.

Yet, policymakers frequently invest somewhat less effort in designing (and financing) the interim and final evaluations of a programme than in ensuring its initial launch. Data-collection systems need to be designed at the advent of the programme and programme recipients legally bound to provide the data needed to determine the programme's outcomes. In

the absence of such planning, efforts to capture relevant data ex post are often disappointingly half-hearted. The learning outcomes of such poorly documented (or understood) programmes are similarly weak.

DGF has continually monitored its activities and collected relevant data on its investment activities. However, it is properly obliged to provide such data in order to justify its continued support to government supporters. Similarly, the institutional investors supporting its fund activities will also have their own clear industry-standard expectations of investment and performance requirements from their fund managers. DGF demonstrates a transparency which is seen as an expected norm from publicly-supported bodies in Scandinavian nations.

Yet, such numbers provide reporting information, not analysis. While the metrics required by executives and the government are essentially descriptive in nature, the scale of DGF's activities will increasingly allow the opportunity to undertake more sophisticated econometric modelling. In the UK government's review of its risk capital programmes (Cowling et al., 2011) the richness of data allows rigorous multi-variate analysis to test causation and impact. Germany, Sweden and Finland similarly use highly sophisticated quantitative methodologies in policy-oriented reviews. In its IIF programme, Australia has similarly invited academic evaluators to undertake quantitative assessments (Murray, Cowling and Liu, 2010). DGF already uses the Danish Business School to ascertain the socio-economic returns on its activities.

DGF already has well-managed data management and analysis services to support its investment activities. It is also well-linked to sources of professional policy review both internationally (Nordic community, European Union, EVCA, OECD, World Bank, etc.), as well as embracing some academic

collaborations. Over time, DGF will probably increasingly wish to undertake a detailed quantitative performance review to ascertain investment and policy impacts and effectiveness at the level of the firm and the fund. (It may also wish to look at the use of randomised trial methodologies which are increasingly being employed to improve the accuracy of empirical findings.) This is an area where Nordic countries have the potential to be exemplars in the methodologies of rigorously appraised public policy action.

Experimentation, Learning and Adaptation

Successful programme execution should be characterised by continued learning, experimentation and adaptation. Programme managers should be able to demonstrate that the resultant programmes are significantly informed by a deep familiarity, including strengths and weaknesses of design and execution, with equivalent programmes adopted by other national and international (public and private) enterprise finance agencies.

There is an increasingly substantial, body of knowledge of publicly-supported VC fund activity, both from practitioners and academics, available across the advanced economies of western countries. Most countries of Western Europe have some form of VC programme with the state acting as a sponsor and/or investor. The European Commission places considerable emphasis on the role of VC in economic development within the European Union. The FoF programme of the European Investment Fund is probably the largest scheme of its kind in the world. Yet, most VC programmes remain strongly parochial in their structure and implementation. Contiguous country programmes may have an influence, but foreign programmes are frequently poorly understood and too readily seen as inappropriate within specific cultures or context.

Thus, there is a need for DGF to be oriented towards similar government institutions in other countries to learn from their experiences – both good and bad – and to adapt to these. Based on the interviews (see Appendix A), DGF appears to be active in the European VC community and actively participates in OECD work on the subject. Thus, DGF is in a position to access new knowledge in the field from both within and outside the Nordic community.

In the context of DGF, there is evidence of experimentation, learning and adaptation. The wholesale changes since 2006 in fund type, structure and focus support this assertion. The spinoff of Sunstone as an autonomous set of funds indicates a boldness to address market realities. Similarly, the removal of smaller funds and the separation of DGF activity from regional-investment pressures indicate a level of professionalism and political courage. More recently, the advent of the syndicated loans to VC portfolio firms in 2011 is an experiment that directly addresses funding issues in the early-stage enterprise where VC's equity capital is constrained.

Table 5.4 below summarises the ten indicators compared to the peer countries of our study. It should be stressed that such a rating is highly subjective. It is used to stimulate reflection and discussion rather than to be taken as an absolute statement. It would be useful to conduct this exercise among the management of DGF itself.

TABLE 5.4

The 10 indicators compared to the peer countries

#	Indicators	Subjective rating against selected European peers
1	Existence of an entrepreneurial ecosystem complementing VC activity	2
2	Understanding 'competitive advantage' in determining VC fund's deal-flow	2

3	Global perspective in funding and investing	3
4	Employment of profit seeking 'agents' as GPs	3
5	Aligned incentives between government and its GP agents	4
6	Planned redundancy of programme intervention over time	2
7	Adoption of administrative and legal norms of VC activity	4
8	Long-term perspective from government as to evaluation and impact	3
9	Transparency of programme to the public	4
10	Experimentation, learning and adaptation by programme managers	4

Source: Gordon Murray and DAMVAD

Note: 1 = much worse than; 3=same as; 5; much better than

5.3 The Evaluation of Publicly-supported VC Activity

The popularity of government involvement in early-stage VC activity cannot yet be measured by a similar number of robust evaluations of the outcomes of such policy initiatives in entrepreneurial finance. The OECD (2013) and the Swedish Agency for Growth Policy Analysis (2009) have each looked in some detail at the variable supply and quality of evaluative materials. An implicit assumption of such criticisms is that it is difficult to promote cross-programme or country learning if the analyses and methodologies available are not robust. The ideal system might be a general agreement on the nature and purpose of an evaluation prior to the commencement of the programme.

Such an *ex-ante* agreement would include the data to be collected and a broad design of the methodologies and analyses to be used. Interim and final (*ex-post*) evaluations would use, refine and augment the earlier methodologies and analyses. The actual evaluators would be selected on the basis of both

their expertise and their independence of any interest in the programme or its outcomes. Such an ideal and timely process is rarely the norm. Most evaluations of public programmes are likely to be internally conducted with considerable restrictions on their use or dissemination. Public audits of government programmes do not necessarily resolve this problem of independent evaluation.

It cannot be assumed that the government or its officers will invariably understand VC sufficiently to conduct rigorous evaluations. Like many financial instruments, VC is a complex process. Information asymmetries also exist between government and its VC agents. Further, the long-term nature of VC investment raises particular issues of timing and context. LPs, including government, will be asked to commit finances for a fixed period of often ten years or more. For some complex technology investments with a necessarily long lifecycle of development and testing, as in biotech and medical products, ten years may not be a sufficiently extended horizon for the accurate assessment of economic outcomes.

This extended periodicity raises important issues. Evaluations should not be left until the policy or programme is finished. Interim evaluations are necessary in any proper process of public governance. Countries with limited experience of VC programmes particularly might need to conduct early interim evaluations. Such evaluations have to deal with the problem of partial information. Cowling and Murray (OECD, 2013) looking at UK evaluations, have noted the sensitivity of programme outcomes to the timing of the assessment. A commercial or technological breakthrough as well as changes in the wider economic environment are likely to rapidly change a firm or fund's economic prospects.

The extended period of VC investing and harvesting raises further problems and particularly that of the

influence of the economic cycle. Like all market activity, VC can be reduced to buying low and selling high. With short-term economic cycles occurring every 8 to 12 years, the exact time at which investments were made can dwarf other selection or performance effects. VC partners and investors entering the US or UK market in 1996–1998 rarely failed to make money in a major technology boom. The same investors starting second or follow-on funds in 2000 and 2001 saw stock markets and company exit valuations collapse while entrepreneurs still maintained unreasonably high expectations for young company evaluations. The successful ‘vintage years’ of the mid to late 1990s for VC funds were replaced with disastrous negative investors’ returns for funds raised only two or three years later. The latter funds were often raised by the same managers and invested in the same sectors as the formerly successful funds.

Thus, timing – the vintage year in which the programme starts – can have a profound effect on VC fund returns. Accordingly, it is rarely sufficient to assess a GP’s skills or a programme’s effectiveness by referring to one fund or a short period of activity.

5.4 Changes in DGF’s VC Activities

In the context of enterprise finance and particularly risk capital, Denmark is little different from its Nordic and (Northern) European peers. Since the beginning of the second millennium (2001), DGF has increasingly been an active participant in the provision of VC to Danish firms with the potential for exceptional growth both domestically and internationally.²² It has followed a process of policy learning also seen across other advanced Western econo-

mies with a strong interest in VC and enterprise finance (Tykvova et al., 2012). Namely, the state has changed its role from that of a direct investor in new/young enterprises to a more indirect responsibility as a major public co-financier of VC funds. Thus, the state has increasingly removed itself from the executive position of a general partner allocating funds to promising companies. Professional investors with a clearly commercial objective have taken this position of investment or fund manager. They are incentivised by the state to take on this agent role in recognition of the considerable challenges of successful and profitable investment at the early stages of the VC cycle.

Accordingly, government acting as a co-investor or ‘special’ limited partner (LP) has largely superseded government activity as a direct investor. In this latter model, exclusively adopted in, for example, the UK or Australia, the state has no commercial input but leaves this decision making to its elected private sector agent acting as the general partners (GP) of a VC fund in which the state is also an investor (LP). DGF retains a direct VC activity as do government sponsored investors in Sweden (Industifonds) and Finland (FII). However, in each country this channel of investment has increasingly been reduced in favour of commercial GP agents via VC funds or VC Fund of Funds.

Changes in activity over time

The changes in DGF since 2001 show an increasing awareness and reaction to the difficulties that characterised the first decade post 2000. Starting with the implosion of the ‘technology bubble’ in the spring of 2000, which savagely reduced the attractiveness and volume of early-stage VC investing and moving to the deepest global recession since

²² As a rule of thumb, such growth firms will represent approximately 5% of all firms started in any one period (NESTA, 2009).

World War II starting in 2008, enterprise finance has had to recognise the unattractiveness of this risky asset class to nervous investors (Rosa et al., 2006; Sohl, 2003). Moving to a predominantly Fund of Funds (FoF) structure is, as noted, an industry-wide trend in mature VC markets.

The move in part reflects the growing experience of the industry and a sufficiency of professional GPs, which may be trusted by investors. Secondly, it reflects the scale economics necessary for institutional investors (including pension funds, insurance companies, sovereign wealth funds, etc.) to be able to consider VC as an asset class when incorporated into their multi-billion-dollar portfolios.

In the absence of an FoF structure, large institutional investors wishing to invest (for example) USD 20m in a VC fund would only be able to choose the largest funds (>USD 200m) if they did not wish to have an excessive weighting/exposure to any one fund. The aggregation effect of an FoF structure reduces this problem if a sufficiently large number of VC funds are available for inclusion in the FoF scheme.

The fact that DGF has made this move towards indirect investments through FoF structures can be seen as an appropriate adaptation to the developing Danish VC market, a proactive response to investors' needs, and the recognition of a need for sectorial specialisation.

5.5 DGF's Equity Investment Activities

5.5.1 Different modes, different platforms

The following section examines DGF's VC activities during the period 2010–2012.

Focus is partly on the direct (DGF Ventures) and indirect (DGF Funds) VC activities separately and partly on Danish Growth Capital (Fund-of-Funds).

The focus of the evaluation is on the period 2010–2012, but data from 2008–2012 is included to ensure overlap with the evaluation Ernst & Young conducted in 2010 (see further on this in the box below).

Comparison to 2010 evaluation

When comparing data on direct investments from this evaluation with the EY (Ernst & Young) evaluation carried out in 2010, the reader should be aware that some data are not fully comparable. This is due to the following circumstances,

- DGF calculates data on direct investments from the time the invested capital has been transferred and not the time the deal was made, which was the case in the 2010 evaluation.
- DGF does not use the term pre-seed anymore, which means that investments termed pre-seed in the 2010 evaluation are termed seed in the current evaluation.
- DGF uses the following sector definitions Cleantech, ICT, Industry, Life Sciences and a residual group named 'other'. In the 2010 evaluation EY worked with a different set of sector definitions.

Source: DGF and DAMVAD

DGF Ventures

DGF invests directly in a number of companies. This includes both initial investments and follow-on investments. DGF Ventures has been described as the "venture light" model of smaller investments in companies with growth potential" (DAMVAD, 2013)

Direct investments are investments made by DGF directly into a company. By doing direct investments, DGF assumes the responsibility of active co-ownership. This is usually a minimum of 20% equity stake initially. DGF Venture managers are on the board of portfolio companies and are actively involved in strategy development and governance.

The number of investments was relatively stable from 2008 to 2012 with the exception of 2009 where

there only were two initial investments, see Figure 5.5.

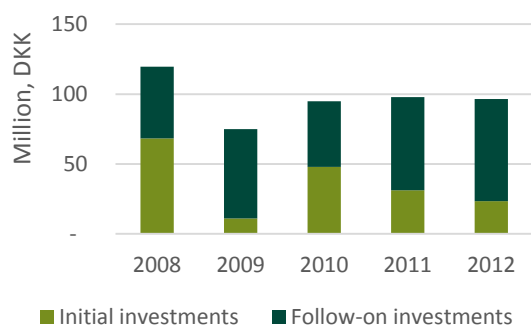
FIGURE 5.5
Number of direct investments



Source: DGF and DAMVAD

From 2010 to 2012, the total amount invested was stable, but the amount invested in initial investments fell in the period from the highest year of 2008, see Figure 5.6.

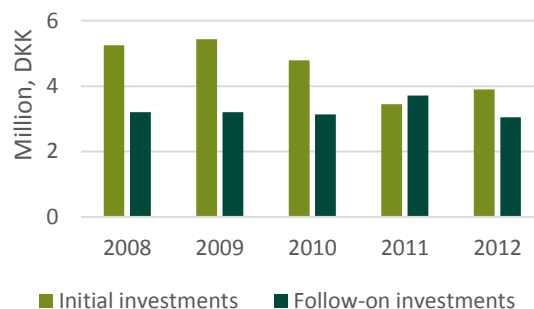
FIGURE 5.6
Total amount invested in million DKK



Source: DGF and DAMVAD

Since 2008, the trend has been for the average values of follow-on investments to stay relatively constant, at around DKK 3m. In contrast, Initial investment averages have fallen over the period. If continued, these trends would perhaps suggest some winding down of this direct activity, see Figure 5.7.

FIGURE 5.7
Average investment in million DKK



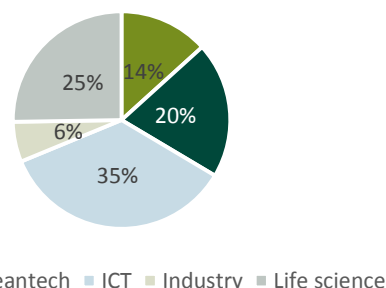
Source: DGF and DAMVAD

Since the beginning of 2011, DGF has been able to provide additional syndicated loans between DKK 2–7.45m (EUR 1m). This could also affect the need for direct investments from DGF, and may partly explain the decline in initial investments from 2010 to 2011, since syndicated loans to some extent replace further equity investments.

Sectors

From 2008 to 2012, the main sector of initial direct investment was ICT, but the amount invested is relatively diverse with Life Science and Cleantech as the other dominant sectors, see Figure 5.8.

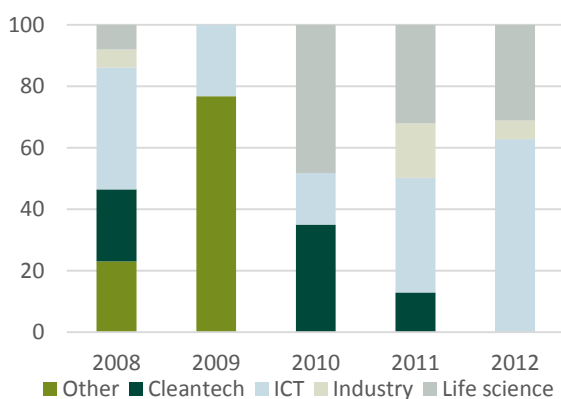
FIGURE 5.8
Breakdown of accumulated initial investments by sector, 2008–2012



Source: DGF and DAMVAD
Note: Breakdown of amount invested

DGF's focus on the ICT sector increased up to 2012, while the share of Life Science and Cleantech investments fell. In 2012, DGF did not make any initial investments in any Cleantech companies, see Figure 5.9. These patterns may reflect the fact that only two of the management team are Life Science specialists or more likely a considered view as to contemporary opportunities. Similarly, the poor financial returns on Cleantech investments and this sector's subsequent reduction would suggest institutional learning. Given the small number of actual investments, generalisations from these results should be treated with some caution.

FIGURE 5.9
Distribution of initial investments by sector, %



Source: DGF and DAMVAD
Note: Distribution of amount invested

Stage of investments

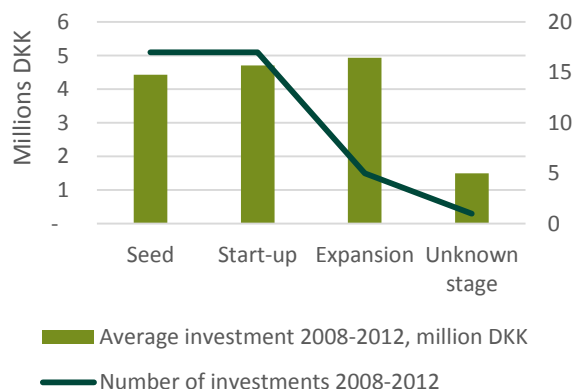
The average size of seed, start-up and expansion investments was 4–5m DKK. There was an equal number of seed and start-up investments (17), and only five expansion investments were made, see Figure 5.10. While one would expect to see less later-stage investments over time due to natural attrition, it is perhaps more surprising that seed and start up investments were of equal number and equal average values. Normally one would expect that a small number of later-stages and follow-on

deals would consume markedly larger average investments, and particularly so for the expansion stages. This is not the case, since the average size of expansion investments are only slightly larger than seed and start-up investments.

This could be explained by the fact that syndicate partners were taking over the largest financial commitment to later-stage investments. Such a pattern is likely to depress DGF's investment returns from such activities, albeit that the pump-priming logic encourages exactly this type of transfer to private parties.

Again, the results shall be treated with caution given the relatively small amount of actual investments made by DGF.

FIGURE 5.10
Initial investments by stage, average size and number, 2008–2012

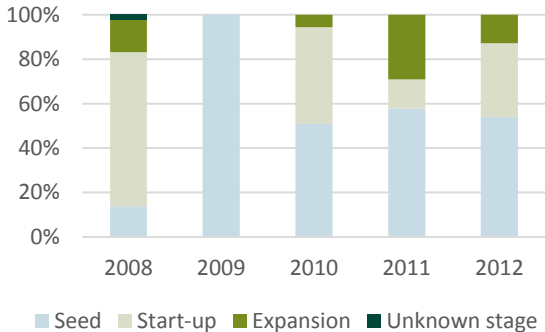


Source: DGF and DAMVAD

The percentage of start-up investments fell from 2008 to 2012 while the percentage of seed (pre-commercial) investments increased, see Figure 5.11. Again, this pattern is not common. The fact that a government-supported fund is undertaking a majority of seed activity can be construed as a market-supporting logic. Generally, nascent firms re-

quiring seed capital struggle to command any interest from professional investors. However, in many countries, seed is no longer seen as an activity for professional VC investors but more a precursor activity to be supported by business angels or other informal investors. However, this market is not yet well developed in Denmark.

FIGURE 5.11
Distribution of initial investment in %



Source: DGF and DAMVAD
Note: Distribution of amount invested

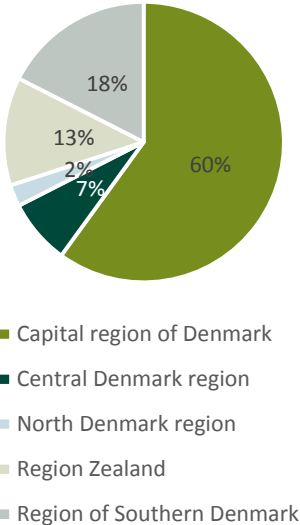
Geography

The main region of direct investments was the Capital region where 60% of the investments were made. The North Denmark region is the region where DGF has invested the least, see Figure 5.12.

Given that most entrepreneurial activities are generated in metropolitan areas (Kerr and Nander, 2012), this pattern is desirable and should be defended against its detractors. However, a metropolitan focus, despite its commercial validity, will always be vulnerable to the protests of regional interests. While such partisan interests are understood for the majority of VC public programmes, a concentration on regional issues (frequently addressing societal concerns of equity, opportunity and access) is inimical to the running of a professional and commercially-focused risk capital operation. Concentrating on social investing is likely to undermine the

ability and competencies of professional VC investment teams seeking commercially attractive enterprises in new knowledge areas.

FIGURE 5.12
Distribution of direct initial investments by region, 2008–2012



Source: DGF and DAMVAD
Note: Percentage distribution of number of investments

DGF Funds

In the period 2000 to 2012, DGF invested a total of DKK 4bn. DKK 2.3bn was invested directly in Danish companies (DAMVAD, 2013). It is worth remembering that prior to 2007, indirect VC investment in independent VC funds was the minority activity. The spin-off of Sunstone Capital that year was pivotal in DGF’s evolution. Fund of Funds investing starting in 2010/11 is still very new indeed in terms of the VC cycle.

Sunstone Capital
Sunstone Capital is a private fund established as a spinoff of activities from DGF in 2007. Sunstone focusses on life science and technology investments.

Since Sunstone was spun-off in 2007, it has raised four additional funds. Sunstone administers six funds: three life science funds and three technology funds.

The investors in Sunstone are predominantly Nordic and international institutional investors: European Investment Fund, Industriens Pension, Sampension, ATP, Nordea Liv og Pension, DGF, and DGC.

Source: www.sunstone.eu and DGF

As at September 2013, DGF Funds had a portfolio of 24 funds. Its total commitment to these funds is DKK 4.8bn. The funds have collectively raised more than DKK 11.5bn and invested in more than 269 companies (DGF, 2013).

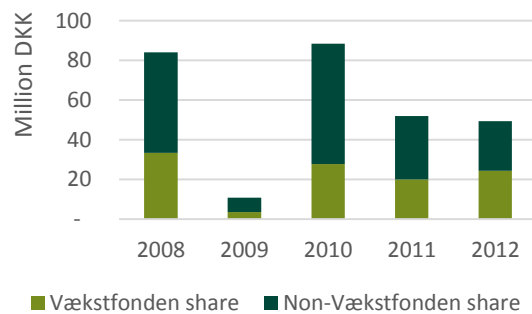
In recent years, DGF has focussed the bulk of its investments on indirect investments through funds run by professional managers (general partners). Here, DGF takes on the role of a limited partner in these partnerships together with the other institutional investors. The fact that government is often the largest investor does not convey any special or preferential partnership rights. The form of indirect investing has become the most popular mode of operation in publicly co-financed VC programmes across the developed world.

Distribution of indirect investments

DGF's share of total Danish investments varies across funds. In some funds, DGF is the primary investor, while DGF is a minority investor in others. The total amount of initial indirect investments has been declining since 2008. The 2009 level of investment was extraordinarily low as were direct investments, See figure 5.13.

FIGURE 5.13

Distribution of indirect initial Danish investments, million DKK

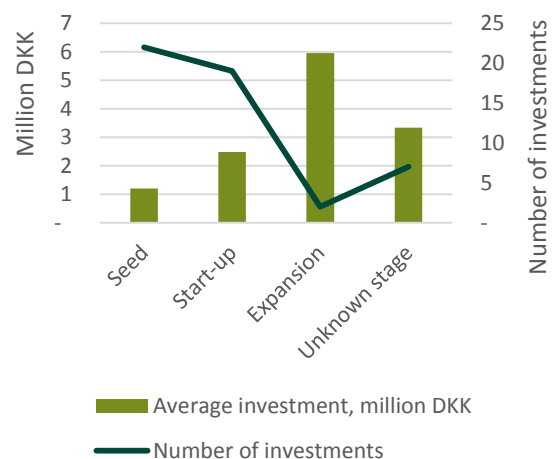


Source: DGF and DAMVAD

Most initial indirect investments are made to companies in the seed phase and start-up phase. The seed phase is where the average investment value is the lowest, just above DKK 1m. Start-up investments are twice as big as the seed investments, while expansion investments are much bigger, see Figure 5.14.

FIGURE 5.14

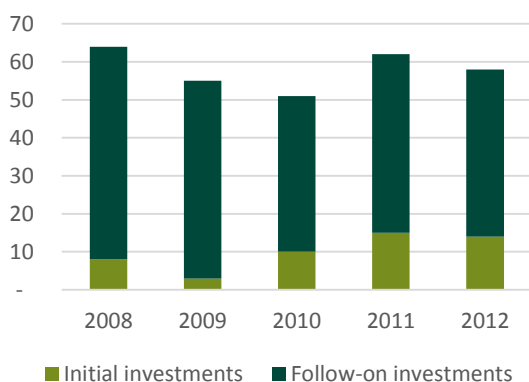
Initial Danish investments by stages, average size and numbers, 2008-2012



Source: DGF and DAMVAD

The number of indirect investments dropped from 64 to 51 from 2008 to 2010, but in 2011 and 2012 they went up to around 60. Most indirect investments are follow-on investments, see Figure 5.15. This is in line with what is to be expected given the nature of VC investments and particularly during a time of international economic uncertainty.

FIGURE 5.15
Number of Danish investments

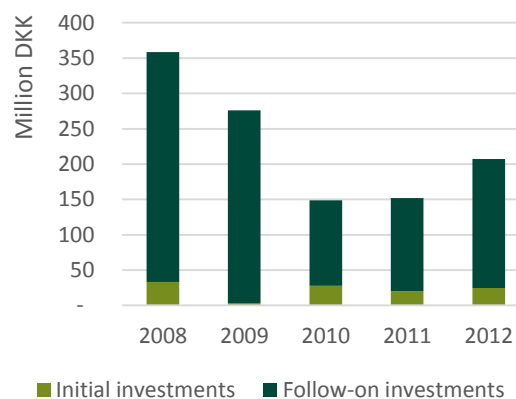


Source: DGF and DAMVAD

Size of investments

The total amount invested through indirect investments has been declining since 2008. In 2008, DGF invested DKK 325m as follow-on investments; in 2012 the amount was DKK 176m, roughly half of what it was in 2008, see Figure 5.16.

FIGURE 5.16
Total DGF indirect Danish investment, initial and follow-on



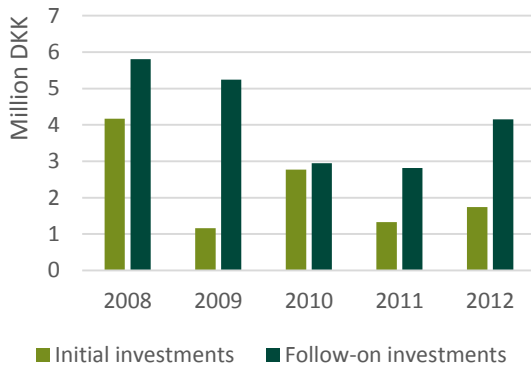
Source: DGF and DAMVAD

The average size of investments has also dropped since 2008. The largest drop was in the initial investments, where the average dropped from DKK 4m to DKK 1m. Follow-on investments dropped from just shy of DKK 6m in 2008 to DKK 4m in 2012, see Figure 5.17.

Given the global financial crisis, this curvi-linear pattern largely follows annual venture investment throughout Europe with the industry's nadir being 2010. Similarly, PE has also seen a pattern of reduced and recovering investment during and post the global financial crisis. The nadir year for European buy-outs was 2009.

FIGURE 5.17

Average size of Danish investments, DKK



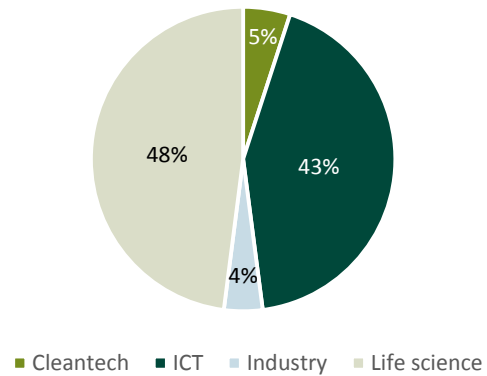
Source: DGF and DAMVAD

Sectors

The ICT and life science sector combined received 90% of indirect DGF investments from 2008 to 2012, see Figure 5.18. This is a much higher concentration than seen by European VCs where equivalent industry sectors collectively accounted for between 30 and 40% of total investment by all VC/PE investors over the comparable period. Similarly, Danish country figures, while higher than European averages in these technology sectors, do not match the concentration of DGF even in their two most technology-focused investment years of 2009–2010 (EVCA 2012). DGF is clearly following the remit of a concentration on early-stage, technology/new-knowledge-based enterprises. Given DGF’s remit, this is an appropriate generic focus.

FIGURE 5.18

Initial accumulated Danish investments by sector, 2008–2012



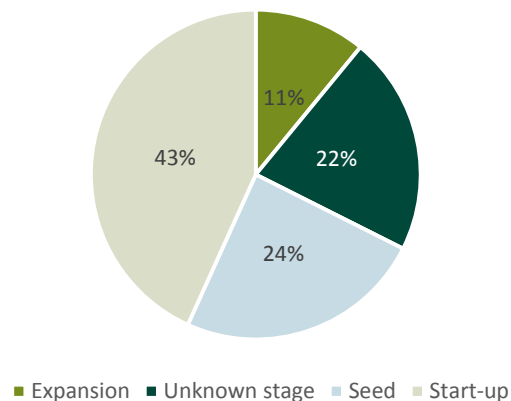
Source: DGF and DAMVAD
Note: Distribution of amount invested

Stage of investments

Accumulated over the period 2008–2012, start-up companies received 48% of indirect investments, see Figure 5.19. DGF directs two-thirds of its VC investments exactly into the area that is most problematic for commercial VC and PE investors.

FIGURE 5.19

Initial investments by stages, 2008–2012

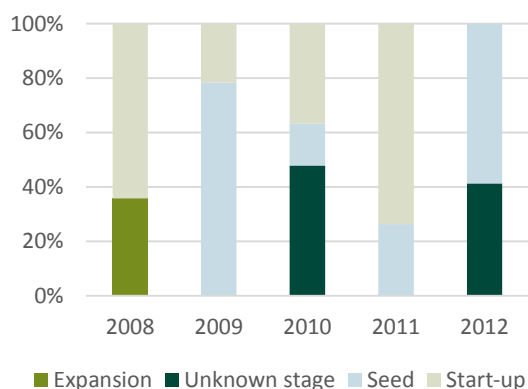


Source: DGF and DAMVAD
Note: Distribution of amount invested

The stage of indirect investments varies greatly without a clear pattern over the years, see Figure 5.20.

FIGURE 5.20

Initial investments by stages, %



Source: DGF and DAMVAD
 Note: Distribution of amount invested

Danish Growth Capital (DGC) (Fund of Funds)

In 2011, the Danish Government, F&P (The Danish Insurance Organisation), and the two public pension funds ATP and LD agreed to establish a risk capital fund with capital of DKK 4.8bn. The focus of the fund is entrepreneurs and small and medium-sized enterprises with growth potential.

To date, approximately half of the committed capital has been invested in eight small- and mid-cap funds (i.e. Private Equity) and four VC funds.

DGC operates as a private investment fund, which makes commercial investments in small and mid cap, venture and mezzanine capital funds. One-quarter is invested directly in DGC by the pension funds, and three-quarters is provided as a loan to DGF, which invests it for equity in DGC. This essentially creates two asset classes and alleviates the risk-based funding requirements of the pension funds, because their loan to DGF is guaranteed by

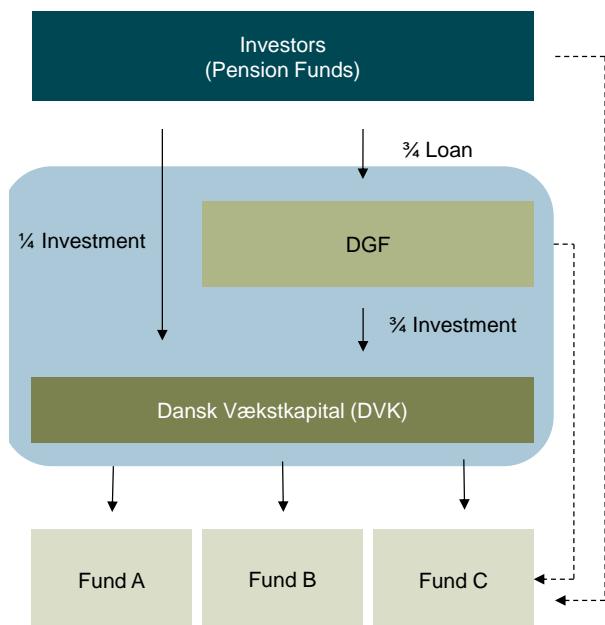
DGF and thus, indirectly in effect by the Danish state.

DGC invests exclusively through other funds. These funds in turn invest in an agreed range of industries. The aim is to create more growth companies as well as delivering competitive returns to the investors. DGC only makes commercial investments in funds managed by professional, private managers with specialised knowledge within the types of companies or technologies in which they invest.

Furthermore, investments in funds can only be made if, in addition to the capital supplied by Danish Growth Capital, the managers of the funds are also successful in attracting additional private capital.

The structure of DGC is that Danish pension funds have invested DKK 1.2bn in DGC and have provided DGF with a loan of DKK 3.6bn that DGF has invested in DGC. Thus, the total capital in DGC is DKK 4.8bn. All Danish funding. The structure is illustrated in figure 5.21 below.

FIGURE 4.21
Structure for Danish Growth Capital (DGC)



Source: DAMVAD

The dotted lines illustrate that the pension funds and DGF can individually make additional investments in the funds, in addition to their indirect investment through DGC.

So far, DGC has invested in eight small and mid-cap funds and four venture funds. The total investment is approximately DKK 2.7bn. The ratio of investment in VC and PE is approximately 1:3, see Table 5.6 below.

TABLE 5.6
DGC investments

	DGC investment	Total fund
SMALL and MID CAP	Million DKK	Million DKK
Maj Invest Equity 4	400	1.200
Capidea Kapital II	362	724
ProcuritasCapital Investors V	37	1.520
IK VII	300	10.430
CataCap	250	500
Erhvervsinvest III	300	871
FSN Capital IV	280	4.400
Danish Climate Investment Fund	150	1.190
Total invested	2.079	
VENTURE FUNDS		
Sunstone Technology Ventures Fund III	175	626
Sunstone Life Science Ventures Fund III	200	662
SEED Capital Denmark II	150	682
NCP-IVS Fund III	125	524
Total invested	650	

Source: DGC, www.danskvaekstkapital.dk

Note: The total fund size is DKK 4.8bn, but it is not yet fully invested. The investment period runs until 2015.

DGF functions as DGC's secretariat and facilitates contact between DGC's board and the fund's clients and other stakeholders. As the main investor and secretariat, DGF has veto rights with respect to investment proposals from the board, and the board has veto rights with respect to proposals put forward by the secretariat. In effect, this means that there is a mutual reciprocity in the veto right.

5.6 DGF's activities in an international context

To assess DGF's activities, it is necessary to see them in an international context. No two countries choose the same approach for the promotion of a venture-capital market. However, there is a consensus in the European countries that the early-stage venture capital market faces particular difficulties that can warrant government intervention.

The US venture industry, which is often a primary source of reference, largely operates at arm's length from government. Its commercially most successful funds are privately financed. No European countries have a venture capital market that matches the US in terms of size, upper-quartile investment returns or the global success of its best portfolio companies. However, by contrast, the European Private Equity sectors of the risk capital market are comparable to the US in terms of the levels of deal activity and the returns generated for LPs.

In this context, it is important to emphasise that not all areas of the US have good access to venture financing. There is a very high concentration in Silicon Valley, Greater Boston and a few other 'clusters' of intense innovative activity (e.g. New York, the North Carolina Triangle, Seattle, etc.). In addition, it is an industry that has evolved over the past 50+ years and is thus far more mature than the majority of European VC industries. It has also flourished in the world's largest and historically most innovative economy. One should therefore be cautious in comparing national VC industries without a clear understanding of the difficulties of identifying direct causal links for policy intervention. Lessons can be learned but context is everything if implementation is to be effective.

Another important point is that the notion of a *national* venture market is in fact often a misrepresentation of reality. Venture funds are increasingly international in focus, both in terms of investment targets and funding sources. This represents a challenge to sovereign funds which, for political reasons, may have a narrow national focus in their investment strategies.

This evaluation compares the Danish venture capital market to a number of comparable Northern European countries, which are economically and politically similar to Denmark compared to the results achieved in other countries.

This is done in order to study the development of the Danish venture market and the role of DGF in creating a sustainable VC market and culture in Denmark.

5.6.1 Reference countries and programmes

DGF's activities are analysed in reference to the total Danish venture market, which is compared to a sample of institutions in similar countries (see Table 5.7. below). These are all high-income north European countries. They can thus be assumed somewhat economically comparable in terms of both performance, policy development and focus.

TABLE 5.7
Countries in benchmarked relevant organisations

Country	Institution
Germany	High-Tech Gründerfonds
	ERP-EIF Dachfonds
	KfW Mittelstandsbank
Sweden	Industrifonden
	Almi
Norway	Investinor
Finland	Finnerva
	Finnish Industry Investments (FII)

United Kingdom	Capital for Enterprise Ltd. (CfEL)
Netherlands	Innovation Fund SME+
International	European Investment bank

Source: Gordon Murray and DAMVAD

Note: See appendix for description of the individual organizations. They are chosen for both their VC and debt activities.

In the individual countries, there are a number of different venture investing organisations – both public and private, see Appendix C.

It is interesting to note the many similarities between the individual markets, but there are also important differences. Thus, there are no two countries which have designed their systems identically. There is clearly the copying of successful programmes between nations. For example, Denmark leaned heavily on Norwegian experience in designing its own FoF programme. Australia and the UK researched the SBIC scheme in the US in designing their own FoF programmes. Yet all programmes are modified and operated within the specific economic and political contexts of the host nation.

They are all products of complex political priorities and, as such, individual programmes are not necessarily direct reflections of the exact demands of the market. This is especially the case with institutions, which have a regional focus where social returns may be more important than just economic returns.

It is important to have these differences in mind when analysing the quantitative data for the different markets. A few examples of this include Germany's KfW banking group, which is the third largest German bank and operates across markets and sectors, Sweden's Almi has a regional focus and Norway's Investinor does not invest through FoF structures.

5.6.2 EVCA and DGF statistics by key criteria

Looking at the Danish venture market in comparison to the reference countries, it seems as if the private Danish venture market is smaller and less developed than the comparable market in the reference countries. A closer look suggests that this might not be correct, however. In the following sections, we look at the number of funds established in the reference countries, government funding of the market and the average size of investments.

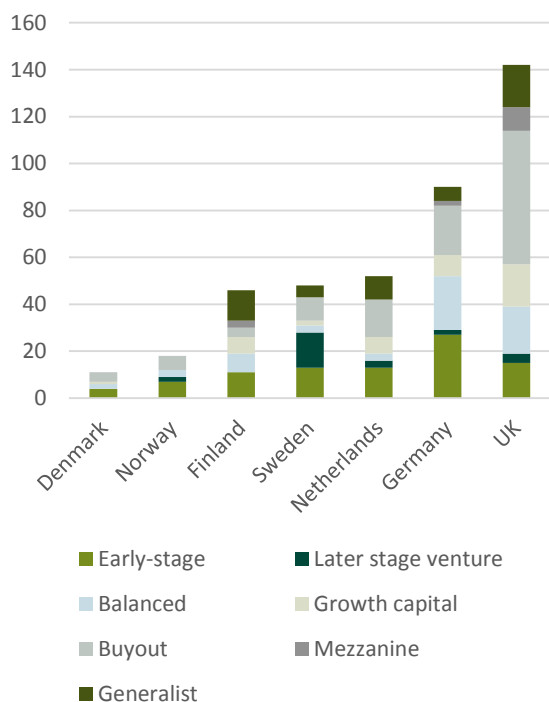
The findings show that the number of established funds in Denmark is well below that of the reference countries in absolute terms and relative to GDP, and that there is a rather narrow sectorial focus on ICT and Life Science. However, a larger share of funds raised in Denmark is sourced from private financing, and the funds are more internationally oriented in their investments. The average size of comparable VC investments in Denmark is larger.

Number of funds

First of all, the number of funds established in the period 2010–2012 is considerable below that of the reference countries, except Norway. Most notably is the Finish example which is comparable to Denmark in size. Over three years, 2010–12, Finland raised four times as many funds as Denmark, see Figure 5.22.

FIGURE 5.22

Number of funds established, 2010–2012



Source: EVCA Yearbook 2013

UK is by far the country where most new funds were established in the period. But only a relatively small share are VC-funds. A large part are buy-out and generalist funds which are able to attract more private capital due to their later-stage market focus and the superior investment performance of PE funds.

The number of funds is particularly interesting in this context because specialisation is important in order for the funds to be successful. Thus a smaller number of funds can either result in less specialisation or in a narrower sectorial focus, as in Danish investments.

DGF helped raised four new funds in 2010–2012 which are primarily focussed on Life Science and ICT (see table 5.8). The table shows the four funds

and their specialisation. An interesting point is that none of the four funds is managed by new GPs. They are respectively second and third funds of incumbent management teams. Backing experienced managers is preferable to funding new management teams with each new round of finance. Australia made this mistake initially with its IIF programme. Successful first-round GPs could not bid for follow-on rounds of finance which went to new management teams running new VC funds. The result was that better GPs, now excluded from government finance, moved up market to larger PE type investments. Their experience and skills were lost to the VC industry. And, in a relatively small economy, Australia found it difficult to replace these VCs with comparably skilled new teams. Constraints in the supply of human capital put the programme at risk.

The incidence of managers raising multiple funds is therefore encouraging. Empirical evidence suggests that more experienced managers are better able to meet investors' expectations. These managers are also more likely increasingly to be sector specialists. This again is seen as desirable (Lerner and Hellman, 2012).

TABLE 5.8

VC Funds raised in 2010–2012

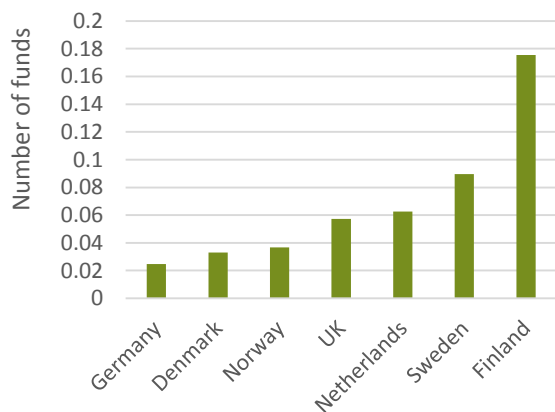
Fund	Specialization
Sunstone Life Science Ventures Fund III K/S	Life Science
Sunstone Technology Ventures Fund III K/S	ICT
NCP-IVS Fund III K/S	ICT
SEED Capital II K/S	ICT, Life Science and Cleantech

Source: DGF

A limited number of qualified fund management teams can result in a relatively low number of funds established in the period.

But looking at the number of funds in relation to GDP shows a somewhat different picture. Sweden and especially Finland stand out among the other countries, while Denmark is number two from the bottom, see Figure 5.23. However, such comparisons need to be undertaken with some circumspection. It is the quality rather than the number of VC funds created which will be of greater importance over time.

FIGURE 5.23
Number of funds established in 2010–2012 relative to GDP in 2011

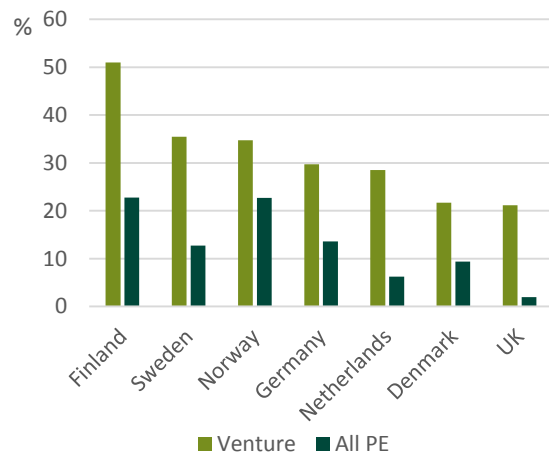


Source: DAMVAD analysis on EVCA Yearbook 2013 and World Bank Data

Government funding

Another interesting point for analysis is the share of new VC funds raised from government finance. Figure 5.24 shows that Finland, Sweden and Norway have the highest share of new VC funds raised from government finance among the reference countries, while UK and Denmark have the lowest. Thus, a larger proportion of the capital in funds raised in UK and Denmark is private. If maintained, the emphasis on a greater private investors' commitment is an encouraging signal.

FIGURE 5.24
Share of government capital in new VC funds raised, three-year average, 2010–2012



Source: DAMVAD analysis on EVCA data provided by DGF

It is interesting to compare the results of Figures 5.22 and 5.24 taking into consideration Figure 5.24. Denmark was the country where the fewest new funds was established, but also together with UK, the markets where government financing made up the smallest share of total financing when looking at VC. The ability of GPs to raise non-government funds, particularly if raised from international investors, is an encouraging mark of quality bestowed on the GP and its investment history.

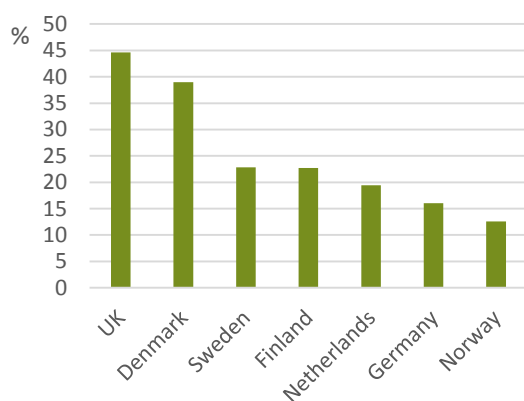
More than 50% of new funds raised in Finland were raised by government financing. Thus, the relatively high number of newly established funds as shown in Figure 5.23 is not necessarily an indication of a well-functioning VC market but could also be the result of continued government investment in a yet immature industry. However, Finland's Vigo programme has been notably successful in attracting a number of foreign investors from outside Europe to its early-stage investment programmes. The hub of accelerators, start-ups, early-stage finance and

commercialisation activity being undertaken around Aalto University in Helsinki, including its US links, is genuinely impressive for its innovative and entrepreneurial vigour.

Most governments must be presumed to be reluctant to let their investment agencies invest in companies created in other countries. Thus, a higher share of new VC funds raised from government finance may result in a lower share of VC investments made to non-domestic companies.

The UK and Denmark have the lowest share of new VC funds raised from government finance and the highest share of investments made to non-domestic companies, see Figure 4.25. However, as always, considerable caution is advised when interpreting bi-variate statistics.

FIGURE 4.25
Share of investments made to non-domestic companies, three-year average 2010–2012



Source: EVCA

In Denmark, the purpose of state funding is to support the establishment and development of a self-sustaining VC-ecosystem. It can be a barrier to this goal if public subsidies constitute a large part of total financing. This is because public funding can impose constraints which can reduce the commercial manoeuvrability and FoF managers.

Based on the interviews conducted as part of the evaluation, one of the key factors for success noted by fund managers is a sectorial focus. However, if the geographic focus is too narrow, it may be difficult to focus on specific sectors because the number of potential investment opportunities is too small.

Average size of total investments

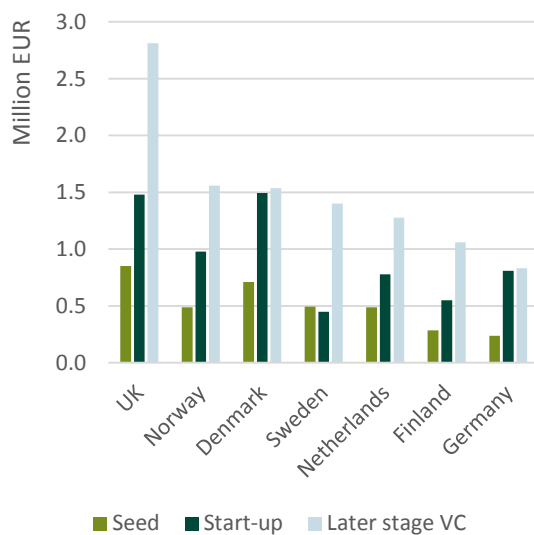
The last point worth noticing in this context is the size of investments.

European VCs are often criticised by their US peers of investing too little, too slowly into promising portfolio companies. The size and timing of investment should be dictated by the needs of the individual portfolio company. Too often, it is dictated by the financing limits for the size of the funds under management. In the absence of a benign banking system, one would expect to see successively greater allocations of finance to growing portfolio companies over time as they seek to reach operational and commercial success. EVCA statistics show a curious parity in Denmark between start-up and follow-on average investment.

Among the reference group countries, the UK stands out with regards to the size of its later-stage VC investments which average EUR 2.75m (DKK 20.5m). At the other end of the spectrum, the average German investment is EUR 0.8m (DKK 6m). The average Danish later-stage VC investment is EUR 1.5m (DKK 11.2m), see Figure 5.26 below. However, we have to be careful about direct comparisons. The UK has hybrid VC programmes that can make investments of over EUR 2.4m (DKK 18m) per firm. It also has a range of private VCs who will syndicate attractive investments with government co-financed funds. It also has an SME banking service that is strongly averse to risk. The UK also has an established business angel sector which will

frequently assume an investment role in early-stage deals. In contrast, Germany has a less developed VC market and its public supported activities at federal level are strongly focused on early stage High-tech (e.g. Gründerfonds). However, Germany also has a regional and national banking system that actively funds the long-term growth of SME clients.

FIGURE 5.26
Average size of total investment in portfolio companies, three-year average, 2010–2012



Source: EVCA Yearbook 2013
Note: This includes Syndicated loans.

DGF's position in the 'Financial Escalator' (DGF in relation to early (seed) and later stage (private equity) investors)

The term 'financial escalator' is widely used to illustrate the desired policy outcome of 'joined up' markets for capital for new firms and SMEs. In an ideal world, 'family and friends' finance would, where necessary, be complemented by growth funds provided by banks (debt) or business angels (equity). Increasingly family and friends in certain areas of enterprise may well be followed by "Crowd-funding" sources (Mollick, 2013). Grants for R&D or commercialisation may also form part of an integrated package especially for technology and 'new knowledge'

based young firms in a pre-commercial stage of development. As the firm continues to grow, informal investors (business angles) and professional VC firms can provide more substantial investments in equity for new product development, internationalisation, etc. There may be several rounds of such funding, and VCs will often bring in syndicated partners from their networks as deal sizes grow. The firm may now be able to operate using, at least in part, cash generated from trading. This revenue may allow the firm to take out and cover the interest charges on new bank loans. An illustration of the financial escalator can be seen in Figure 5.27.

With continued growth, the firm and its investors may well seek an exit via an IPO or a trade sale, and thereby allow the investors to be rewarded for their capital, patience and selection skills. This scenario of a seamless transition from one type of *appropriate* finance provider to others, as the scale of funding increases but the risk levels reduce, is often not born out in practice. One of the UK respondents (Rory Earley, former CEO of the Capital for Enterprise Board) approached during this evaluation made a very specific observation, “The main thing we all know about the Financial Escalator is that it does not work!”

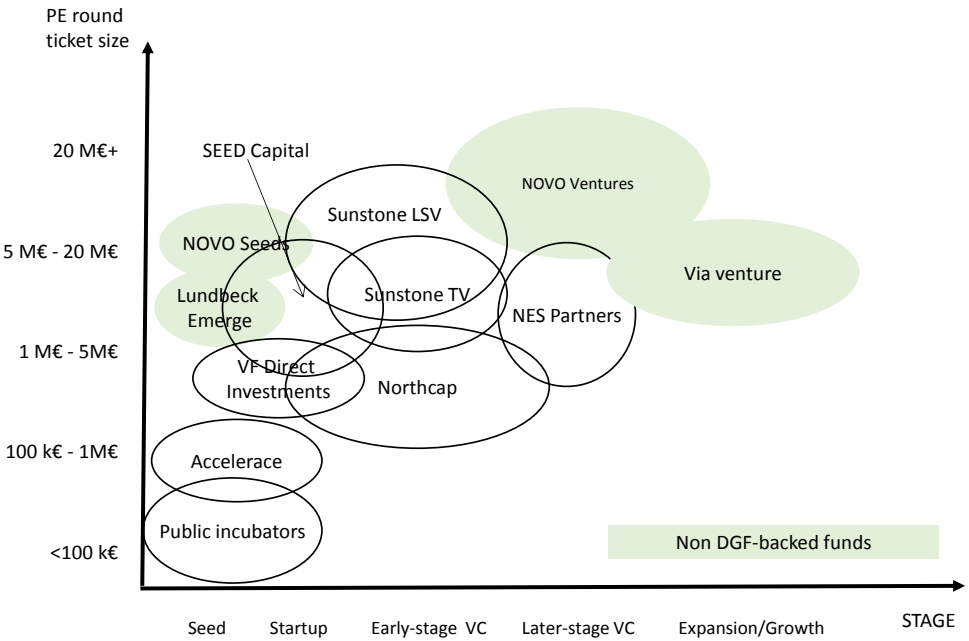
This British observer was acknowledging the difficulty in the transition of financial agreements between different investors particularly at the early stages of a young firm’s growth trajectory. The firm

and its product/service/technology remain unproven. Thus, there is considerable room for several views as to interim firm evaluations.

The first external investors often had limited resources and needed to realise a return commensurate with the very high risks taken. If they seek to retain equity in the portfolio firm, they do not wish to be severely diluted. Their needs for a high company valuation are in direct contrast to the next-stage financier who wishes to buy as cheaply as can be achieved (while still wishing to see evidence of sustained and continued growth).

The second-round financier has the advantage that he/she has other investment opportunities for the available finance. The original investor and entre-

FIGURE 5.27
Financial Escalator – Danish VC-system



Source: DGF and DAMVAD

preneur are already committed to an illiquid investment and remain vulnerable until follow-on finance is secured. Conflict is built into what remains too often a 'zero sum game' structure. Issues of appropriate valuations between financial stages can be problematic between seed and start-up funders, incubators and professional investors and business angels and venture capitalists. All practitioner respondents noted this area of conflict. The US VC industry has sought to resolve this problem by having its VC funds invest across the board from seed to pre IPO financings from the same fund (Dimov and Murray, 2008). Such a spread of activity across the whole firm-development cycle requires large funds. Many of the US's most prestigious and successful VC firms can measure individual fund raising in multiples of hundreds of millions of dollars. Europe has a much more problematic tradition of having small specialist VC funds that focus on a single or narrow stage(s) of financing within the funding escalator. These small funds bear all the disproportionate costs and vulnerabilities of their size (Murray and Marriot, 1998).²³ In this particular issue of fund size, DGF is to be congratulated on its efforts to significantly increase the size of supported funds and to resist the requests for DGF co-financing of small regional funds of questionable viability.

Given the dominance and scale of DGF within the Danish market for entrepreneurial finance, the Danish policy approach has resulted in a Danish public financing escalator that has in part internalised the transition between funding rounds. Funds supported by DGF are generally large enough to do multiple financing rounds of their portfolios. The more established GPs (i.e. Sunstone) are also established enough to organise their own syndication

finance opportunities with other investors, both nationally and internationally. The split in selection of VC funds supported by both the two indirect equity activities of DGF (DGF Funds Group and Danish Growth Capital) allows for funds to be available for early stage and growth stage investments. These multiple direct and indirect investing channels mean that DGF may well invest in a single business at different stages of its growth via different funds. A portfolio firm can receive direct DGF investment and co-financing or follow-on investment via DGF supported funds or from funds-of-funds.

The above figure supports this matrix of investment channels. Both DGF-supported and independent funds span the market for equity finance across all venture growth stages and size of investment up to DKK 150m (EUR 20m). It is only in the <DKK 7.5m (EUR 1m) level that the provision is reduced to two funds. Incidentally this is also the area where Business Angels are most likely to operate.

[Linkages to quality deal flow \(relations to other Danish enterprise programmes \(Incubator Environments\)\)](#)

If a Funding Escalator perspective is used, the seed investment activities of the six (soon to be merged into four) incubators primarily funded²⁴ via the state through the Incubator Environments programme should reasonably assume that follow-on finance is or will be made available via DGF. In reality, DGF is neither structured as a seed investor nor is capable of making a majority of investment decisions directly because of its growing indirect activities.

This decision-making activity is increasingly delegated to private GPs within the supported funds. These managers will draw their own conclusions as

²³ However, one UK VC industry respondent noted a recent contrary US trend in the growth in seed funds as a means of new entrants accessing the VC industry.

²⁴ The Ministry of Education and Research allocates about 80% of the programme's funding to very young firms.

to which deal flow is and should be funded. At this early-stage activity, it is common for investors to reject >95% of the proposals received. One incubator manager mused that he would expect DGF to take more risks as a public investor than they do in practice. However, because DGF has an ambition to develop into an 'evergreen' funding arrangement, it cannot afford to accept any more risk that it needs to assume.²⁵ DGF's agent GPs are mandated to make an attractive investment return on their fund activities. This does not necessarily encompass acting as an exit opportunity for Danish incubators.

A second problem with deal flow into DGF from the public incubator programme is that presents an opportunity for the misalignment of interests and incentives of the two organisations. The incubator programme is constrained in the amount of funding it can place in any one portfolio firm. If such a firm is growing rapidly and/or needs substantial funds to realise its planned growth, government support is limited to a maximum of DKK 3.5m.²⁶ The longer the incubator can delay going for additional funds from a follow-on investor, the longer a severe dilution in its part-ownership of the portfolio can be avoided. In an ideal situation, the now older and more experienced portfolio company is stronger and will thus attract a greater valuation on which the new financing is calculated. However, while to the advantage of the initial (incubator) investor, delay may be at the direct expense of the portfolio firm in volatile, rapidly-evolving markets.

US investors are much more successful in rapidly growing the most successful firms in the VC's portfolio.²⁷ This is also borne out in the superior US investment performance compared to European VC

funds, even though there has been a convergence of performance between the two regions in recent years. US and European figures show that young US companies are more likely to die. However, they are also more likely to grow exceptionally (Bravo-Biosca, 2012). Because of these loosely aligned incentives with DGF, the incubator's investment manager can face a 'moral hazard'. Actions that may benefit the incubator commercially in the short-run as an equity investor may do serious long-term harm to the portfolio company. At worst, the company's optimal growth and development opportunities may have been arrested because of delayed funding in markets and technologies that are extremely dynamic.

Articulating this conflict is not to argue that DGF should take over incubator investing activities. DGF is not presently designed or organised for such a responsibility. However, despite these above caveats, the linkages between DGF and Innovative Environments do appear to be robust. Figures for 2012 show that DGF Ventures is accepting incubator companies (via the Innovation Environments programme). Over one-third (36%) of Ventures' total deal flow and 21% of total deal flow over the period 2007–2011 came from this source. These linkages with Ventures have increased markedly in the last two years, see Table 5.9.

²⁵ Innovation Investment Fund in Australia mandates a proportion of investment returns to the government from supported funds to be directed to the maintenance of an evergreen fund structure.

²⁶ There is some flexibility for further public funding (DKK 2.5m) if the incubator can raise further private funds in excess of 60% of additional monies raised.

²⁷ The lead investor is likely to continue to fund successive rounds, thereby avoiding pricing conflicts between investors.

TABLE 5.9

Number and share of new investments in companies from the innovation environments (incubators) compared to total new investments 2012–2013

	2012	2013
VF Venture (direct)	2(6)	5 (6)
VF Funds (indirect)	9 (17)	3 (9)
VF Venture (direct)	50%	83%
VF Funds (indirect)	53%	33%

Source: DGF

Thus, we see that investment directly controlled by DGF management is linking to other investment programmes to produce a financial escalator. In contrast, over time, indirectly managed funds supported by DGF via commercial GPs are more likely to keep their linkages to the incubator scheme weaker but still accounted for one-third of all new investments in 2013. These two trends may illustrate the pressures on private GPs to maximise returns on invested capital. Given such an objective it is often quite rational to dispense with any involvement in very young and unproven companies such as are involved with an incubator programme. However, Ventures' selection is also fully commercial, given the objectives and incentives structures in DGF, although possibly operating at an earlier stage than some indirect funds.

DGF referenced against comparable hybrid VC programmes (Selection of countries)

By the very nature of early-stage, 'classic' VC activity undertaken by government in collaboration with private investors and managers, and most publicly supported VC schemes will share a considerable level of conformity in their operations. Thus, all the Nordic VC programmes at the very least share some considerable commonality of purpose and operation as do German, French, Dutch schemes, etc.

The fact that a country has a government-supported VC programme does not allow us to discriminate adequately to find credible reference organisations.

Factors of most relevance to DGF

In order to seek meaningful comparative countries, it was necessary to look at the key characteristic of the DGF organisation itself. This was seen in DGF's ability to offer a range of funding scales from direct start-up funding, through the successively bigger funding rounds of its DGF Fund programme to its DGC Fund of Funds programme. This, in-house scale is different from the Dutch scheme with some thirty separate seed VC funds (NB: 'seed' is a misnomer here as the funds actually fund start-ups) followed by later stage 'side car' investors and the availability of an EIF supported FoF. Likewise, Germany has the HTGF-programme but only it is directed at firms less than a year old. Successful firms can leave the scheme and gain further rounds of finance from ERP Start Funds or via the ERP-EIF Dachfonds. In Finland, the early-stage VIGO scheme provides a deal flow for later rounds of funding via Finland Industry Investments' (FII) direct or FoF VC activities (Saarikoski et al., 2014). In Finland's current (2013) plans, TEKES, a technology support and grant aiding public body, will act as a VC investor operating at the financing stages between VIGO and FII.

In each case, the Dutch, German or Finnish schemes assume that the funding supply is provided by a range of organisations operating at different parts of the escalator and working in close collaboration regarding the trajectory of financial (equity) support for a high-growth business. DGF does not operate in this manner. Indeed, deal flow from Incubator Environments is a relatively small element of its comparatively modest direct investment activity. (Some VC funds co-financed by DGF may

also invest in firms coming out of the six incubators but again the numbers are small.)

Perhaps surprisingly, one of the most appropriate programmes against which DGF might measure itself is the Australian Commonwealth's Innovation Investment Fund. This FoF was set up in 1997 and now is in its third round. IIF has invested DKK 1.1bn (AUD 221m) matched with DKK 1.7bn (AUD 354m) of private investment finance.

The Innovation Investment Fund Round 3 objectives²⁸ are to:

- develop fund managers with experience in the early-stage VC industry
- by addressing capital constraints and management constraints, encourage the development of new companies that are commercialising R&D
- establish, in the medium term, a 'revolving' or self-funding scheme
- develop a self-sustaining, early-stage VC industry in Australia.

As written, these objective accord closely with the policy ambitions of DGF. Unlike DGF, the IIF programme does not operate on a *pari passu* basis. However, the government in successive tranches has reduced its contribution to total funding in order to reduce the asymmetry of costs and benefits as the Australian VC industry gained greater experience and external investor interest. An econometric evaluation of IIF – of the impact of receiving IIF equity via the participating funds on the performance of portfolio companies – was undertaken in 2009. In

a matched sample study of over 300 portfolio companies, it concluded that IIF-supported firms are more likely to be start-ups in technology-based sectors, to attract multiple financing rounds, and to exit by either IPO or liquidation. There was no evidence that IIF funds 'crowd out' private VC providers (Murray and Cowling 2011; Treasury and DIISRTE, 2013).

5.7 Five questions of policy relevance

5.7.1 Have DGF's activities advanced the development of the Danish VC market?

Based on the interviews conducted in the project and the data made available by public and private sources, it is possible to form a view as to whether DGF has played a crucial role in the development of the Danish VC market. Several respondents argue that, since DGF had available capital in times when it was difficult for private investors to raise capital, DGF has been pivotal in the development of the Danish venture market.

The trend towards FoF activity is encouraging. This has helped to attract private investors for the funds and partly to develop competencies in the various management teams who manage the funds which are supported by DGF.

Several respondents see it as an advantage if DGF invests in a fund, since its presence can help to attract private investors. DGF is thus clearly acting as a cornerstone investor in the development of Danish VC funds. DGF continues to play a significant role in actively developing the Danish VC market.

²⁸ <http://www.ausindustry.gov.au/programs/venture-capital/iif/Pages/IIF-FactSheets.aspx>

Respondents emphasised however, that there is still a need for DGF to remain an active investor in the Danish VC market because the market is not yet at a stage where it is mature enough to be self-sustaining. Firstly, this situation is believed to be due to a lack of private capital and secondly, there the fact that there are still too few competent investors and fund managers to constitute an efficient market.

5.7.2 Are *pari passu* investment terms the optimal structure?

The term 'pari-passu' refers to loans, bonds or classes of shares that have equal rights of payment, or equal seniority.

DGF has laid a considerable emphasis on the fact that it uses a *pari passu* arrangement for the distribution of any net capital gains made on its funds' investments between all limited partners (LPs). *Pari passu* can be seen as a symmetrical distribution of surplus or interest income to all interested parties. All parties are treated exactly the same regarding both costs and returns in proportion to their investment commitment. The alternative is to use an asymmetric mode of distribution (temporarily or permanently) to encourage or reward one investor group at the expense of other investors. In this latter case, it is usually the private LPs who benefit, to the detriment or cost of the public or 'special' government LP. This private preference is very often made despite the government LP frequently being the largest single investor in a co-financed fund. For example, individual Enterprise Capital Funds in the UK can be based on a maximum two-thirds investment by government.

Pari passu is advantageous precisely because of its fairness between all parties. No party is given incentives (or constraints) different from any other investor. This arrangement makes the assumption that all

parties are equally interested or committed to making the investment. This assumption might be entirely credible for a large MBO financing; the pre-IPO investment round of a 'hot' technology stock; or some other situation where the major concern of the professional financiers is gaining access to an attractive investment opportunity.

However, in the case of encouraging LPs to invest in seed, start-up or other early-stage venture capital opportunities, the prime concern of investors is not will they will be able to subscribe to or otherwise access the available shares. Indeed, most LPs are extremely sceptical about being involved in VC given the poor historic VC returns and particularly to technology-based VC funds over several years. Without some form of additional incentive, it is very unlikely that all but a very few elite (and largely US) general partnerships would attract any institutional LP interest at all.

In the case of DGC, the private pension funds have been attracted by the interest rate paid by DGF on the loan which is above that received on a government bond with comparable risk.

Venture capitalists investing in regions outside of the world's premier technology clusters, particularly if the general partnerships did not have unchallengeable records of successful fund performances, would find little interest from institutional investors in the fund raisings on offer. Newly formed general partnerships without any demonstrable track record of successful investment would in contemporary times have a negligible chance of raising a new fund in established European markets. The only likely exception would be VC managers who have become early entrants into a 'hot' (i.e. fashionable) novel sector or technology presently enjoying popularity among investors and pundits.

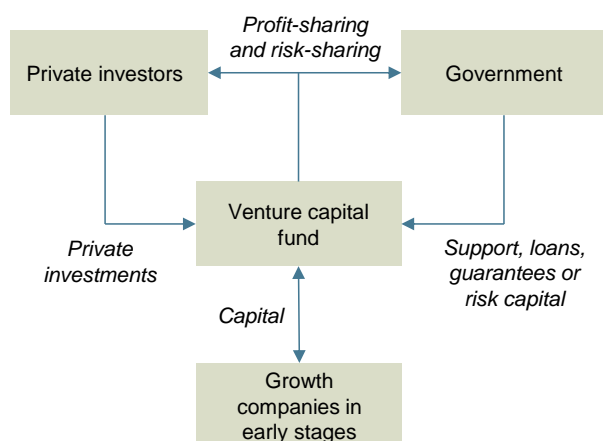
It is in this common situation for early-stage VC fund managers of investor indifference or suspicion that

pari passu may be an inappropriate rewards structure in the design of a new VC fund or programme. The architects of the new policy may be obliged to give strong incentives to private investors at a direct cost to the public exchequer.

Figure 5.28 illustrates the general principal of the co-investment structure by which governments invest alongside private investors and take part in both profit-sharing and risk-sharing.

FIGURE 5.28

General diagram showing a co-investment structure (hybrid fund) in which the government co-invests in a VC fund operated by private investors



Source: Gordon Murray and DAMVAD

Jaaskelainen, Maula and Murray (2007) modelled a number of incentives structures used by government policymakers to incentivise both general and limited partners in early-stage VC funds. They used a model of a VC fund developed for the Australian government by Murray and Marriott (1997). Specifically, they looked at the impact of the following structures on the distribution of returns:

- Distribution structure 1: Investments are timed so that government invests first followed by the private investors.

- Distribution structure 2: Government investment is provided as a loan with a fixed interest level (5% p.a.) and preferred payments.
- Distribution structure 3: The total profits of government are capped at a predetermined level (of 5% p.a.).
- Distribution structure 4: Government provides a downside guarantee covering 75% of any capital losses of private investors.

Jaaskelainen et al., found:

“that, of the examined distribution structures, asymmetrically timed public and private investments offer the highest increase in the returns for the private LP after the direct costs of the compensation of the GP are subtracted. It therefore provides the most effective mechanism to skew the distribution of profits and thereby to create greater incentives for private investors to participate. Both of the structures, where public participation comes in the form of a loan or where the returns of the public investor are capped, offer smaller increases in the returns for the LPs. ... The guarantee structure fails to increase the incentives to participate from the standard structure.”

These authors also showed that at the time of their research, several governments were commonly adopting asymmetric incentives in the structuring of early-stage VC programmes.

Government being ‘the first investor in and the last investor out of a deal’ was effective as such an asymmetry had impact because of the high time cost of the VC’s capital. Venture capitalists measured on IRR of their funds, were particularly sensitive to an incentive structure, which improved rates of return and thus their potential impact on the portfolio of the LPs.

The point being made is that asymmetric incentive structures may be a necessary cost in order to influence the decisions of institutional investors. They are part of an armoury adopted by government in order to encourage investors to undertake actions consistent with government's policy priorities. The incentives are a 'zero sum game'. Government relinquishes some of its rights to investment returns (as an LP) in order that the other LPs and the GP may take a greater share of any surplus than their committed capital would warrant on a pro-rata basis. By a process of experimentation, government can calculate what costs it has to incur in order to encourage LP activity in early-stage venture capital.

Thus, asymmetric investment is no better or any worse than a *pari passu* structure. It is merely different and can be used to add incentives beyond those available via an equal sharing of investment returns. It is noteworthy to add that the arrangement of asymmetry is not fixed. The US, UK and Australian governments have each changed their incentive arrangements to fit the circumstances pertaining at the time of the VC programme or fund launch. In the case of both the UK's ECF programme and the Australian Innovation Investment Fund, different tranches of the programmes over time have been introduced with increasingly less asymmetric benefits for private LPs at the expense of the government.

However, *pari passu* arrangements can confer other benefits. A structure that treats all parties equally is simple and quick to set up. Importantly, it signals a confidence in the quality of its investments by the state's unwillingness to give additional advantage to private parties. In addition, as already noted by a UK CfEB correspondent, the simplicity and parity of the structure may achieve regulatory approval more quickly through the European Commission's ratification of member state exemptions.

5.7.3 Should governments engage in 'direct' venture capital investment activity?

Industrial policy as conducted by governments is undertaken on the assumption that judgements have to be made regarding the preferential allocation of scarce capital and other resources. These assumptions necessarily have to accept the reality of partial information and imperfect or incomplete analysis. Thus, policy prescription and executive action will always involve both uncertainty and risk, which may lead to adverse selection. Many observers often take a sceptical view of this foresight activity of government becoming an early commercial investor in new industries or technologies.

Governments do not have a history of unblemished success in an activity which is often somewhat dismissively described as "picking winners" (Hakim, 1989). Indeed, the term is most often employed to mean its exact opposite, i.e. the government "picking losers". Given the pre-eminent importance currently accorded to market-based or market-informed decision making in liberal economies, direct involvement and responsibility for commercial activity by a government department or delegate organisation will invariably have to be justified.

In the context of venture capital, the balance of opinion has moved to a position that government should not directly be involved in the investment decision (Brander et al., 2010; Lerner, 2010; Murray and Lingelbach, 2010; OECD, 2013). Rather, government's investment (and thus policy) goals may be more likely realised if the state assumes a more indirect role. Namely, government should promote the competitive selection of a skilled, experienced investor (the VC managing or general partnership) to act as the *agent* of government. In electing to use an agent, government also mandates the selected investment manager to attract additional private capital to the fund in which government is likely to be a

major contributor but will not wish to be the sole investor. The direct model has become less popular over time particularly in countries with a long history of commercial VC and PE activity. For example, the UK and US national governments no longer have any direct VC programmes. Their presence has similarly been scaled down in a range of countries including Germany, Finland, Sweden and the Netherlands in favour of collaboration and co-investment with private VC fund managers.²⁹ The support of the European Investment Fund for FoF arrangements at national level has helped to increase this trend.

To academic sceptics of direct publicly-managed VC investments (Brander et al., 2008; Lerner, 2009), this activity can only be justified if it is designed to be a 'catalyst' or 'pump-primer' for subsequent private investment activity by professional, rent-seeking investors acting as the general partners of one or more VC funds. Direct investment therefore is only sanctioned as a *temporary* activity.

Of particular concern to academic and many industry observers is that direct activity with its public investors' preferential access to 'soft' government money will have an unfair advantage to private investment managers. The latter have to go to competitive capital markets and will need to pay the full cost to private investors of the risk associated with VC investment. In extremis, if the support given to direct public investors is too generous, commercial investment managers will either be *crowded out* of the market or chose not to enter the market given the absence of a level playing field regarding access to and the price of risk capital. Cumming and MacIntosh (2006) examined a Canadian tax-driven venture capital vehicle known as the "Labour Sponsored Venture Capital Corporation" and found that

crowding out did occur to the extent that the total supply of VC in Canada was reduced by this programme.

In reality, in the absence of extreme examples of clumsy government intervention, the crowding out argument is difficult to demonstrate in practice over a protracted period (since 2000–2001) when the supply of early-stage VC has been erratic and frequently highly constrained to the majority of young firm applicants. The very poor returns for VC investors have similarly reduced the supply of risk capital in both Europe and North America over the period. But while such circumstances may give a powerful argument for a public response, it does not necessarily provide a case for direct investment.

If the assumption is made that the best investors of risk capital funds will be professional investors with experience and a track record of success in this investment activity, then the case for a direct investment programme can only be made if such private investors either do not exist or are not prepared to work as agents in collaboration with a government supported VC programme to specifically address the financing of early stage VC activity.

Given that the social rate of return on VC investments are frequently greater than the commercial rate of return, (Griliches, 1992), there may well be occasions where government can – and should – continue to invest directly in VC when private agents demur. CEBR (2010) estimated this spill-over as between 10–50% for DGF's investments in innovative young firms. However, such activity contradicts governments' espoused statements of being best seen as catalysts or pump primers. In reality, for most advanced western economies, government would

²⁹ Sweden in particular has been an active direct player in the VC market since the introduction of *Foretagskapital* in the mid-1970s and successor

programmes in *Industrifonden* and the *Sixth National Pension Plan* (Swedish Agency for Growth Policy Analysis, 2010, p.38).

wish to delegate the role of VC activity (i.e. both fund raising and investment) to private capital and its agents as soon as can be practicably managed. With a world-wide VC and PE industry measured in hundreds of billions of dollars, government has far too many demands on its exchequer to wish to assume a role which appears to be able to be carried out most effectively in the benchmark country of the US (and to a lesser extent, the UK) by private individuals and commercial institutions.

A further argument can be made for direct investment as part of a portfolio of predominantly indirect VC-related activities by a government. Essentially, this argument is based on the government's need for market intelligence in the chosen area of intervention, i.e. the early-stage VC market. In order to invest effectively in partnerships with private rent-seeking agents, the government needs to be deeply familiar with the nature of the business including its risks, profitability, industry terms of trade, etc. This agency argument implies that government is unlikely to get unbiased information from its commercial partners. To get an independent view and to remove information asymmetries, it has to 'learn by doing'. That is, government has to become a venture capitalist itself.

Undoubtedly, VC agents have vested interests that would or could influence their negotiations with a government partner or principal. Fee income, capital gain ("the carry") and the modus operandi of the fund each have to be negotiated. It is highly likely that inexperienced governments (as well as inexperienced institutional investors) have occasionally been overly generous in their arrangements with pri-

vate VC agents.³⁰ Yet there is a considerable incentive for all investors to learn quickly. In the last fourteen years of the current century, analytical data and information on VC and PE have grown exponentially. Independent bodies such as the OECD, the World Bank, the European Commission and the European Investment Fund, as well as several professional data providers and consultancies to the global financial industry, have provided a flow of information and analyses of direct relevance to the interests of all parties involved in the VC cycle. The OECD has been particularly noteworthy as an educator of policymakers in the areas of entrepreneurial and innovation finance. Accordingly, the market intelligence or 'learning curve' rationale for having a direct VC activity is less credible that it would have been in the early 2000s.

There may be associated intelligence arguments for a government interested in assessing the future market potential of, for example, 'Cleantech' or exciting 'new materials' in the nanotechnology field. The argument here revolves around designing effective innovation systems, the role of the science base and the (possible) need for public support. However, such intelligence or investor signals on long-run commercial value is exactly what an efficient market is supposed to provide. The idea that government bypasses such a source of information for its own private trials (via a direct VC activity) is in danger of supporting the notion that governments should be 'second guessing' markets-makers by an alternative reliance on their own preferred channels. A further possible argument for direct government investment is that agents are likely to 'drift' towards larger and later-stage deals over time given the

³⁰ UK venture capitalist on the Enterprise Capital Funds programme, in the initial negotiations with government, wished to have a majority of the realised capital gain from the fund's VC investments while requiring the government investor to take the majority of any losses incurred. The British

government refused to underwrite losses as a condition of its reduced share of any capital gains. Australia in its IIF programme followed this UK practice.

commercial attraction of such moves. A government-based investor is less vulnerable to such pressures given that management's incentives for commercial success are usually less valuable to public servants than their privately employed peers.

5.7.4 Should DGF continue to have a direct VC activity?

DGF Venture is the direct VC activity within DGF. It has a current portfolio of some 30 companies that have received first and/or follow on investment. Finance is spread across four industry segments: ICT, Medtech, Cleantech, and industrial technology. It invests at the early stage of VC in seed, start-up or young growth businesses and provides equity finance of between DKK 5–25m. It is looking for exit possibilities of a value of about DKK 3–400m. It is a 'hands on' early-stage investor and will demand an equity stake as well as a position on the board of any portfolio company that it supports. Its senior investor team have predominantly forged industrial careers with a strong emphasis on new-technology-based firms. Staff are financially incentivised via a share in the capital multiple of successfully exited firms in their portfolio. In short, DGF Ventures appears to operate exactly like an early-stage VC general partnership except that its staff is employed by DGF.

If VF Ventures is a VC general partnership, in function if not in legal status, the question arises why it should remain within DGF? Related questions that might be asked include:

- Does it operate in a market space that is not tackled by other VC firms in Denmark?
- Would its portfolio of firms have been able to raise finance without the existence of VF Ventures?
- Would the board of DGF be less informed or unable to obtain robust information without the

presence of a highly experienced team of early-stage VC investors on their payroll?

- Does the access of DGF Ventures to DGF's financial resources reduce the opportunity of other private funds seeking or raising finance via DGF?
- Is this investment activity cost effective in both scale and impact?

While a number of the above questions are counterfactual, sufficient time and investment activity has passed for DGF to come to a view on the 'pros and cons' of have a continued direct VC investment activity.

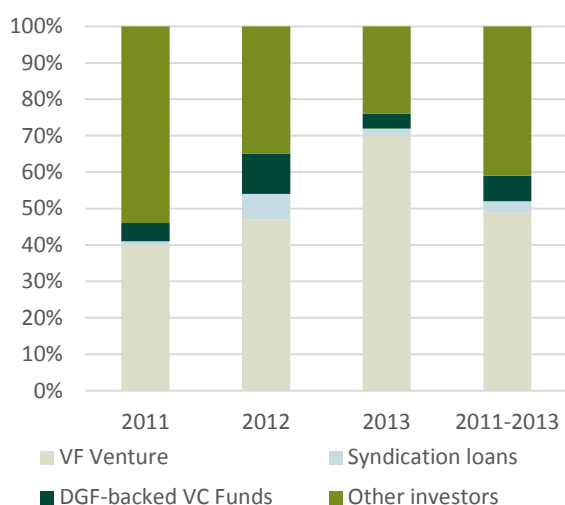
Figures from DGF show investment activity for the last three years (see Figure 5.29). DGF Venture activity engenders interest from non-government co-investors. This private activity increases over time with the public investor taking a larger and earlier risk in portfolio companies. On average, government exposure to the portfolio firms remain slightly over 50% excluding other DGF backed investors. The reduction in VF Venture's total investment exposure over the three year period would support the logic of a pump-priming or catalytic function for direct public investors.

However, as has been shown previously, direct investment by DGF Ventures is more likely than independent GPs to link and follow-on invest in Danish incubators, thereby supporting a financial escalator logic. However, DGF's own analysis shows that GPs have become less risk averse since the recession. The share of companies less than two years old in DGF's total portfolio has increased from 62% in 2008–2009 to 71% in 2012. Similarly, the number of very young portfolio companies with turnovers of DKK 0–2m at the time of the investment rose from 25% in 2008–2009 to 88% in 2012. While DGF direct ventures may be encouraging, this trend of investing at the earliest stages (and where the equity

gap is most likely to occur), it is also being followed by autonomous GPs.

FIGURE 5.29

Share of capital from VF Venture and other syndication partners in all investment rounds, where VF Venture has participated, 2011–2013



Source: DGF and DAMVAD

As noted, the existence of such direct investment by public agencies has tended to decline over time as equivalent, private-sector VC firms have increased in experience and ambition. This would also suggest that a continuation of the present activity should sensibly be justified by a business case based on the essential logic of DGF’s market development remit. The CEO of DGF, Christian Motzfeldt, in a presentation to DAMVAD and the Ministry of Business and Growth in October 2013, described the rationale for public intervention in venture capital as:

1. Experience and capacity building (pump priming)
2. Knowledge externalities and socio-economic returns.

While beyond the remit of this current evaluation, it would be valuable to quantify these two rationales in order to come to a view on the net benefit of direct VC investment in 2014 and beyond.

When questioning other policy respondents on the merits or otherwise, of direct VC investment, the two most commonly voiced issues were:

1. The lack of flexibility associated with maintaining a portfolio of companies that were, in effect ‘in-house’.
2. The cost and overhead burdens associated with direct investment. In short, the practice kept the investing organisation committed to actions which may be of less direct value over time and, further, the activity did not allow early-stage investment in a significant number of companies with comparable efficiency to an indirect method of investing. Respondents did not feel that the counter argument of insider intelligence in new technologies or sectors actually supported the core role of the public investor.

An evaluation of direct activity must also consider the impact of the existing activity. This is possibly the most salient factor. In the last six years (2007–2012), DGF Ventures has made less than ten new investments per year in young companies. Follow-on investments add to this cohort another 20 investments per year on average. The Danish economy adds some 30,000 new companies to the economy each year. In this context, the scale of present activity by DGF Ventures cannot be seen as other than inconsequential.

As has been repeatedly noted, a successful public policy intervention will conclude with the state withdrawing from what has become a private and professional investment activity (see Israel’s Yozma programme). It makes sense that such a goal is also addressed to DGF Ventures’ direct activities. In

the absence of competing arguments supporting a robust economic argument for retention, an increasingly persuasive case for the spin-off into the private sector of direct VC investment activity may reasonably be made.

If the Danish government wishes to continue to engage in direct VC activity, then the scale of activity needs to increase very significantly indeed. The current structure is not large enough to reap any significant economies of scale or scope. Any resources directed to such an outcome will need to be compared to alternative uses. Thus, for example, it may well be sensible to make a direct contrast to an enlarged and supported Business Angel activity.

5.7.5 Do DGF's activities encourage private VC activity?

It is an evident truth that the Danish state has, via DGF's efforts, directed substantial investment finance into seed, start-up and early stage growth activities in the Danish VC market in recent years, see Figures 2.14 and 2.15.

This money has obviously been advantageous for recipient firms seeking capital for growth. It is a more difficult question when the advantage for institutional investors is discussed. Historical activity of DGF prior to its reorganisation in 2010 is not likely to result in an attractive return for its investors. Most aggregated investments in firms by DGF will continue to have TVPIs of less than one. There have been no huge wins that turn the economics of the portfolio on its head.

DGF is only sensibly appraised by its policy ambitions. In the long run these must include the ability of the Danish VC industry to generate attractive returns that in turn encourage the commitment of unsubsidised finance from private (and ideally international) institutional investors. It is not yet possible to

determine the outcomes from current VC fund support. DGF is on its third round of fund investments as is the Sunstone general partnership. Increasingly, the majority of DGF's activity will be via FoF structures.

As these autonomous funds develop, their GPs and investors will have to determine the nature of their own deal flows including their involvement in seed and start-up activity. If they follow a pattern recognised in the more mature VC industries of the US and the UK, VC fund managers are unlikely to wish to undertake early-stage funding. Rather, their deal flow is likely to move towards the first round of growth capital after the original idea and enterprise has been tested with grants and heavily subsidised, early-stage risk capital support. We do not see a change from the present trend in which seed, start-up and other early-stage activity remain dependent on continued government subsidy.

While public involvement is likely to remain entrenched in the earliest stages of risk capital, the case for continued public support of later-stage growth funds remains less compelling. The distribution of funds between PE and VC in DGF's FoF activities is 3:1. In effect, for every one kroner going to an early-stage company, later-stage investors are getting three kroner of funds supported by the state. The state has borne the lion's share of risk for the youngest ventures. Alternatively, it remains the proper responsibility of the professional VC industry to generate attractive returns in competitively structured markets for private equity transactions.

If the above roles between the state and the private sector are agreed, then the question of the role of DGF can be answered. DGF has a complementary role in the encouragement of private VC activity to the extent that it removes itself and its public finance from investment stages that should not continue to enjoy public subsidy.

5.8 The scarcity of 'Business Angels'

In the USA, in 2012, BAs invested DKK 125bn (USD 23bn) in 67,000 investments. The formal VC industry invested DKK 147bn (USD 27bn) in 3,858 ventures in the same year (Centre for Venture Research, 2013; NVCA, 2013). In Europe, DKK 37bn (€5bn) was invested by BA networks in 2,913 enterprises in 2012. The formal VC industry in Europe also invested DKK 26.9bn (€3.6bn) in 2012 (EVCA, 2013; EBAN, 2014). In both regions, BAs operating both as individual and group investors invested monies broadly equivalent to the formal VC industries. Given reporting difficulties, these aggregate numbers are likely to underestimate the totality of informal investing in both regions.

It is notoriously difficult to get independently validated, performance figures on BA activity. Private individuals are able to invest as they wish and are not obliged to give detailed information to government. Indeed, many private investors are very reluctant to provide any such information. The only access to data is where the private investors also avail themselves of government co-funding programmes and/or the tax incentives specifically set up for early-stage investment activity. However, some VC associations recognise the importance of convincing government of the value of BA. The British Venture Capital Association has supported several analyses of BA activity as has the UK Business Angels Association as both parties recognise the complementary investment interests of VCs and BAs.

The Danish experience is in contrast to several other schemes in Europe. A 2012 evaluation of EU member state's BA activities (CSES, 2012) omits to mention any Danish activities. According to Christensen (2011) the fledgling Danish business angel network was "squeezed between political pressures, impatience and lack of understanding of the broader benefits of an angel network." OECD

(2014) estimates that in 2009 only 7% of Danish growth entrepreneurs had successfully accessed BA finance. We found little information on BA in Denmark compared to other European countries.

For example, CSES (2012) estimates German activity to be around 5,000–10,000 individual informal investors with a total investment activity of DKK 1,493–2,239m (€200–300m) per annum. 10–20% of the BAs (1,000–1,400) and 25–50% of the investments are made from Business Angels organised in BANs. Similarly, the German HTGF program has a very strong contingent of BA investors who contributed some DKK 265m (€35.5m) in 2012. This compares to financing of DKK 166m (€22.2m) from the German VC industry.

The UK government via the Enterprise Capital Fund programme has set up a specific BA Co-investment Fund of DKK 900m (£100m). This initiative is directed at an activity which at the height of the recession in 2009 still invested DKK 384m (£42.3m) in 238 businesses (BIS 2009). The participation of the co-fund has seen financing rounds triple to an average size of DKK 12,25m (£1.35m). Commentators have argued that the BA Co-fund has allowed BAs angels to take the place of VC firms which have vacated the early-stage investment space (Deloitte and BBAA, 2013).

In the Netherlands, around half of the 30 seed funds created, and with total funds under management of DKK 1,716m (€230m), are composed of BA investors. Likewise, Vigo has a range of Finnish and international investors including high network individuals from both within and outside Finland acting as business angels to promising high-tech young firms based in Finland.

Business Angels

A Business Angel is an affluent individual who provides capital for a business start-up, usually in exchange for convertible debt or ownership equity. A small but increasing number of angel investors organise themselves into angel groups or angel networks to share research and pool their investment capital, as well as to provide advice to their portfolio companies.

Angel investments bear extremely high risk and are usually subject to dilution from future investment rounds. As such, they require a very high return on investment. Because a large percentage of angel investments are lost completely when early-stage companies fail, professional angel investors seek investments that have the potential to return at least 10 or more times their original investment within 5 years, through a defined exit strategy, such as plans for an initial public offering or an acquisition.

The UK is the most developed BA market in Europe. In reality, accurate industry statistics do not exist, given that there is no requirement on BAs to register their activities and many (perhaps a majority of) investments go unrecorded. OECD estimates the UK market at just over one billion dollars. The actual figure of BA investment may be considerably larger than the 'observed' market. Table 5.10 shows the estimated figures for 2009.

TABLE 5.10

Size of Angel market 2009–2010

DKK million	Angel market, 2009		Venture capital, 2010
	Visible	Estimated total	Estimated total (All stages)
USA	2,562	96,700	157,632
CANADA	186	2,120	2,148
Europe	2,092	30,367	26,684
UK	404	3,410	5,536

Source: OECD (2011)

The statistics for the US are approximately five times larger than Europe. The US angel investor market in 2012 continued the upward trend started

in 2010 in investment dollars and in the number of investments, albeit at a moderate pace.

A well-developed BA financing environment is part of an effective entrepreneurial ecosystem. (Isenberg, 2010; OECD, 2013). Such an environment, as with formal VC structures, is the product of several years' activity including sensitive and appropriate policy and fiscal incentives.

A critical advantage of a developed BA infrastructure is its complementary relationship to early-stage VC investment. In both the US and the UK, deal sizes below DKK 37.7m (EUR 5m) are increasingly becoming of interest to BA network investors. Such investment groups are picking up opportunities that have been left as VC funds continue to increase in scale and in the minimum size of investments which they will consider funding. The funding of BA investors and syndicates by established public programmes in the UK, Germany and the Netherlands has lessened the pressure on VC funds to become the sole or the first equity investors beyond the entrepreneur and his/her family and friends.

Tax incentives such as the British Enterprise Investment Scheme (and from 2012, the complementary seed-focused programme, the SEIF) and equivalent arrangements in several other peer nations allows individual investors substantial income and capital gains tax relief as an incentive for taking clearly higher-risk investment decisions (HMRC, 2008; Keuschnigg and Nielsen, 2003). It is unlikely that an effective and growing BA activity could be established in a country without similar or equivalent fiscal incentives.

The Danish government appears to have chosen a different source of early-stage finance which has relied on a formal VC model of delivery. VC may however, be a necessary but not a sufficient provider of

early-stage risk capital for young businesses. Accordingly, given the importance of personal competencies, networks and a well-functioning VC-ecosystem, there may be some merit for the Danish government in re-visiting the logic and feasibility of a formalised Danish BA financing activity as part of its portfolio of risk capital measures.

The fact that a BA programme has been tried in the past and was found not to be successful is not a sufficient reason to ignore BA as one possible part of a future entrepreneurial ecosystem.³¹ Circumstances and market environments change which may encourage (or discourage) more individuals to invest either in their own or BA syndicates.

While not the subject of this report, it is important to mention ‘crowd-funding’ when referring to the informal investment area (see Financial Conduct Agency, 2014; Mollick, 2013; NESTA, 2012; Pierakins and Collins, 2013). Crowd-funding in particular, as it applies to the provision of loans and equity to new or growing businesses, needs to be considered by policymakers. In the UK, the growth in these two areas of entrepreneurial finance appears to be growing rapidly (see Table 5.11 below). It is an activity addressing early-stage and entrepreneurial finance. Given its newness and its linkages to social media, this activity remains deeply unfamiliar to most policymakers. The default position is to look at protecting the naive or gullible consumer. This is the stance taken by the Financial Conduct Agency in determining the degree of governance crowd-funding services require to ensure that the public is protected.

However, as Barack Obama noted in announcing the ‘Jumpstart Our Business Start-ups’ (JOBS Act)

in May 2012, the bill which includes provisions for crowd-funding could be a ‘game changer’. It is unlikely that crowd-funding will be restricted to the USA or the UK. The Danish government will also need to consider both its potential and its threats. In this respect, DGF is likely to have a level of expertise that would make its opinion material and relevant to such a discussion.

TABLE 5.11
UK Statistics on Crowd-funding

Type of Crowd-funding	2012 million	2013 million	% Annual change
Securities-based	DKK 35	DKK 250	618%
Loan-based	DKK 1.690	DKK 4.300	154%

Source: UK statistics on crowd-funding (FCA, 2014)

The fact that most of Denmark’s peer countries in this evaluation continue to encourage growth in BA activity suggest this may be an area to re-examine. BA activity in mature markets both complements venture capital and, at the earliest stages of enterprise finance, is increasingly an effective substitute. However, any changes to promote BA activity must also recognise the particular importance of fiscal incentives for individual investors.

Similarly, Denmark, in looking at informal investing, will invariably have to address the potential for crowd-funding as part of an entrepreneurial finance escalator. In both cases, DGF’s expertise and market knowledge as a practitioner gives it an important role in policy foresight.

³¹ The hugely successful Yosma program in Israel was started two years after an earlier policy experiment with VC in Israel had failed.

5.9 DGF as a convenient government 'platform' – comparisons to CfEB

The CfEB has managed seven programmes with a direct equity focus (Cowling et al., 2011). With the UK government directly supporting a new bank to offer support to SMEs beyond that seen as forthcoming from the UK's major clearing banks, the CfEB has metamorphosed into a major part of the foundations for the new British Business Bank to be operational in 2014. Importantly, its major extant VC programme, the Enterprise Capital Funds, will be subsumed within the new bank. Since the difficulties consequent on the Global Financial Crisis (GFC), the UK has put in place a number of support and guarantee schemes to ensure more bank debt being made available to SMEs. These schemes were managed by CfEB.

Twin activities, twin cultures

The senior management of CfEB were asked if the placing of two very disparate activities – debt financing and equity financing – within one organisation could be seen as problematic. The operations of providing a greater supply of bank debt to SMEs compared to seeking new (high tech) capital investment opportunities via a VC programme are driven by different cultures, logics and systems.

Given that the British Business Bank will not be fully operational until possibly the end of 2014, it is not possible to give a full answer to any concerns. However, it was acknowledged that the new CEO is and will have to remain very mindful of the two different (and possibly conflicting) operations that define the new bank. Similarly, it is believed that DGF will also have to monitor closely the consequences and impact of its increasing debt role on what has been historically an equity operation. Venture capital appears to be a form of economic investment activity, which benefits from focus and specialisation.

In the UK, where VC was pioneered early than the rest of Europe, banks were quick to set up in-house VC operations in the 1980s. With no major exceptions, these equity operations were eventually sold off (sometimes to the bank's VC managers via a buy-out). Clashes of culture between the two organisational activities were often cited as a contributory cause for this division. In addition the Basel II & III banking regulations have increasingly made the cost of equity provision too onerous for the retail banks. Capital adequacy demands occasioned by a VC operation were constraining their core debt businesses.

We are not emphatically stating that there is a schism in DGF. What we are signalling is that there is the potential for a conflict of cultures between debt and equity-based organisations, at least in theory. Risk capital including VC and PE appears to be an activity best carried out by specialist and highly focused organisations. DGF is a 'convenient' public platform on which to place a range of policy responsibilities. We raise the point that a diversity of objectives may reduce the effectiveness of specialist operations.

Being Danish in global markets for finance and technology

Being both 'local and global' is a tough goal even for an advanced economy. It is particularly challenging for a small country like Denmark with a population of only 5.6m (World Bank, 2012). Yet, the markets for risk capital and technology are both global in scale and meritocratic in nature. External linkages to the leading markets for capital and technology are imperative as VC investors seek to identify and support the best firms *regardless of geography*. It should be noted that scale, while assisting, does not resolve the problem of global linkages. The CEO of HTG noted that it was difficult to get US interest in

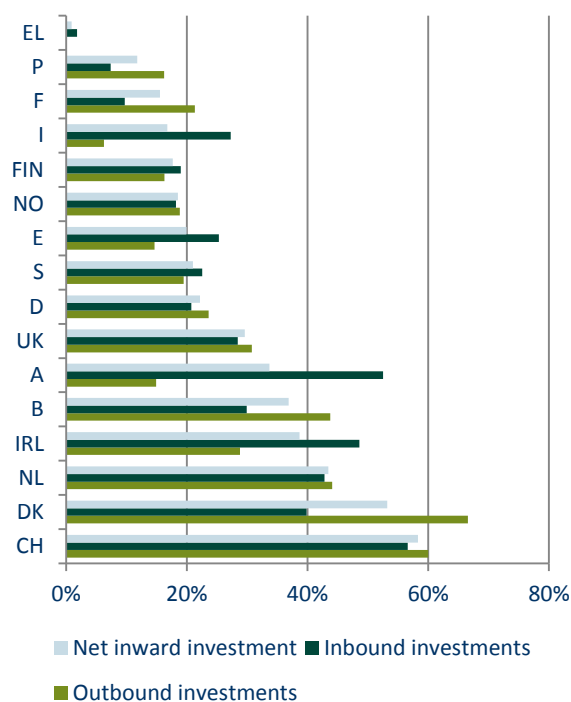
his young firms in part because of North America's distance from Germany.

It is our impression that the Finns understand well the need for strong international linkages within the international market for new technology ventures. Aalto University has become a technology and entrepreneurship hub with international student links including MIT. The VIGO scheme has a strong component of overseas (and particularly US) investors. It may well be that notably Finland's geographic isolation has compelled it to address international linkages more forcibly than other countries.

Yet European statistics show a rather different picture, see Figure 5.30. The figure shows Denmark as highly integrated into international venture investment flows. What the graphics do not show is the different countries that represent 'foreign' investors. Clearly as the Danish VC industry has matured, it is becoming more international in scope. However, several critics still argue that this process needs to go further if Danish enterprise and knowledge-based assets are to be fully valued internationally.

FIGURE 5.30

Share of foreign investments by domestic investors and domestic investments by foreign investors in Venture Capital



Source: EVCA (2013)

The system of financing SMEs in Denmark appears relatively domestic in focus. The government is the major financier of DGF's activities. The institutional LPs supporting both the VC funds and FoF activity are predominantly Danish. And given the constraints of public financing, the recipient companies of the VC portfolios are largely of Danish origin and operation. Such a domestic focus is not a characteristic of early-stage, technology focused VC in centres of excellence, including the UK, Israel or the US. Denmark cannot act any differently. The best young enterprises will rapidly have to become international in focus in order to succeed commercially (Burgel and Murray, 2000). Accordingly, the foster-

ing of high levels of reciprocal, cross-border investment activity, particularly within sectors and technologies where Denmark can demonstrate exceptional skills, is a critical condition for the successful development of a VC industry.

6 DGF loan and guarantee activities

By providing loans and loan guarantees, DGF aims at alleviating the credit constraints for promising entrepreneurs and SMEs, who lack sufficient collateral and/or record of accomplishment to obtain a bank loan on normal market terms.

Thus, the aim of DGF must be willing to take higher risks than private banks and financiers, because the socioeconomic effects and returns are thought to be sufficiently high to compensate for the additional risk. Otherwise, the investments will or should be made by private entities on market terms.

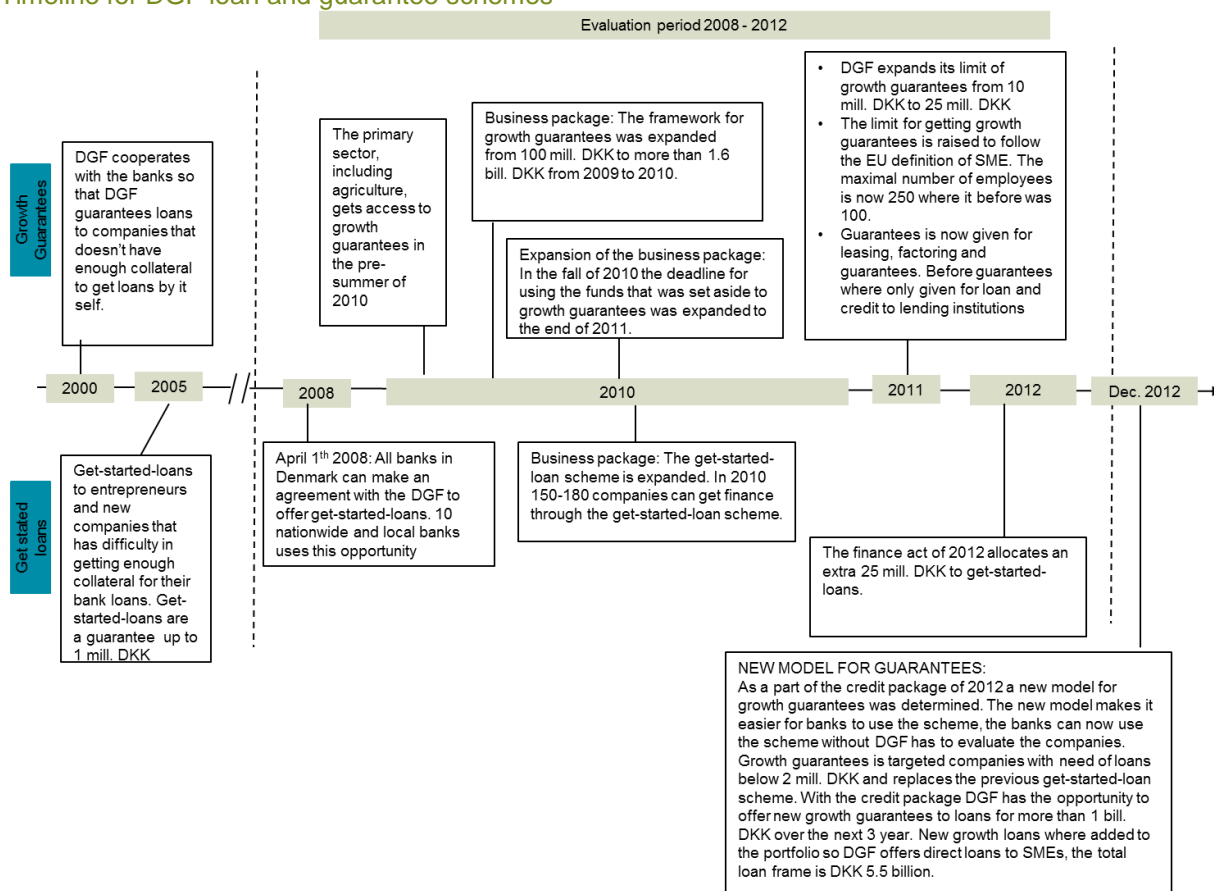
6.1 Quantitative analysis

This section evaluates the loan and guarantee schemes of DGF using quantitative data. In 2013, the strategy of DGF's loan and guarantee scheme was substantially changed following political agreements. This section focuses on the two loan guarantee products offered in the evaluation period between 2008 and 2012:

- Growth guarantees (Vækstkautioner) is a loan guarantee scheme provided by DGF to banks for lending to small businesses. The product is

FIGURE 6.1

Timeline for DGF loan and guarantee schemes



Source: DAMVAD

intended to expand access to finance for smaller development-oriented companies. The target group includes start-ups, companies that invest in the product line, process or market development, as well as generation and ownership changes.

- Get-started loans (Kom-i-gang-lån) are ordinary bank loans with an associated guarantee from DGF. The loan targets entrepreneurs, i.e. companies less than three years old. In addition to the loan, DGF offers the entrepreneur professional advice and coaching in starting up and running a business.

Both schemes have been subject to considerable changes in the evaluation period. In general, the schemes have been expanded to offer more loans to a wider range of companies. Figure 6.1 provides an overview of the main changes.

This section is divided into two parts. First, the growth guarantee scheme is evaluated followed by an evaluation of get-started-loans in the second part.

6.1.1 Growth guarantees

In 2008 and 2009, the financial institutions in Denmark granted considerably fewer growth guarantees compared to the subsequent years. In 2008, 52 companies received growth guarantees amounting to DKK 120m DKK, which is the same picture for 2009.

In 2010 and 2011, the number of companies receiving guarantees increased considerably. In 2010, the number rose to 203, continuing further to 327 companies receiving growth guarantees in 2011. In 2012, the number of companies receiving guarantees stabilised at 301, see Figure 6.2.

Two factors probably explain the pronounced shift in activity from 2008–2009 to 2010–2011. On the one hand, the financial crises led to increased insecurity and lower liquidity in the loan market. Financial institutions were very reluctant to issue loans, which in itself had a dampening effect on the supply of growth guarantees. The low level in 2008 in particular is probably due to this fact.

On the other hand, the lack of traditional financing led to an increase in demand for financial instruments supplied by the DGF. From 2009 to 2010, the Danish Government raised the lending capacity of the DGF from DKK 100m to DKK 1.6bn to accommodate the insecurity in the loan market. As will be discussed further in the international part, this is an important government tool to counteract a credit crisis. Furthermore, the DGF initiated an information campaign to raise awareness of the growth guarantees among the financial institutions in Denmark. As a result, the number of companies receiving guarantees increased considerably.

FIGURE 6.2
Amount and number of growth guarantees

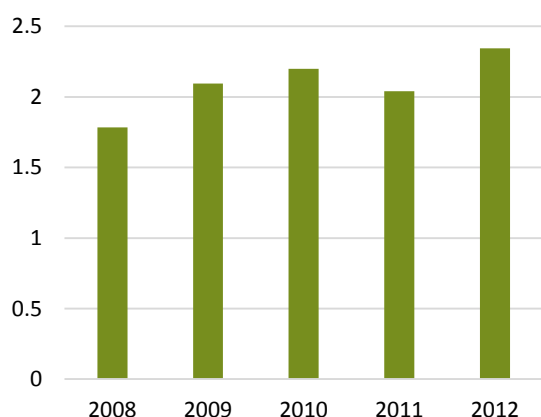


Source: DGF and DAMVAD

Note: Number of companies

The average size of guarantees remained almost constant over time at around DKK 2m, see Figure 6.3. This is despite the fact that the allowed size of the guarantees increased over time. The limit of the guarantees increased from DKK 5 to 10m in 2009 and again from DKK 10 to 25m in 2011.

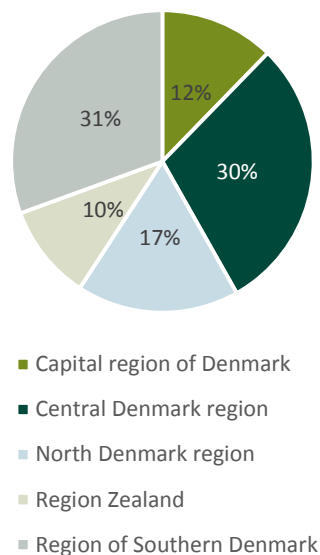
FIGURE 6.3
Average size of guarantee, million DKK



Source: DGF and DAMVAD

The geographical distribution of growth guarantees is generally diverse across the Danish regions. Almost 80% of the guarantees were granted to companies in Jutland, see Figure 6.4. One reason for this is that financial institutions in Jutland have been keen to supply growth guarantees to companies and another reason is the addition of the primary sector (including agriculture) to the guarantee scheme in 2010.

FIGURE 6.4
Geography of guarantees, 2010–2012 (share of companies)

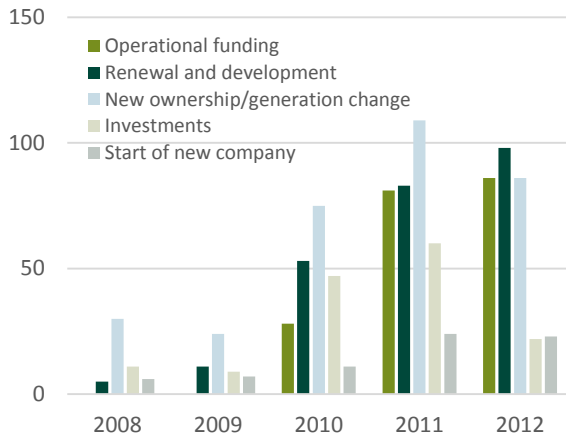


Source: DGF and DAMVAD

The financial institutions have primarily granted growth guarantees in connection with generational change or new ownership. In 2008 and 2009, when the financial crisis hit, the financial institutions granted only a few guarantees to support renewal and development, investments and start-ups, see Figure 6.5. This picture changed in 2010 with the business package from the Danish government, where the use of guarantees to support operational funding was introduced. Also, renewal and investment was more widely used from 2010 and onward.

FIGURE 6.5

Number of guarantee according to purpose, 2008-12



Source: DGF and DAMVAD

Economic indicators of companies with guarantees

This section describes selected economic indicators of the companies that received growth guarantees in the period from 2007 to 2011.³²

The companies that received growth guarantees had average yearly sales of DKK 14.7m, see Figure 6.6. Looking at Danish companies in general, the average sales per year are DKK 40m in the industry sector and DKK 3m in the primary sector. Furthermore, the companies that received growth guarantees had average exports of DKK 3.7m, and DKK 4.5m value-added in the year the guarantee was granted.

³² In this part of the analysis, registry data from Statistics Denmark is used. Statistics Denmark does not register some companies. Out of 168 companies that received growth guarantees in 2007-2009, 118 are identified in the data.

FIGURE 6.6

Economic indicators of companies with growth guarantees



Source: Statistics Denmark, DGF and DAMVAD

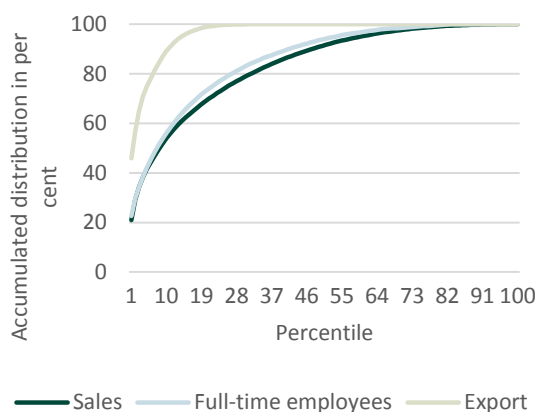
Note: The indicators are measured as an average across all companies in the year each company was granted a guarantee.

Note: Value added is calculated as operating income less cost to product and services.

There is a tendency for sales and the number of full-time employees to be distributed over only a few companies. Ten percent of the companies receiving guarantees account for roughly 60% of respectively sales and full-time employees see Figure 6.7.

FIGURE 6.7

Accumulated distribution of key indicators in the year they received growth guarantee, 2007–2011



Source: Statistics Denmark, DGF and DAMVAD

This picture is even more pronounced when considering export. Exports are highly concentrated among very few companies. Only few companies export and the top 1% of the companies export 65% of total exports and a little over 20% of the companies contribute to 99% of the export, see Figure 6.7. Thus the DKK 3.7m of average exports is contributed by a very few number of companies.

Economic performance

In this section, selected economic performance indicators of the treatment group compared to a control group³³ are presented.

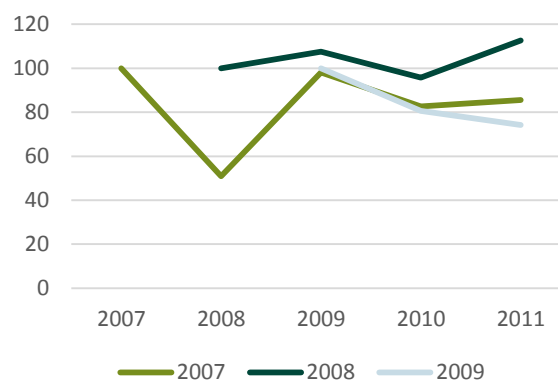
Employment

Companies that received guarantees in 2007 performed worse than the control group in the first year (2008) after treatment, see Figure 6.8. Since then, the treatment group has picked up employment growth. This picture is not particularly robust over time. Thus, companies that have received loans in 2008 performed better than the control group in most subsequent years.

³³ The control group is constructed by finding companies that are equal to the treatment group on the following parameters: equity, start-up year, size of the company (SME definition) and sector.

FIGURE 6.8

Development in employment level, treatment group vs control group



Source: Statistics Denmark, DGF and DAMVAD

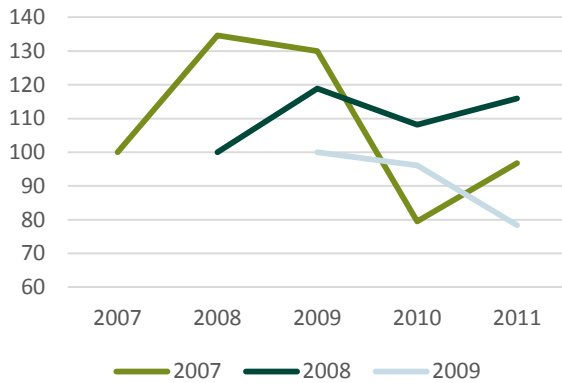
Note: Calculated as employment level in treatment group divided by employment level in control group. This ratio is set to index 100 in the treatment year and changes are calculated for each following year.

Sales

Both in 2007 and 2008 the companies receiving guarantees had a better development in sales relative to the control group, see Figure 6.9.

FIGURE 6.9

Development in sales level, treatment group vs control group



Source: Statistics Denmark, DGF and DAMVAD

Note: See Figure 3.8.

After 2009, sales dropped for the companies that received guarantees in 2007, returning to the same level as in 2007, whereas the control group sales rose. Overall, in 2007, the two groups started out at the same level of sales, around DKK 10m, and in 2011 had the same level of sales, at around DKK 12m.

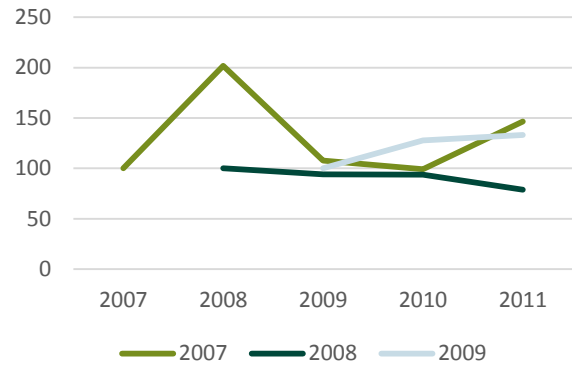
In 2008 the group that received loans had higher sales and continued these higher sales and sales growth to 2011.

Labour productivity

The companies receiving guarantees in 2007 performed better in terms of labour productivity in all subsequent years. They increased their productivity from 2007 to 2008, where the productivity of the control group declined. From 2008 to 2009 the control group increased their productivity compared to the treatment group, see Figure 6.10.

FIGURE 6.10

Development in labour productivity level, treatment group vs control group



Source: Statistics Denmark, DGF and DAMVAD

Note: See Figure 3.8.

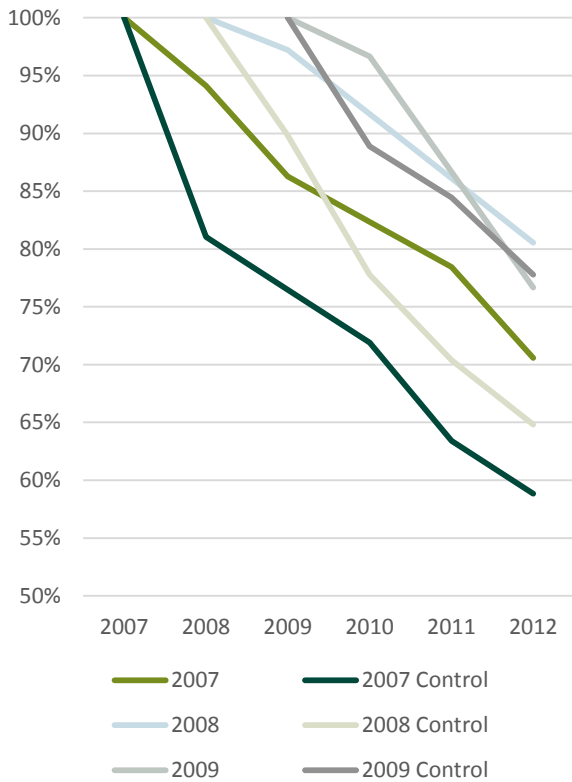
This is a result of the increase in number of full-time employees in the control group from 2007 to 2008 and the decline again in 2009, where the group that received loans had a more stable development in the number of full-time employees. The companies receiving guarantees in 2008 and 2009 had almost the same productivity change as the control group, though companies receiving guarantees in 2009 had a small relative productivity increase.

Survival of companies with growth guarantees

The survival rate of the treatment group is for the 2007 treatment group approximately 10-percentage points higher compared to the control group. For the 2008 treatment group, it was 16 percentage points higher in 2012 than the control group, and for the 2009 treatment group it is almost the same for the treatment and control groups. Thus, the companies DGF supports through growth guarantees seem to have a better survival rate, see Figure 6.11.

FIGURE 6.11

Survival rate



Source: Statistics Denmark, DGF and DAMVAD

For the purposes of this analysis, a company survives until the point in time when the company does not exist as a legal entity as recorded by Statistics Denmark. This does not necessarily mean that the company ceases to exist. Some of the companies are bought up by other companies or may have changed their business registration number for organisational reasons. This is the case for two treatment companies and one control group company.

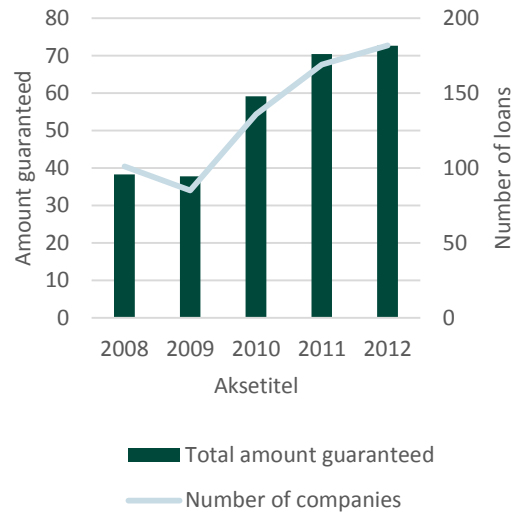
6.1.2 Get-started-loans

Get-started-loans are guarantees on loans given to companies in the entrepreneurial or start-up phase; thus, they are given in a very early stage of the company's development.

In 2008 and 2009, relatively few loans were granted by DGF; after 2009 there was a large increase in the number of loans granted, see Figure 6.12.

FIGURE 6.12

Total amount and number of get-started-loans



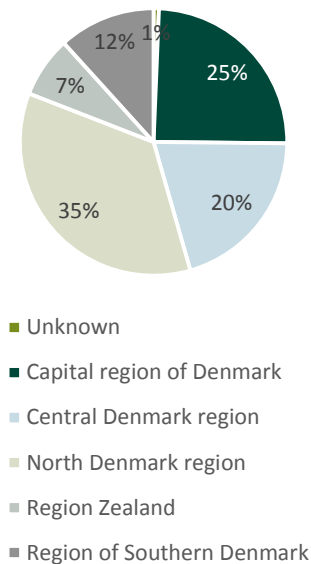
Source: DGF and DAMVAD

From 2010 onwards, both the amount and the number of get-started-loan increased continuously. This development is largely due to an expansion of the programme, but also to heightened awareness of the loan guarantee products provided by DGF.

The geographic coverage of the financial institutions providing get-started-loans is reflected in the geographical distribution of the companies that are granted the loans. In the early stage of the scheme local banks in the North Denmark Region, for instance, showed great interest in the loan products and became better at integrating the loan products. This is one explanation why Jutland has received a relatively large number of get-started-loans. The top scorer among the five regions is The North Denmark Region and the Central Denmark Region, see Figure 6.13.

FIGURE 6.13

Geography of get-started-loans, 2010–2012 (share of companies)



Source: Vækstfonden and DAMVAD

Economic indicators of companies with get-started-loans

This section describes selected economic indicators of the companies receiving get-started-loans from 2007 to 2011.³⁴

The companies receiving get-started-loans are in a much earlier stage of development than the companies receiving growth guarantees. Thus, key economic indicators, such as yearly sales, exports and value added, are relatively low. This is shown in Figure 6.14.

³⁴ In this part of the analysis, registry data from Statistics Denmark is used. Statistics Denmark does not register some companies. Out of the 277

FIGURE 6.14

Economic indicators of companies with get-started-loan



Source: Statistics Denmark, Vækstfonden and DAMVAD

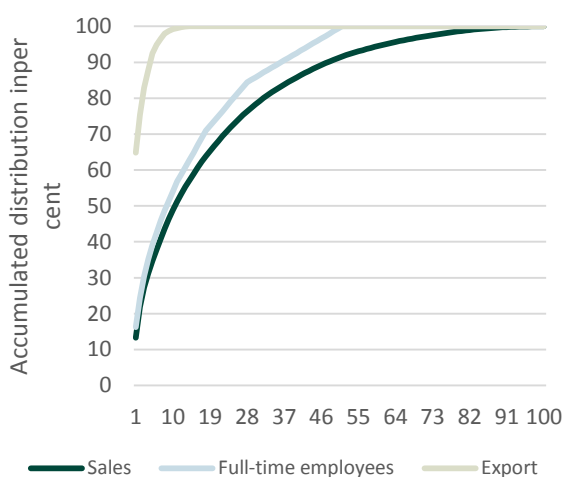
Note: The indicators are measured as an average across all companies in the year each company was granted a loan.

Sales and, to some extent the number of employees, are distributed evenly across companies that have received loans. Exports are highly concentrated among very few companies. About 10% of the companies cover 100% of total exports, see Figure 6.15.

companies receiving get-started-loans in 2007–2009, 181 have been identified in the data.

The distribution of key figures for the companies receiving get-started-loans are very similar to the companies receiving growth guarantees. However, the top companies have a more pronounced share than for those receiving guarantees.

FIGURE 6.15
Accumulated distribution of key indicators in the year a get-started-loan is granted, 2007–2011



Source: Statistics Denmark, Vækstfonden and DAMVAD

Economic performance

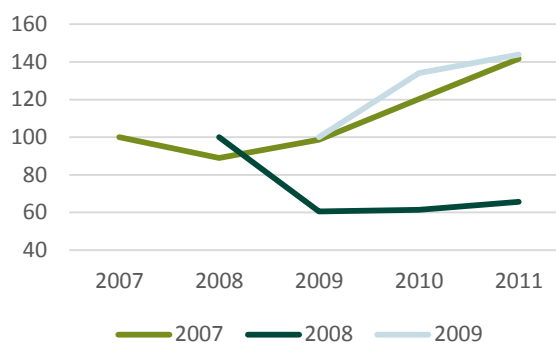
In this section, selected economic performance indicators for the companies that received get-started-loans are compared to a control group.³⁵

Employment

The companies that were granted get-started-loans in 2007 had a lower performance from 2007 to 2008. From 2008, the treatment group performed substantially better than the control group. The development cannot be found in the 2008 treatment group, which performed lower in all the years. The 2009 treatment group followed the pattern of the 2007 group, see Figure 6.16.

³⁵ The control group is constructed by finding companies that are equal to the treatment group on the following parameters: equity, start-up year, size of the company (SME definition) and sector.

FIGURE 6.16
Development in employment level, treatment group vs control group



Source: Statistics Denmark, DGF and DAMVAD

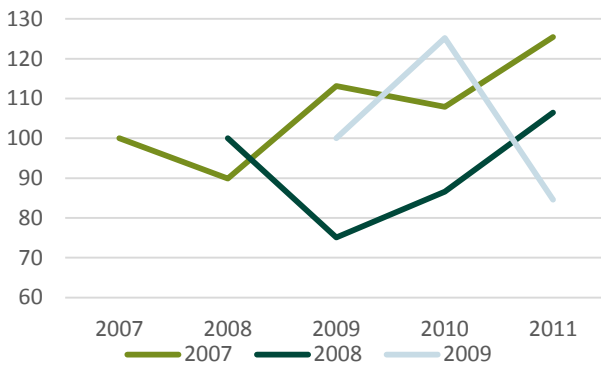
Note: See figure 3.8.

The amount of full-time employees did not decline for the group that received get-started-loans. Throughout the period, the number of full-time employees is higher for the treatment group. The control group had on average only 0.8 full-time employees in 2008, whereas companies that received get-started-loan had 1.5 full time employees in 2008.

Sales

The change in sales for companies that received get-started-loans in 2007 was worse in the first year (2008) compared to the control group, this is similar to the performance of the employment level. Overall, companies which received get-started-loans in 2007 performed substantially better than companies which did not. A similar pattern can be found for 2008 treatment group, though the decline in the first year (2009) was more pronounced, see Figure 6.17.

FIGURE 6.17
Development in sales level, treatment group vs control group

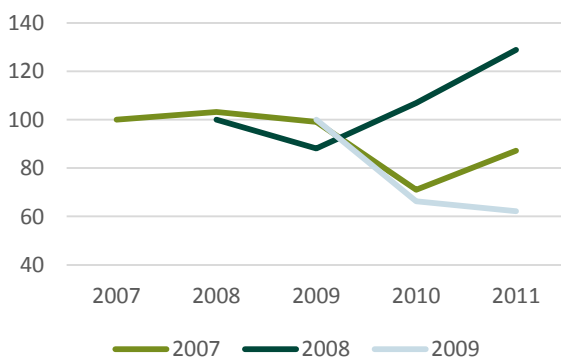


Source: Source: Statistics Denmark, DGF and DAMVAD

Note: See figure 3.8.

The companies that received get-started-loans in 2007 and 2009 performed worse than the control group in productivity until 2010 where the 2007 treatment group increased, though still substantially lower compared to the control group, see Figure 6.18.

FIGURE 6.18
Development in labour productivity level, treatment group vs control group



Source: Source: Statistics Denmark, DGF and DAMVAD

Note: See figure 3.8.

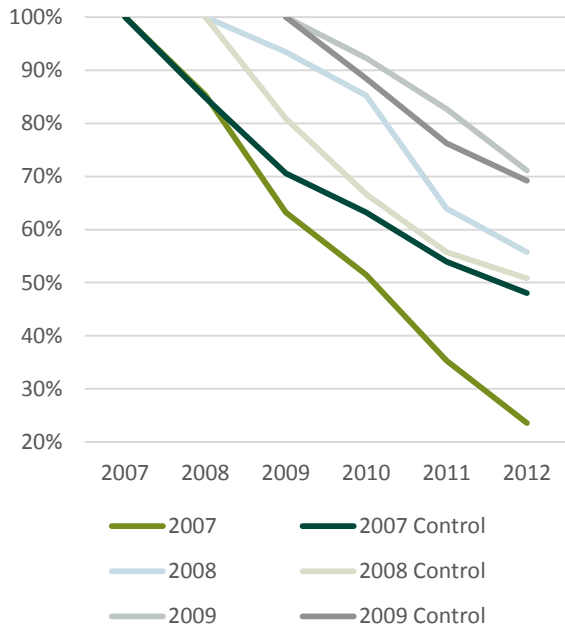
This pattern might be due to the increase in the number of employees compared to the control group. The group that received loans in 2008 increased their productivity, compared to the control group throughout the period. They also had a smaller increase in full-time employees, which could explain the increase.

Survival of companies with get-stated loans

The survival rate of the companies in the 2007 treatment group with get-stated loans is substantially lower than for companies in the control group. This could be a result of the economic crisis as the companies that received loans in 2007, received them in a period where financial institutions were still very willing to give loans. Thus it can be argued that the best companies in 2007 did not need loans from DGF, but got the loans directly from the financial institutions. Therefore, the 2007 treatment group have a worse survival rate, compared to the control group. This discussion about government loan guarantees scheme in economic booms will be dealt with in more detail later in the rapport. For the 2008 treatment group, the survival rate is better than the control group and, in 2011 the survival rate was 5% higher than the control group. For the 2009 control group the survival rate is very similar to the control group, see Figure 6.19. Some of the companies that cease to exist may have been bought up or changed their business registration number. According to our analysis, this is the case for two treatment companies and one control group company.

FIGURE 6.19

Survival rates



Source: Statistics Denmark, DGF and DAMVAD

6.2 International benchmark

6.2.1 Loan and guarantee schemes in the UK and Denmark

In this section, the Danish loan and guarantee schemes are benchmarked against similar schemes in the UK: the Enterprise Finance Guarantee (EFG) and the Small Firms Loan Guarantee (SFLG). Both schemes are government guarantee schemes where the government guarantees up to 75% of the loan. The SFLG scheme was introduced in 1981, but was replaced in 2009 by the EFG scheme (Allinson, G, Robson, P and Stone, I, 2013). It is important to note that we are benchmarking the Danish schemes against the UK, not making a direct comparison of the relative performance of supported firms. We use the UK scheme for this benchmark for several reasons: (a) the UK scheme has a long history and has undergone many trials of innovative policy thinking over its 33 year history. Thus,

if policy learning has occurred, then the UK is a good example of how basic schemes can be developed and enhanced to reflect different economic circumstances and to support different target populations of firms; (b) The UK maintains one of the best Management Information systems for recording scheme-level information and is subject to very regular and independent evaluation, the most recent being Allinson, G, Robson, P and Stone, I (2013). This process of evaluation feeds into the policy-learning process and on a number of occasions has led to significant changes to guarantee schemes. The fact that the quality of scheme level data is rivalled only by the long-running Canadian Small Business Finance Program allows us to state, with a high degree of accuracy, how supported firms have performed and what impact guarantee schemes have had on the UK landscape. This is not generally true in Europe despite the fact that many countries have well-established guarantee schemes.

The EFG provides loans of up to around DKK 9m DKK and the SFLG scheme has a limit of around DKK 2m for businesses trading for more than 2 years, and a little less than DKK 1m for all other businesses. Thus, EFG loans are smaller than the Danish growth guarantees, see Figure 6.20.

FIGURE 6.20

Size of investments,%

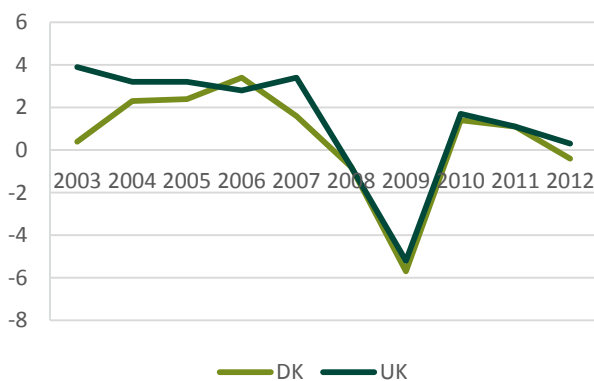


Source: DGF, Enterprise Finance Guarantee (EFG) scheme: economic evaluation and DAMVAD

It is important to notice that in the economic development in the two countries and in the years the companies are treated general economic development plays a significant role in how the companies develop. Figure 6.21 illustrates the GDP growth rates of the two countries.

FIGURE 6.21

Real GDP growth rates,%



Source: Eurostat

The development in GDP has been close to the same in UK and Denmark though the drop in GDP began a year earlier in Denmark compared to the UK, and from 2011 to 2012 the Danish growth rate was negative and the UK GDP growth rate dropped, but without becoming negative growth as in Denmark.

6.2.2 Comparison of companies in schemes

When comparing the Danish and the UK companies it is important to note the size of the companies in the year they received treatment. When looking at sales and employment the companies in the EFG scheme are larger compared to the Danish companies, see table 6.1.

When comparing the value added at the time of treatment, the companies in the EFG resemble the Danish companies. For the SLFG scheme the sales of the UK and the Danish companies are close to the same, though the companies in the SLFG scheme have more employees than their Danish counterparts.

Comparison to the UK Enterprise Finance Guarantee scheme

Here we consider the evolution of UK Enterprise Finance Guarantee recipients on multiple performance measures including profit rates, sales, employment and value added. We compare EFG firms with two control groups.

- The first control group consists of similar firms receiving a conventional private-sector bank loan.
- The second control group comprise similar firms that did not seek a bank loan in the relevant time period. This reflects the fact that in any given time period, even in a severe financial crisis and economic recession, less than one third of all SMEs actively seek bank loans.

All data are weighted using a weighting system that adjusts the control samples to ensure comparability with the treatment (EFG) or (SFLG) sample group of firms.

In terms of absolute cash profit, we find that median profit change between 2009 and 2012 was zero. On average, however, EFG firms suffered the largest decline of 5.6%. In terms of profit margins, EFG firms suffered the largest average decline of 10.3% p.a. over the period. But this contrasted with strong

median sales growth for EFG firms of 30.4% with better average sales growth than that recorded by the borrowing control group. This strong sales performance was also repeated for average exporting intensity. Here, despite median export intensity growth of zero, EFG firms recorded strong average growth in export intensity of 66.5%. As was the case for Danish firms, this high average growth was due to a small subset of high-export growth firms.

In terms of job creation, EFG firms recorded high median growth in employment of 25.0% and high average job growth of 52%. Again, EFG outperformed the borrowing control group. This general pattern was repeated for productivity with EFG firms recording growth of 23.1% and again outperforming the borrowing control group. As there is a strong correlation between sales growth and growth in value added, we also found that EFG firms outperformed the borrowing control group in terms of growth in value added.

Next we compare the performance of companies in the UK SFLG and EFG schemes to companies in the Danish schemes in terms of sales, employment and value added. For the EFG Scheme, we set the equivalent figures for 2009. And for the SFLG scheme for 2006 (the treatment year for the firms) to 100 and index changes from this point. This is

TABLE 6.1

Comparison between Danish and UK companies

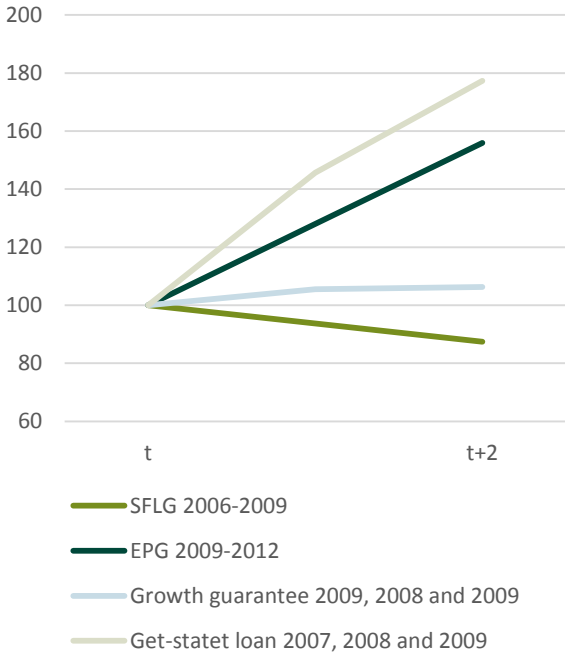
	UK EFG Scheme 2009		UK SFLG Scheme 2006		Average of treatment year 2007-2009	
	EFG	SFLG	Growth guarantees	Get-started-loans		
Sales (million DKK)	11.2	8.0	9.8	2.5		
Employment	14.56	18	6.72	1.26		
Value added (million DKK)	3.7	2.6	3.3	0.67		

Source: Statistics Denmark, Enterprise Finance Guarantee Survey, Marc Cowling and DAMVAD

compared to the Danish growth guarantee and get-started loan. For the Danish growth guarantee and the get-started loans we use an average of the treatment years 2007, 2008 and 2009.

The EPG companies had substantial sales growth above 50% in both cases. Whilst the growth guarantee companies group also grew, the rate of growth was more modest. The SFLG companies had a minor decrease in sales during a two-year period, which may be attributable to the financial crisis. The companies in the get-started loan scheme had the largest sales growth by far, of close to 80%, see Figure 5.23. This large growth may be a result of the lower starting point, and because the very young companies had to expand rapidly to survive.

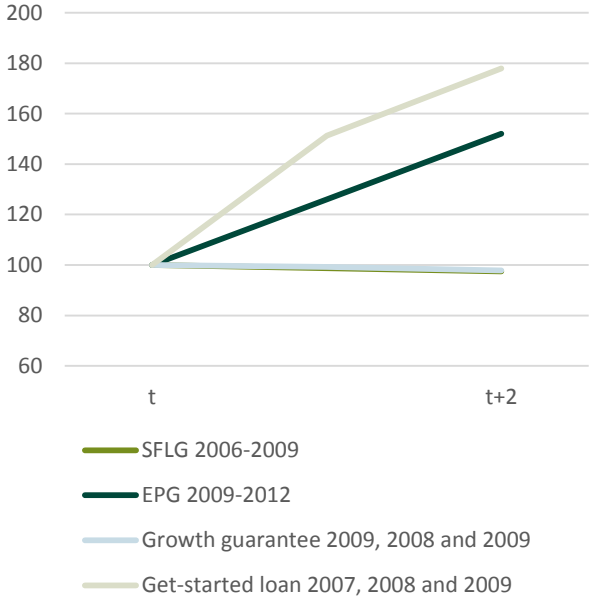
FIGURE 6.22
Evolution of sales



Source: Marc Cowling, Enterprise Finance Guarantee Survey, DGF, Statistics Denmark and DAMVAD
Note: Get-started loans and growth guarantees are an average of the treatment years 2007, 2008 and 2009

Figure 6.23 shows the relative patterns in job growth. Here too we observed very similar patterns across our four groups. Again, we observe generally strong job growth in the get-started-loan and EPG companies. For companies in the growth-guarantee scheme and the EPG scheme there was a very modest decline in employment during the period.

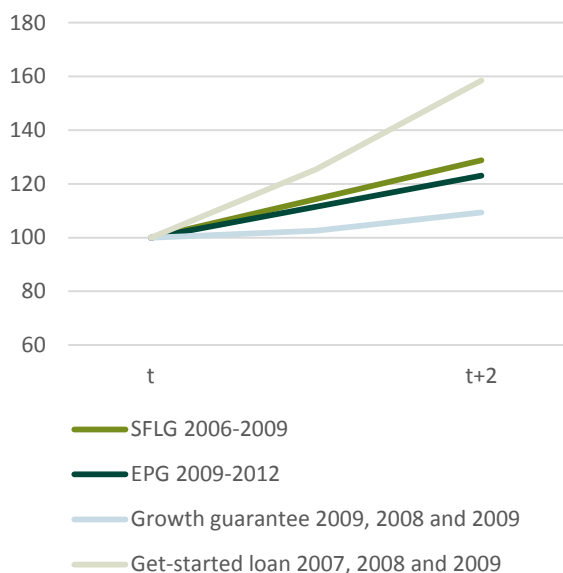
FIGURE 6.23
Evolution of employment



Source: Marc Cowling, Enterprise Finance Guarantee Survey, DGF, Statistics Denmark and DAMVAD
Note: Get-started loans and Growth guarantee is an average of the treatment year 2007, 2008 and 2009

There has been a general increase in value added since treatment in all four groups. As with the other indicators, companies that received get-started loans outperformed the other companies, see Figure 6.24.

FIGURE 6.24
Evolution of value added



Source: Marc Cowling, Enterprise Finance Guarantee Survey, DGF, Statistics Denmark and DAMVAD
Note: Get-started loans and Growth guarantee is an average of the treatment year 2007, 2008 and 2009

When comparing the UK EPG companies to the companies in the Danish growth-guarantee scheme, the number of full-time employees dropped for companies in the Danish scheme compared to a strong growth in the number of employees in the EFG scheme. Sales increased in the Danish case but not by as much as the large growth of companies in the EFG scheme. Only value added resembles the evolution in the UK scheme. It is important here to notice that the Danish data is an average of three treatment years where the UK is for only one treatment year. Compared to the SFLG scheme, the growth-guarantee companies performed slightly better, but the performance is close to equal. The firms in the get-started-loan scheme did substantially better than all the other schemes in all three performance indicators, but this may be a result of the lower starting point, and the lower survival rate.

These differences between the companies in the UK and the Danish schemes can be a result of the size of the companies. The companies in the EFG scheme are much bigger than companies in the growth-guarantee scheme.

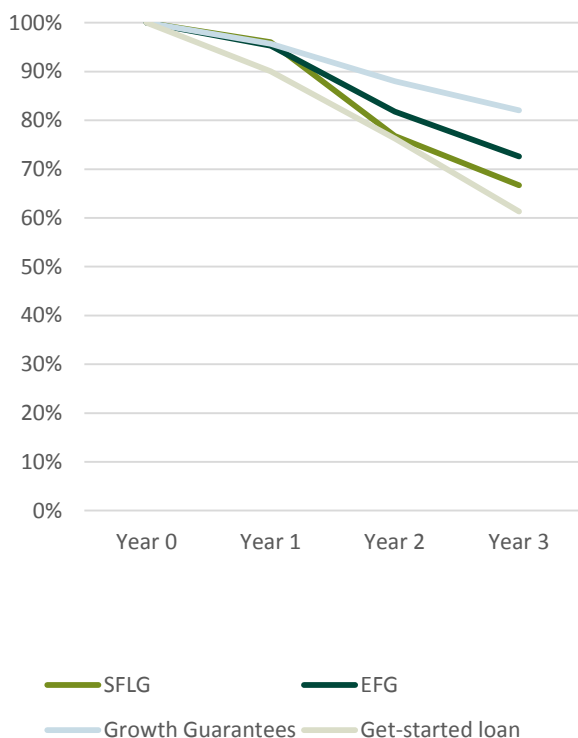
6.2.3 Survival rate of UK companies that received loan guarantees

In this section, we will present survival rates of the companies that received guarantees from the EFG and the SFLG schemes in the UK.

The survival rate of the companies in the UK schemes are more than 10% lower at year three compared to the companies in the Danish growth guarantee scheme, see Figure 6.25. This could be because the maximum size of the loans is much lower than in the growth guarantee scheme. Compared to the get-started-loans, the UK companies do better but this is because the get-started-loan scheme is only for companies in the very early stage and thus cannot be compared to the EFG and SFLG scheme, which also was evident in the previous section when comparing key figures.

FIGURE 6.25

Survival rate of UK companies vs Danish companies



Source: Marc Cowling, SFLG, (Allinson, G, Robson, P and Stone, I, 2013) EFG.
 Note: The data for SFLG runs from 2006 to Q3 2008 and for EFG from 2009 to 2011
 Note: Get-started loans and growth guarantees are an average of the treatment years 2007, 2008 and 2009

6.3 European comparison of guarantee Schemes

The history of loan guarantee schemes in Europe is long (Klapper, L.F., Mendoza, J.C. and Beck, T, 2007) with Luxembourg being the first to set up its *Mutualite D'aide Aux Artisans* scheme in 1949. Italy set up its first scheme (currently 7 variants exist) in

1975, before the UK, French, Dutch and Spanish schemes came into operation in the 1980s. The fact that the UK has a long-standing guarantee scheme (from 1981), one that is regularly evaluated, and has been the subject of substantive changes over time, including very recently in 2009, also influenced our choice of the UK as our benchmark. It is likely that if policy learning does occur, the UK schemes' development over time should reflect this. Late movers into public loan guarantee schemes include Belgium (Sowalfin in 2002), Greece (Tempte SA in 2004), Malta (Malta Enterprise Corporation Loan Guarantee Scheme in 2004) and a number of Accession and former Soviet satellite states, including Estonia, Lithuania, Moldova and Romania, all in the post-2000 period.

6.3.1 The nature and scale of guarantee schemes

In terms of the relative scale of guarantee schemes, the Swedish *ALMI Företagspartner AB* scheme is the largest in Europe with 432 staff and USD 615m in total assets (Klapper, L.F, Mendoza, J.C and Beck, T, 2007). This compares to the *Dutch Besluit Borgstelling Midden en Klein Bedrijf* scheme which has 13 staff and the UK scheme which has 4 staff. In 2014 DGF's loan guarantee scheme employed 31 staff. Standardised by GDP, the Swedish scheme is equivalent to around 0.16% of GDP and 0.13% of total bank credit. In terms of the types of guarantee systems in operation across Europe, 5 out of 18 countries³⁶³⁷ use a mutual guarantee association (MGA), including Switzerland and Luxembourg. The perceived benefits of the MGA model, usually only found in developing countries, are that banks lend to a group of borrowers linked by a joint responsibility for a single loan. Members contribute

³⁶ Belgium, Croatia, Estonia, France, Greece, Italy, Lithuania, Luxembourg, Malta, the Netherlands, Portugal, Romania, Slovak Republic, Spain, Sweden, Switzerland, and the United Kingdom.

³⁷ World Bank, 2007, Klapper, L, Mendoza, J, Beck, T.

to a guarantee fund, which is then used as joint collateral. For a lending bank, this reduces information problems as the MGA is better informed about the quality of its members and conducts peer-to-peer monitoring. The obvious potential problem is that individual members have a lower incentive to repay as they only have a small proportion of the total loan collateral at stake. Further, it relies on a fair and honest judgement of who is allowed entry into the MGA. Seven out of eighteen countries have adopted a publicly operated national scheme, including Greece, the Netherlands and the UK. This is the same scheme as Denmark uses. The advantages of a publicly-operated national scheme are: (a) it is easy to administer and administration costs are low; (b) it is easy to gain market credibility and recognition; (c) all firms facing genuine credit constraints face the same conditions; and, (d) banks which co-operate with a national scheme are usually national themselves. However, in countries with very diverse regional economies, a national scheme may not fully take these local factors into account. Sweden, by contrast, adopted an NGO model for its large-scale guarantee scheme. This was unique in Europe until the UK set up a quasi-governmental organisation, Capital for Enterprise (CfE), to manage its portfolio of business finance activities. A current development is to transfer all CfE activities into the UK government-owned Business Bank. The NGO model effectively transfers scheme responsibility beyond direct governmental control. This allows decisions to be taken without micro-level interference from civil servants and ministries. The big question is around quality and experience of the NGO staff and their funding source and incentives. Governments often erroneously give NGOs delivering schemes on their behalf numerical targets for numbers of firms supported and their remuneration is often linked to this. This increases the probability of non-economic-additional activity occurring.

6.3.2 Narrow or broad economic remit?

In terms of whether guarantee programmes are designed or required to make commercial profit from their operations, around one third of European schemes are profit orientated, including schemes in France and Spain. Amongst the two-third of countries in Europe which, like Denmark, operate schemes that are not explicitly designed to make a profit are Belgium, Italy, the Netherlands, Sweden and Switzerland. This is profit in the narrowest operational sense of the term. As few countries conduct serious evaluations of their guarantee activities, there is little evidence of the true social and/or economic costs and benefits of guarantee schemes. From the UK, the US and Canadian evaluation evidence, it is apparent that once guarantee schemes are measured in terms of their overall contribution, rather than being considered in the same way that a private shareholder of a private financial institution would consider an investment, there is a strong economic case for their use and development, particularly during periods of economic recession and financial crisis (NESTA, 2013).

6.3.3 Scheme administration

On how the guarantee system is administered, two-thirds of European countries operate under a system where the government provides a direct guarantee to banks. This means that for each guaranteed loan, the government effectively has a contract with a lending bank to cover a specified proportion of the loan if it ends in default. These countries include Belgium, Spain, Switzerland and the UK. By contrast, Sweden provides a guarantee to the loan portfolio. Throughout Europe only one-third of countries have ceded funding responsibility to a financial institution. Interestingly, the UK and Belgium adopt joint responsibility for a funding model with a government agency and financial institutions making lending decisions. Here banks make a preliminary loan offer which is then checked and authorised by

government. This contrasts with Belgium and the Netherlands where financial institutions have complete responsibility for managing and delivering their schemes and Sweden where responsibility lies solely with a non-government agency. The Swedish guarantee scheme is the responsibility of ALMI Företagspartner AB, which is owned by the Swedish government and is the parent company of a group of 21 subsidiaries, which are 51% owned by the parent company. Other owners are county councils, regional authorities and municipal cooperative bodies. Another financial institution is required to be involved in addition to ALMI. However, in exceptional cases ALMI may finance the whole amount on its own. The target group of ALMI is 35 companies with up to 250 employees and there is no upper loan limit for Almi's financial support.

In Sweden and the Netherlands, ownership of guarantee schemes lies with a government agency, whilst in the UK model ownership is shared between government and financial institutions. That is to say, that government and private sector financial institutions work in partnership to administer the scheme and review potential problems and areas for development. Managerial responsibility in Netherlands and the UK lies with a government agency, but in Sweden it rests with an NGO, Almi Företagspartner AB.

6.3.4 Risk assessment

Only three out of the 18 European countries (Estonia, Lithuania and Malta) operating guarantee schemes allow a government agency to make the credit risk assessment (or four including Denmark). In the Netherlands and the UK this operation is given to financial institutions and in Sweden to an NGO. Monitoring in Netherlands and the UK is also ceded to financial institutions and in France, Greece, Portugal and Spain to their respective central banks. Again, Sweden uses an NGO to monitor

the operation of its scheme. The same mode in each case is used for debt recovery in the event of a loan ending in default.

6.3.5 Scheme restrictions and eligibility

In terms of eligibility restrictions, only two countries in Europe, Luxembourg and Croatia, restrict specific scheme access to only new businesses, although Luxembourg operates another scheme which is solely restricted to existing businesses. The benefits and costs of restricting loans to established business are: (a) failure rates are likely to be lower; (b) the absolute scale of economic benefits is likely to be higher; but, (c) the potential for non-additional lending will also be higher so the net economic benefits after removing deadweight could be low. This is the same as with the DGF where the get-started-loan scheme is restricted to new companies and the growth guarantees are a general guarantee to all companies. For the most part, guarantee schemes across Europe are open to new and existing businesses. In terms of the maximum size of firm allowed to access a guarantee, Sweden, Belgium, Italy and France set their size limit at 250 employees (the EU Medium Size Firm Limit). The Netherlands sets its upper limit much lower at 100 employees. In Denmark it was 100 employees prior to 2011, when it was changed to 250 employees. Size restrictions tend to focus schemes on those firms most likely to face binding credit constraints thus deadweight from non-additional lending are likely to be lower. Sector restrictions were in place in the Netherlands and the UK, although subsequent changes in the UK removed these restrictions with the exception of illegal or immoral activities. In Denmark the primary sector did not have access to growth guarantees prior to 2010. Geography, by contrast, is not a focus or a restriction for guarantee programmes in Europe. Historically, in the UK, there was a special set of

conditions for inner city (i.e. deprived area) guarantees which were more favourable than the general guarantee scheme. This distinction is not used now.

6.3.6 Scheme terms

On the level of guarantee available, the Moldovan GARANTIVEST scheme has the lowest guarantee in Europe at 50% of loan value and the Slovak Republic the second lowest guarantee at 65 % of the loan value. France and Greece have guarantees set at 70% and the UK, Belgium, Estonia, Malta and Denmark a guarantee of 75%. The highest rate of guarantee in Europe is 80% as is Italy. Regarding the maximum term for which the guarantee is available, the Swedish scheme has a short term at a maximum of 6 years. This compares to 10 years in Belgium, Greece and Denmark, 12 years in the Netherlands and 15 years in Spain. Training and advice are available to lenders in 39% of European countries, including Greece, Italy, Netherlands, the UK and Denmark with the get-started-loan scheme. In Italy, Spain and Sweden training and advice are also available to borrowers. In two-thirds of countries, a fixed fee is paid per loan issued, including Belgium, Netherlands, the UK and Denmark, but not Sweden, where a fee is charged which relates to loan risk. Further, in the Netherlands the fee is also related to the maturity of the loan. The actual fee levels vary considerably across countries with a 1% fee in Belgium, 2% in the UK, and a very high rate of 7.9% in Sweden. In Denmark the fee is 2% for the growth guarantee and 3% for get-started loans. Fees have little or no impact on firm level outcomes, but do make a contribution to the administration costs of schemes.

6.3.7 Additionality of lending

Additionality is a key issue for loan guarantee schemes and for the extent to which loans issued under guarantee fundamentally determine the true

extent of credit rationing in the market for SME finance. The average share of loans issued under government-backed guarantees for which the borrowing firm would have been unable to borrow without the guarantee (genuine rationing) is 62%, which was higher than the 50% reported for the Netherlands scheme (Klapper, L.F, Mendoza, J.C and Beck, T, 2007). In the UK, evaluation studies suggest a figure of between 70% and 80% (KPMG, 1999; Cowling, 2010; Allinson et al., 2013). Therefore, loan guarantees, by international standards seem to have very important additionality in support of SME finance.

6.3.8 Default

Generally, the Swedish scheme is one of the largest in Europe in terms of loans issued under guarantee, but the rejection rate for guarantees is around 23.8%. Further, the average amount under guarantee at USD 58,000 is one fifth of the USD 301,200 reported for the Netherlands scheme which has an average cost of default of 33.1% of loan value for defaulting loans (USD 99,700). Default rates are high on the UK scheme at around 3% (under SFLG) and 27.4% (under EFG). They are relatively low for the Belgian and Netherlands schemes at 12.8% and 13.7% respectively (Klapper, L.F, Mendoza, J.C and Beck, T, 2007). In Denmark the default rate of the new guarantees issued in 2010 was 13.2%.

6.3.9 Who accesses guarantees?

In terms of what types of firms access guarantee schemes, there is a degree of consistency in terms of the guarantee being accessed primarily by micro (1–9 employee) sized firms. This was true for 58 % of firms on the UK scheme, 58.1% on the Belgian schemes and 57.9% on the Swedish scheme. In most countries manufacturing firms disproportionately accessed guaranteed loans. This was the case for 48.8% of loans under guarantee in the

Netherlands, 36.0% in the UK and 29.7% in Belgium. The implications are that schemes, regardless of the upper size limit of firms allowed access to them, focus on the size class of firms most likely to face binding credit constraints. Thus the potential for economic value added is higher.

6.3.10 Summary

Guarantee schemes have been a feature of European public-policy interventions in capital markets for several decades. Each country has its particular variants, and some countries have more than one scheme, but there are some common features across Europe. Perhaps the most common feature is that access to guarantee schemes is fairly open in terms of the types of firms that can apply for a guaranteed loan, with the notable exception of a firm size limit. This latter point simply reflects the well-understood belief that SMEs face more difficulties when seeking to raise external debt than large firms.

There are important differences in the scale of guarantee scheme operations, and the Swedish scheme is very large compared to its economy. It is also very well-resourced in terms of its administration capacity which partly reflects the guarantee model which is quasi-public sector. This contrasts with other countries such as the Netherlands and the UK who use a public-private guarantee model under which lending is essentially devolved to private-sector financial institutions, as indeed it is in the US and Canada, and oversight rests with a government agency. Importantly, the countries that use private-sector financial institutions to deliver loans incentivise good behaviour by capping the overall loss rate, typically at 12–13% of the total loan portfolio. Delinquent financial institutions are penalised in terms of covering additional losses and are withdrawn from the list of approved lenders typically.

General terms such as guarantee levels and interest rate premium are fairly consistent across major countries, including Denmark, at 75% and 1–2% over the conventional lending rate. Sweden, by contrast, adopts a full-risk pricing model and has the highest average interest rate premiums. This suggests that they are making loans at a point above which the bank loan supply curve is backward bending, even for guaranteed loans. This simply means that lenders cut off the supply of loans at high interest rates as they take the view that any investment capable of generating enough cash-flow to repay such a high interest rate is too risky. It also implies that borrower firms must have investment projects that are capable of generating high returns or have high default rates. Despite this, there remains excess demand for guaranteed loans in Sweden which would imply that their risk assessment model is choking off the highest risk loan applications. The pricing model is interesting as the recent UK EFG evaluation suggested that relatively small upward shifts in the borrowing cost would deter a significant proportion of firms from taking out a guaranteed loan.

What is also apparent across countries is that, despite fairly wide access conditions in terms of what types of firms can access guaranteed loans, the reality is that they are issued disproportionately to; (a) manufacturing firms, (b) micro firms, and (c) younger firms. This suggests that the potential for economic value added is high as all manufacturers tend to have a higher exporting potential and make investments in capital with productivity enhancing potential. Further, younger, and to a lesser degree smaller, firms tend to grow faster, and create more jobs and value added per DKK of investment.

6.3.11 Guarantees as a response to economic crisis

Interestingly, in response to the financial crisis which began in 2008, and led to the deep economic recession, the UK response was to replace the long-standing SFLG scheme with the EFG scheme which gave much larger firms access to guaranteed loans. An additional, and short-lived scheme Transitional Loan Fund, was also brought into operation to support lending to established SMEs experiencing short-run, cash-flow, problems. The scale of this change from SFLG to EFG in the UK was significant with a previous upper limit of approximately DKK 235m in sales to a new limit of approximately DKK 385m. In parallel, the maximum loan amount rose to approximately DKK 9m. This change was replicated in the US with the Recovery and Reinvest Act of 2009, and the Recovery Act 2012 and Jumpstart Our Business Start-ups Act of April 2012. In each case the SBA 7A Loan Program was widened in terms of its scope and in the original 2009 Act the loan maximum rose from approximately DKK 11m to DKK 27m. It was also replicated in Canada through the Economic Action Plan of 2012. In Canada, the Canadian Small Business Finance Program increased its maximum loan size from approximately DKK 1.5m to DKK 2m and allowed firms with up to approximately DKK 29m in sales access to the guarantee program. In Denmark the growth guarantee scheme was expanded in 2009 and again in 2011 to accommodate the new economic conditions. The maximum loan amount rose from DKK 5m to DKK 10m in 2010 and again from DKK 10m to DKK 25m in 2011. Guarantee schemes are the primary, and most appropriate, policy instrument for responding to economic downturns and periods when credit markets are reducing funds available for lending to businesses. In the four major guarantee schemes in the world (Canada, the US, Japan and the UK) guarantee schemes were extended to support lending to the widening pool of businesses

unable to access credit. This feature was replicated in Denmark.

6.3.12 Learning from the UK guarantee schemes development

Here we present some key highlights of UK policy development in the context of its guarantee schemes and draw conclusions about policy learning and how that could be usefully considered by Denmark in terms of developing its' own guarantee programmes. Table 6.2 highlights key historical milestones over the last 35 years in the UK.

TABLE 6.2

Key UK Milestones in the guarantee scheme

Year	Milestone
1979	Wilson Committee of Enquiry into Small Firms recommends guarantee scheme to support small business lending
1981	SFLG scheme started as a 3 year pilot: <ul style="list-style-type: none"> • Guarantee 80% • Interest premium 3.0%
1984	Scheme changes: <ul style="list-style-type: none"> • Guarantee 70% • Interest premium 5.0%
1985	Take-up and default modelling (Cowling and Mitchell,2005) for Ministry
	Scheme changes: <ul style="list-style-type: none"> • Guarantee 70% • Interest premium 2.5%
1987	Scheme changes: <ul style="list-style-type: none"> • Inner City Pilot scheme introduced NERA Evaluation
1988	Department of Employment Evaluation
1992	PIEDA Evaluation
1993	Scheme changes: <ul style="list-style-type: none"> • New firms get 70% guarantee • Established firms get 85% guarantee • Fixed rate loans 0.5% interest premium • Variable rate loans 1.5% interest premium
1994	Counselling scheme pilot introduced linking loans to advice
1996	Scheme changes: <ul style="list-style-type: none"> • Inner city loan special terms removed • Catering firms excluded • Maximum loan term extended to 10 years Counselling scheme pilot Evaluation
1999	KPMG Evaluation
2000	Competition Commission Enquiry into Banking Competitiveness: Shift in policy focus towards equity based interventions
2001	Temporary lifting of sector restrictions for SMEs in areas affected by Foot and Mouth outbreak
2003	Scheme changes: <ul style="list-style-type: none"> • Sector restrictions removed
2004	Graham Review of Loan Guarantee Scheme
2005	Scheme changes: <ul style="list-style-type: none"> • 5 year rule introduced which restricted access to firms under the age of 5 years
2008	Cowling et al (2008) Early Stage Assessment of Graham Review changes
2009	Scheme changes: <ul style="list-style-type: none"> • 5 year rule removed • EFG introduced and replaces SFLG • EFG allows access to larger guaranteed loans for larger sized firms • Transitional Loan Fund came into operation to support lending for working capital to established SMEs
2010	Final SFLG Evaluation (Cowling, 2010) Transitional Loan Fund Evaluation (Cowling and Oakley, 2010)
2013	EFG Evaluation (Allinson et al., 2013)

Source: Marc Cowling, 2014

The UK scheme was a direct policy response to a government committee of enquiry into small business financing in 1979. This was the third such large-scale enquiry into small businesses in the UK, the earliest dating back to 1935. Governmental enquiries are far reaching in the UK and draw upon wide-ranging evidence from academics, firm representative groups, financiers, business owners, government departments, employee representatives, and the general public. Each enquiry has a team of civil servants who support the main committee lead (in this case Wilson) and collate all the evidence, both oral and submitted. Recommendations arising from such enquiries are only made where substantial evidence supports the recommendation. When, and if, recommendations are made, the appropriate Ministry then considers options and viability. The fact that guarantee schemes had existed in Canada and the US for decades supported the UK case for a similar policy intervention.

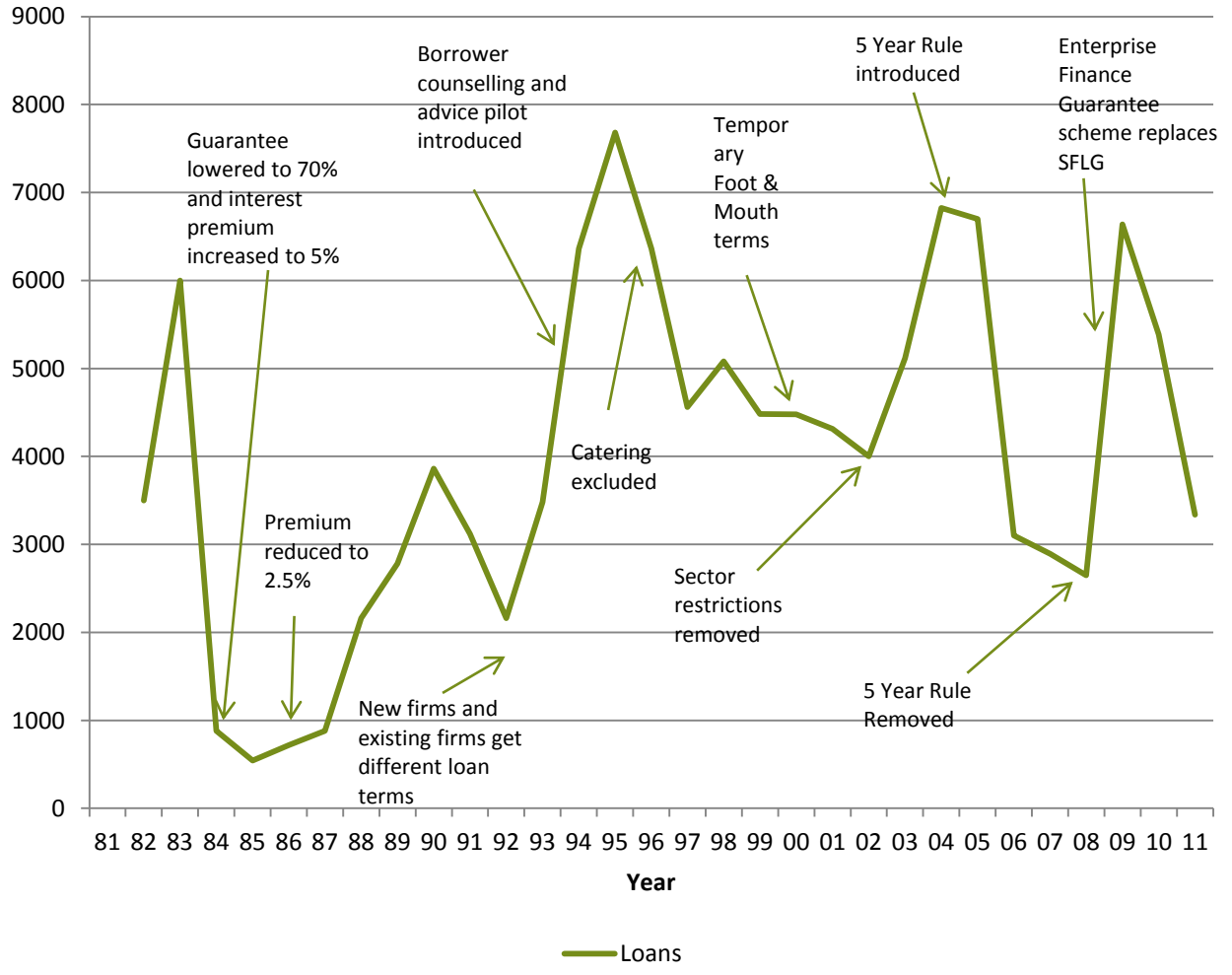
Figure 6.26 illustrates how different policy changes have affected the number of loans over time. The Small Firms Loan Guarantee Scheme was introduced on a three-year pilot basis in 1981 with a guarantee level of 80% and an interest premium (over and above the bank lending rate) of 3%. After the pilot was extended in 1994, the level of guarantee was reduced to 70% (making it less attractive to banks) and the interest premium was raised to 5% (making it less attractive to small firms). These changes quite literally nearly killed the scheme off in its infancy. This highlighted how sensitive guarantee schemes are to the core parameters over which the government has control, the level of guarantee and the government premium. Subsequent developments proved time and time again that this is still the case.

Policy Lesson 1: Set the parameters over which the government has control with careful consideration for the level of additional costs that firms can stand and what level of incentive financial institutions require to co-operate in the market.

The subsequent period from 1986 to 1993 was characterised by relative stability as banks and small firms became more familiar with the scheme

which was operating at a level of 2,000–4,000 loans per year. This would represent around 1–2% of the total SME loan market. During this period, three formal evaluations of the scheme were conducted. These evaluations informed the fundamental changes to the scheme in 1993, when there was a clear distinction set between guaranteeing loans to new businesses and guaranteeing loans to existing SMEs. In this case, existing SMEs received more

FIGURE 6.26
UK guaranteed loans, 1981–2011



Source: Marc Cowling, 2014

favourable guarantee terms than new businesses. This was a clear, and arguably fairer, representation of their relative risk of loan default. A differentiation was also made in terms of fixed and variable rate guaranteed loans.

Policy Lesson 2: The core scheme parameters are easily understood, easy to change, and capable of being adjusted to specific groups/types of SMEs and entrepreneurs.

Perhaps the most interesting change, given the huge body of academic evidence linking human capital to superior business performance, was the Counselling Pilot scheme which ran from 1994 to 1997 and was available in a number of “test” regions. This scheme linked guaranteed lending to advice and support from business development advisors. The 1999 formal KPMG evaluation econometrically tested for its effects and found it to have a significant benefit to recipient firms (and directly to government through lower default rates). The removal of this pilot, and indeed the lack of its geographic expansion, was perhaps the single most important policy mistake or missed opportunity in the history of the SFLG.

Policy Lesson 3: When trying out interesting variants or additions to a core scheme, evaluate and assess their impacts during their operations and extend and expand them if they appear useful or stop them/shut them down if they appear unhelpful.

This general lesson has been clearly demonstrated in trials and errors subsequently made on the UK scheme and the speed at which they have been corrected. For example, the service sector exclusions put in place in 1996 were repealed in 2003 after further investigation found that the growth in demand for services meant that displacement issues were

relatively minor. Equally, the 5 Year Rule was intended to focus the scheme on the youngest of firms which were more likely to be subject to problems based on a lack of track record information. It was also partly driven by the political desire to reduce potential liabilities of guaranteed lending by reducing the cash volume of loans under guarantee. Again, after a collapse in scheme lending, and further evidence from a formal early stage assessment that banks and entrepreneurs felt this restriction too prohibitive, this rule was removed in 2009.

Policy Lesson 4: Learn lessons, adapt to changes in the environment, and use the flexibility of guarantee schemes to tackle temporary objectives where appropriate

The temporary widening of the scheme to allow businesses in regions affected by the outbreak of foot-and-mouth disease was an example of how policymakers used an existing policy instrument to support businesses in temporary difficulty in 2000. Equally, and perhaps more significantly, the replacement of the SFLG after a 28-year life with the Enterprise Finance Guarantee scheme reflected policy thinking at a long-term strategic level and at a short-term level to support bank lending in the credit crisis.

Policy Lesson 5: Set up data management systems capable of monitoring scheme lending and conduct assessments and formal (independent) evaluations on a regular basis. Use this evidence base to inform policy development.

A great strength of the Canadian and UK schemes has been the willingness of both governments to conduct formal evaluations and early assessment when significant scheme changes have been made. This has not been the case in any other countries, and policy development has either not occurred to the extent that we have outlined in the UK, or has

been made with no evidence base. From its initiation in 1981, the UK government has maintained a Management Information system which has supported in-house analysis and reporting, formal independent evaluations, and a large body of academic analysis. Arguably, the availability of scheme data has created a virtuous circle of recommendations for policy development, adjustments to the scheme, review, and further adjustments and developments.

6.4 Guarantee schemes and the Danish context

The underlying rationale for DGF guarantee scheme intervention in the market, that of supporting the flow of loan capital to SMEs with viable funding opportunities but without sufficient collateral and/or track record, is consistent with the vast majority of comparable international guarantee programmes. The development of DGF's guarantee scheme activities over time has some unique features and some that have been mirrored across Europe and in the US, Canada and Japan. Perhaps the most interesting historical aspect is that the DGF Growth Guarantee scheme, set up in 2000, preceded the Get Started scheme by five years. This suggests that the policy focus was quite different in the formative years of DGF guarantee activity and was clearly intended to support potential high-growth SMEs, particularly those that were investing in innovative and developmental activities. This is a fairly small subset of the population of firms in any economy at a given point in time. This target pool of constrained borrowers would be much larger in size than most SME policy interventions focused on debt markets would support and would not typically be the types of firms who lack a track record. We might assume that the vast majority of Growth Guarantee loans would be addressing the issue of insufficient collateral. The initial size restriction for access to Growth Guarantee loans was 100 employees which indicates that policymakers made an assumption

that larger SMEs (i.e. those with more than 100 employees) were unlikely to face collateral constraints when borrowing from banks.

The get-started loan scheme, initiated in 2005, had a clear focus in terms of its target population of firms less than three years old and supported lending up to a modest DKK 1m which would be sufficient for the majority of young firms. It is an interesting policy question why the original Growth Guarantee scheme was not simply widened to support lending to young firms. This would possibly have led to economies of scale at DGF and built on the five years of experience and human capital of administering the Growth Guarantee. This aside, the rationale for policy intervention in the form of loan guarantees is much clearer in the case of the Get Started scheme as young firms clearly lack track record and also face potential collateral constraints as they have not had sufficient time to build up their asset base through trading and investment. As young firms are more likely to face binding credit constraints, this addition to DGF's guarantee scheme portfolio had the potential to see a huge expansion in guaranteed lending by number of loans and by cash volumes supported. It also increased the probability of DGF's guarantee activities being finance additional, thus reducing potential deadweight. An innovative addition to the Get Started loan scheme was the provision of advice and coaching to supported entrepreneurs. This mirrored the UK counselling pilot which was found to have a positive impact on outcomes. It also suggests that policy thinking understood that young firms and early stage entrepreneurs need to raise their human capital in order to manage productive investments.

A unique and interesting feature of DGF's guarantee activities is the fact that DGF conducted its own due diligence on potential borrower firms. The vast majority of guarantee schemes throughout the world

effectively hand over due diligence to private sector financial institutions (or in some cases NGOs, as is the case in Sweden) as a standard requirement that private sector financiers conduct lending appraisals in the same way they would any other small business proposition. In fact, in the UK, firms are not allowed to approach a bank for a government guaranteed loan explicitly. The procedure is to submit a formal lending proposition to a private bank which then conducts its appraisals in the normal way. Only when the proposition passes the serviceability (generating enough cash-flow to service the capital and interest payments) and credible business-plan tests, is the issue of collateral raised. At this point, if the firm cannot meet the bank's collateral requirements (which are normally higher for young firms with little track record), the offer of a government guaranteed loan is discussed. DGF began to do in-house risk assessment as a result of poor performance on the guarantees when the private lending sector alone made the due diligence. This choice has proven to be very effective in minimising the default rate on loans but have increased the administrative cost substantially.

Even with a guarantee scheme in place, banks will always be less willing to make loans than governments. This situation arises because governments have a wider remit than banks, which simply want to lend money to people and firms with a high probability of repayment. In this sense, banks are only interested in firm growth if it increases the probability of repayment. Governments have a wider interest in economic growth and job creation and are thus able to consider a broader set of outcomes than simple ability to repay a loan.

This leads to another interesting question around how governments, and particularly its audit or treasury departments, measure the success or otherwise of their guarantee schemes. Taking a narrow, com-

mercial, view seems nonsensical as would any requirement for a guarantee programme to be self-financing through premium income revenues covering guarantees paid out in default. The major advantage of government is that it can take a longer-term view than private shareholder-driven financial institutions and that it has a broader economic welfare remit. If the UK, US or Canadian schemes were measured purely on a narrow commercial basis in terms of premium income covering default losses then no scheme in the world would stand up to scrutiny.

Taking a broader, and longer-term, view than the market requires a clear statement about what a guarantee scheme is intended to achieve (i.e. job, productivity, sales and export growth) and then formally evaluating outcomes against stated objectives as they do consistently and on a regular basis in the UK and Canada. In reality, governments 'manage' their guarantee exposure within acceptable limits which are often defined politically. In the UK, and other countries, individual financial institution default loss rates are capped, thus incentivising banks not to over-lend to non-viable businesses.

Perhaps the clearest indication of policy learning from DGF occurred in the period 2010–2012. Here changes to DGF's guarantee activities reflected longer-term strategic aims and the need to intervene to support firms suffering from the immediate effects of the financial crisis and economic downturn. In 2010 a key change was to allow SMEs to use guaranteed loans to support cash-flows and weakening balance sheets as private-sector financiers reduced the scale of funds available for lending and withdrew or scaled down overdraft facilities to existing borrowers. This, again, reflected governments desire to help otherwise viable SMEs manage their cash flows through a tough economic period and represents an efficient use of government money. It remains the case that in the normal course

of events, few SMEs cease trading and most continue on a slow growth trajectory ad infinitum. To support these objectives, more cash was made available to guarantee lending.

The second interesting change during this period occurred in 2011 when the maximum firm size restriction was raised from 100 employees up to the EU's SME definition of 249 employees. Whilst numerically this change affects quite a small number of firms, the nature of their activities may generate significant positive economic benefits, particularly through manufacturing exports and general productivity gains. It also brings DGF guarantee activities broadly in line with other European countries. 2011 also saw a more general expansion of guaranteed funding available from government and a broadening of sectors allowed access to guaranteed loans. The final changes in 2012 saw a raising of the previous young firm maximum loan limit to DKK 2m from DKK 1m. It is likely that this change will have a relatively modest impact on future take-up as average loan scale for this type of firm is well below this level. Again, this mirrors changes to all the major guarantee schemes in the world. But the most significant changes were the removal of the requirement for DGF to evaluate lending propositions and the merging of both guarantee schemes under one umbrella guarantee scheme. An interesting adjunct to these guarantee scheme changes was the decision to become involved in direct lending to young firms. This is completely at odds with policy developments over the last 30 years in most countries where public-sector organisations have sought to build strategic and delivery partnerships with experienced private-sector financial institutions. Indeed, the main focus of direct lending schemes is in the developing world.

To summarise, DGF guarantee scheme development has had a relatively short, but interesting, history and to some degree a unique one starting as it

did with effectively a high-growth potential, innovation-focused scheme largely intended for existing SMEs. The subsequent addition of a young-firm-focused guarantee scheme brought DGF's guarantee activities into line with most countries. There is clear evidence of policy learning over time and the Danish government has used the guarantee schemes as a vehicle to address wider economic contexts, particularly the financial crisis and subsequent economic downturn through extending the funds available for guarantees. The advice and coaching offer is an innovative and useful complementary addition to the financial support available for younger firms.

In terms of guarantee scheme models, the DGF model is one of the most closely involved in physical market operations. In this sense it is closer to the Japanese model than the UK, Canadian, US models and the general model adopted in most European countries in which the governmental role is more of a monitoring, legal and evaluation role. The hands-off model has obvious benefits in terms of allowing experienced lenders to make commercial decisions without being burdened by bureaucratic requirements. Safeguards in the form of capped losses and exclusion from scheme lending have to be built in to this kind of guarantee model to ensure good behaviour on the part of financial institutions. But a potential negative aspect of this type of hands-off model is that government policy is secondary to bank lending policy. Sweden, by contrast, adopted an intermediate type of guarantee model, which has a high level of input from a large NGO. The obvious concern about this type of guarantee model is the experience and quality of the NGO staff in the administration of guaranteed lending schemes. But the use of an NGO intermediary can have significant benefits as it can operate at arms' length from politicians and focus on administering a guarantee scheme that delivers long-term benefits without short-term political concerns. But, if it is effectively a

quasi-public sector organisation, then many of the potential benefits of this model are potentially lost.

6.4.1 Comparative scheme costs

Here we provide international benchmarks of three large-scale guarantee programmes in the UK and Canada. The schemes considered are: the UK Small Firms Loan Guarantee Scheme (SFLG); its successor, the Enterprise Finance Guarantee Scheme; and the Canadian Small Business Finance Scheme. These countries' schemes were chosen as they have the longest running schemes in the world.

On many parameters and measures DGF guarantee schemes appear broadly in line with more established country schemes. Default costs, proportional to size of scheme and guarantee activities, are DKK 39m from a portfolio of 234 guaranteed loans amounting to DKK 686m of guaranteed lending, and a default rate of 13.2%. The latter is lower than UK levels of loan default. Premium income is relatively high at DKK 31m, and this reduces net scheme costs to a relatively low figure of DKK 22m. In contrast, the UK schemes generate quite low levels of premium income. Cash lending volumes are also relatively high in Denmark at approximately DKK 686m highlighting the large average size of loan. If default is expressed in terms of the costs per DKK lent, the figure of 5.6% for Denmark is lower than UK and Canadian international benchmarks, as is the figure of DKK 92,388 for average net cost to government per guaranteed loan, see table 6.3.

The one area where Denmark appears out of line with the UK and Canada is in terms of absolute and relative costs of scheme administration. Operating costs of approximately DKK 14m to deliver 234 loans represents an average administration cost of approximately DKK 58,000 per loan guaranteed. In comparison, the UK team of four staff administer

3,100 loans at an average administration cost of approximately DKK 995. There are clear explanations for why this might occur. Firstly, until 2012 DGF performed an internal evaluation on every loan proposal put before it. This was a hugely costly and time consuming task. In addition, there are substantial fixed costs of operating a guarantee scheme and in the case of Denmark, this fixed cost element is only spread over 234 loans compared to thousands in the UK and Canada. Overall, it might be expected that per loan administration costs will fall substantially as fewer lending evaluations are performed and more loans are made. The average net cost as amount guaranteed is lower compared to the UK and Canadian schemes. Furthermore this cost analysis is performed on the 2010 loan portfolio which was the year DGF increased its loan capacity substantially and thus hired more staff. This effect of the increased loan has a delay in the number of loans given so that the administrative cost in year 2010 can have been substantially higher per loan compared to other years. The one counter-balancing effect is the start of the direct lending scheme. If this scheme attracts large numbers of funding proposals then the cost impact may be significant.

Default costs are a very large part of the total scheme costs. In contrast, administration costs of operating a loan guarantee scheme are relatively small and vary from approximately DKK 995 per loan issued for the UK EFG up to approximately DKK 3,535 per loan issued for its predecessor the UK SFLG. The largest share of these total administration costs are direct salaries and wages. As the fixed cost element of the administration is high, it would be anticipated that the Danish schemes would have a higher average administration cost per loan as the total volume of loans issued are 1/20th that of the Canadian scheme. In terms of the total cost of defaulting loans and called in guarantees, expressed as a proportion of the total value of loan issued, DGFs scheme generates the lowest

loss rate of 5.6%, the UK EFG scheme generates the second lowest loss rate of 8% by loan volume and the Canadian scheme 10%, the UK SFLG scheme has by far the highest default rate of 17%. In cash terms, each loan issued has to generate benefits of, on average, approximately DKK 28,000-124,000 in additional economic value to create a cost neutral scheme. What is also evident is that schemes with a wider potential target group such as the UK EFG and Canadian scheme generate a much higher relative and absolute income stream from interest rate premiums. This widening of eligibility and participation also allows schemes to spread the fixed cost element of operations, thus reducing per DKK, and per loan, net costs.

6.4.2 Selected issues on loan and guarantees

Smaller firms are an important part of the regional and national economic systems. In particular, they play a key role in promoting and stimulating economic dynamism, job creation, and growth through their contribution to innovation and competitiveness. The ability of smaller firms to access finance is crucial in order for these firms to fund the level of investment that maximises their growth potential, and for many small firms their ability to reach a minimum efficient scale of operation. Lack of finance, not only reduces the rate of new business formation, but impedes the ability of existing firms to grow and can endanger their survival. Specifically, external finance is an important part of the market mechanism, which facilitates the efficient allocation of resources within economic systems (BIS, 2012). Debt finance is the preferred and most widely used form of finance by smaller firms, and this reflects its low

TABLE 6.3

Comparative Loan Guarantee Scheme Costs

	DGF 2010	UK SFLG 2006	UK EFG 2009	Canada 2008
	Million DKK	Million DKK	Million DKK	Million DKK
Default Costs	39	460	468	451
Programme Operating Costs	14	11	8	19
Total Costs	52	471	468	460
Premium Income	31	88	192	216
Net costs	22	383	276	244
Total Loans Value	686	2.692	5.703	4.539
Number of Loans	234	3.100	6.724	9.000
Number of Defaulted loans	31			
Average Admin Cost per Loan	57.671	3.535	995	1.767
Average Default Cost per Loan: Repaid and Defaulted	5.6%	17%	8%	10%
Average Default Cost as Proportion of DKK Loaned	92.388	123.658	41.863	27.947
Average Net Cost as Per Loan	3,1%	14,2%	4,8%	5,4%

Source: Marc Cowling 2014 and DGF

cost, the relatively low risk of failure or non-repayment of the majority of smaller firms, and also a desire by most entrepreneurs to maintain control of their businesses.

Pros and cons of publicly-funded schemes aimed at enhancing the access to debt financing

Small firm financing obstacles have almost twice the effect on annual growth than large firm financing obstacles (Beck and Demirguc-Kunt, 2008). If default increases as constrained firms become unconstrained via the loan guarantee, then under certain conditions, banks are better off without a scheme. This occurs as loan guarantees raise the equilibrium price (via the government interest rate premium) and volume (number of loans and the total value of loans) traded in the market. This can lead to a situation where banks are lending at levels above their profit maximising level (Cressy, 1996; Devinney, 1986; Cowling, 2010). Thus the price for private loans becomes higher as a result of government intervention. This may, in turn, lead to fewer loans, more defaults, and presumably fewer entrepreneurs because of the higher cost of loans will lessen demand. However, the empirical evidence tends to suggest that small firms have a relatively steep demand curve for loans and only reduce their demand at relatively high levels of interest rates. But in general, if entrepreneurs and small firms are unfairly rationed due to lack of collateral where their projects are of comparable quality to those that get funded by the market, then there is a clear role for government intervention to correct this market failure.

The fact that not all potential entrepreneurs and/or small businesses get access to loans is a necessity, but not a sufficient condition, for justifying public intervention in credit markets,³⁸ which often is not understood by entrepreneurs or policymakers. Since

part of the remit of governments is to improve the social and economic welfare of their citizens, policy intervention can often be justified by taking into account socio-economic objectives. For example, banks and investors are not explicitly interested in job creation and local economic development per se, unless it leads directly to more deal flow, higher repayment rates or more profit. Whereas in a public policy cost-benefit analysis, more jobs not only reduces social welfare payments (a cost saving to the state) but new employees pay taxes and stimulate consumption, government has a broader scope of what constitutes a successful loan guarantee scheme. To justify the introduction or continuation of a loan guarantee scheme, it must be the case that small firms cannot gain access to (proportionally) as much credit, or credit on equally favourable terms, as larger firms of equal risk.

If banks only compete on collateral (assuming competition drives down a common loan rate), an increase in collateral requirements drives the safest entrepreneurs out of the market as banks, incorrectly, assume that only good borrowers will risk their assets. But it is questionable whether entrepreneurial talent is the prerogative of the wealthy or more broadly distributed throughout the population as a whole. Without reasonable access to financing, many talented entrepreneurs may be forced to accept waged employment and contribute less to the economic system. Innovation and business development will become a luxury reserved for the wealthy, and the economy as a whole will suffer (Hanson, 1983). Efficiency requires that talent, not wealth, should determine who becomes an entrepreneur (Cowling et al., 2003). Here it is important for the government to address this problem and to

³⁸ This is true if need is assessed on purely economic grounds, although these constraints may be relaxed if schemes pursue an explicit social agenda.

ensure good entrepreneurs access to loans or collateral in form of loan guarantees.

*'Even if government lending programs initially make losses and seem inefficient, they can have long-run general equilibrium effects in the credit market that improve efficiency.'*³⁹

Colombo and Grilli (2007) argue that even those firms which successfully obtained a bank loan were constrained by the amount offered, causing them to be unable to reach an efficient scale of production. Therefore, even though firms can get bank loans, a government loan guarantee scheme has a purpose of helping companies to get enough capital to ensure the most efficient scale of production and thus increase the financial additionality and reduce the deadweight loss that results from a lack of financing.

What about the alternative of direct lending by government agencies? Historically, this has been an important means of channelling small amounts of capital to entrepreneurs and small firms. But direct lending (or in the extreme, non-repayable grants) requires that government agents are capable of evaluating funding proposals, conducting due diligence, and assessing market risk. The sunk costs associated with creating an agency, staffing it with experienced financiers, and supporting the IT required are large. It also raises important issues around entrepreneurs' perceptions of what direct government funding is compared to a private bank loan in terms of moral hazard (switching to riskier projects) and the requirement to repay. Equally, the direct investment model raises political questions around whether the government is prepared to take legal action against its own citizens in the event of default.

However, the UK government, in a direct response to the financial crisis of September 2008, set up such a lending vehicle called the Transitional Loan Fund. The scheme was a direct lending scheme delivered through the UK Regional Development Agencies which made direct loans to existing SMEs with cash-flow problems. The scheme was only available for a 12-month period before it was closed and was explicitly a rapid and temporary government response to the issue that many established and viable SMEs might go out of business as private banks cut off their credit facilities. The Regional Development Agencies adopted a more traditional lending approach and hired former bank staff to administer it. Lending decisions were made on a more personal basis with face-to-face discussions between the lending officer and entrepreneur supported by financial accounts data and forecasts. Loans were relatively short-term, for cash-flow purposes, and attracted a high rate of interest. A formal evaluation (Cowling and Oakley, 2010) concluded that "this study has broadly confirmed both the rationale for and effectiveness of the Transitional Loan Funds. The evidence suggests that Transitional Loan Funds are meeting a real need and providing clear benefits for many businesses. Transitional Loan Funds, by advancing working capital to cash constrained SMEs, improve SMEs' ability to survive the economic downturn, and build capabilities to help them grow as the economy emerges from recession." Thus, it is apparent that direct lending, under certain conditions, particularly using experienced professional financiers, can (a) alleviate credit rationing, and (b) generate positive returns to government.

³⁹ Ghatak et al. (2002): CREDIT RATIONING, WEALTH INEQUALITY,

AND ALLOCATION OF TALENT p. 20

The specifics of DGF's schemes

In an international context/comparison, it is interesting to look at possible conclusions which may be drawn on the specifics of the schemes; i.e., the pricing, guarantee coverage, relationship with the banks/financial institution, nature of the risk (e.g., subordination).

An analysis of the Canadian Small Business Financing programme (CDBF) made by Riding et al. (2006) finds that 81 percent of their loan guarantee sample (of 10,000 loan guarantees) would have been turned down for a conventional loan. The authors found that these guarantees contributed to an additional 22,000 full-time jobs in Canada each year. Thus, according to this paper, the CSBF had a large positive impact on employment and thus the Canadian economy as a whole.

Cowling (2007; 2008; 2010), Cowling and Siepel (2013) and Cowling and Mitchell (2003) have analysed the UK Small Firms Loan Guarantee (SFLG) scheme. They find that default increases with the banks' cost of capital (the loan rate) but not with the government premium. This latter effect is clear evidence of market failure as banks have incorrectly assumed that raising the cost of capital would increase default. In addition, default was also found to increase in periods of macroeconomic growth, suggesting that in economic upturns the marginal SFLG borrower is of lower quality as banks relax their lending criteria. This shows that during economic downturn, when banks' lending is constrained by their capital base, is when governments should increase their support of entrepreneurs, because in periods of economic growth, banks will supply sufficient capital to good entrepreneurs.

Cowling and Siepel (2013) examined whether the UK Small Firms Loan Guarantee Scheme (SFLG) provides value-for-money to the UK taxpayer. Their findings suggest that entrepreneurial firms which

are able to access new finance through SFLG achieve superior performance in the form of improved sales, job creation and exports and that this justifies public intervention in private credit markets. All other factors being equal, not having any collateral reduces a firms' maximum borrowing by half. This is supportive of the role of SFLG in allowing certain types of small firm's access to bank funding under commitment from the government.

From the evaluation evidence presented, it is reasonable to conclude that the majority of studies found that schemes improved access to debt finance. However, at the extreme, loan guarantee schemes can have negative economic consequences as in the case of the Japanese "Special Credit Guarantee Programme for Financial Stability" (SGC) where the guarantees were 100% of the loans. The companies that received the 100% guarantee did not have the incentive to investment them in the safest investment, but instead invested them in high-risk, high-return investments because they could not lose any money.

Whilst the broad body of evidence is far from conclusive, it does appear that in certain circumstances interventions of this type can create additional economic benefits including local economic growth, innovation, technology adoption, exports and jobs. And it appears to be the case that there will always be a small pool of borrowers who, due to information problems, will find it hard to access bank funding, thus providing some justification for this type of policy intervention.

The evidence is broadly supportive of the use of financial engineering instruments to correct for (lack of) collateral issues in debt markets and to a lesser degree lack of a track record. Loan guarantee schemes have the advantage of being simple to design and administer and typically require that investment appraisal is conducted on a commercial basis

thus minimising deadweight. Instruments of this type are most effective when the entrepreneurial population, and entrepreneurial talent, is more widely distributed than wealth throughout the general population. This gives loan guarantee schemes the potential to have disproportionately high and positive effects in countries and regions where (a) collateral based lending is the norm, and (b) a significant proportion of the entrepreneurial population is not asset rich. As a tool for promoting local economic development, loan guarantee schemes have been shown to be a relatively successful means of public-policy intervention. Their use is more widely relevant in the current global financial crisis where the financial constraints of banks are very high.

When designing a new scheme, or adjusting an existing one, policymakers need to consider beforehand both bank sensitivity to the guarantee level and firms' sensitivity to the interest premium in particular. If the premium is too high, the total volume of loans will fall, thus making the scheme irrelevant and making the fixed cost of operation and management too high compared to the gains. If the guarantee level is too high, the cost to government of firms' defaulting on the loans will be too high, and thus their incentive to use the money to high-risk, high-reward investments will be increased as in the previously mentioned case from Japan. Evidence from the UK Enterprise Finance Guarantee evaluation suggests that firms are sensitive to interest rate margins above 5% over base which represents an effective price ceiling for guaranteed loans. Above this 5% ceiling, 85% of total issued loans would not have been taken up by the SMEs who received them.

Most schemes operated in developed countries would be in the 70–80% guarantee and 2–3% interest premium range historically. This should ensure that only good quality lending propositions are funded as the bank bears enough risk to conduct

due diligence. This ensures that loans which are made have a higher probability of being additional than those that would have been made. The DGF scheme follows these general guidelines with guarantees of 75% and a premium of 3% when the loan is obtained on get-started loans. For Growth Guarantee loans the premium is 2% when the loan is optioned and 1.25% a year.

Loan guarantee schemes benefit from being simple to create and operationalise and also from being widely understood by all actors in the debt market. This helps avoid the problem of many complex government programmes, which are only understood and accessed by those with the high level of awareness, skills, knowledge and resources to clear all the necessary hurdles and deal with the complexities of application. This is generally why smaller firms do not bid for government contracts and why in many cases scheme deadweight can often be high. It is therefore important for DGF to have a simple structure of the loan guarantee scheme so entrepreneurs easily know how to get the guarantees and what they cost.

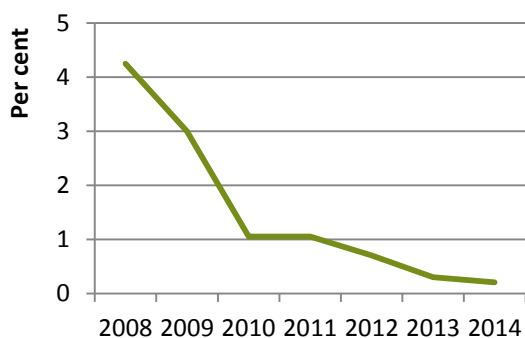
A clear advantage of a government-backed loan guarantee programme is that the government can take a longer (and broader) view in terms of the timing and nature of its investments. Economic evaluations of government-supported financial programmes suggest that the full economic benefits of new investments can take up to six years to fully accumulate. This is important as the costs of many schemes are incurred early on in the investment process, and in particular 80% of defaulting loans do so within 2 years of the loan being made. A failure to accommodate these facts can result in evaluations being conducted too early in the investment cycle and erroneous (and negative) conclusions being drawn. This is known as the J-curve effect where

firm performance dips in the immediate post-investment period as firms re-configure themselves in order to accommodate future growth episodes.

The key determinant of the total cost of credit is commercial banks' lending rate and the default rate on non-performing loans. Figure 6.27 below shows Danish lending rates from 2008 to 2014.

The lending rate, in line with most Western and European countries, fell significantly after the financial crisis in late 2008.

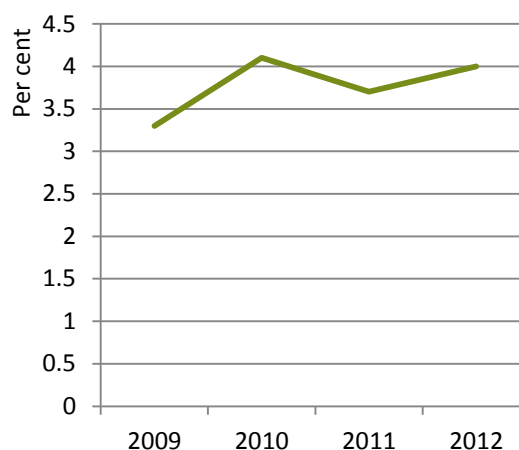
FIGURE 6.27
Danish lending rates



Source: World Bank Indicators Data

The second key element of the cost of debt finance is the rate at which banks issue loans that are non-performing, i.e. loans which are not fully repaid. This is illustrated in Figure 6.28. What is immediately apparent is that the general incidence of non-performing loans is low by any international standards. But the trend is upwards in the rate of non-performing loans. Overall, this suggests that Danish lending banks are cautious in their general lending policies and that risk-adjusted lending is not the norm.

FIGURE 6.28
Danish non-performing loan rates

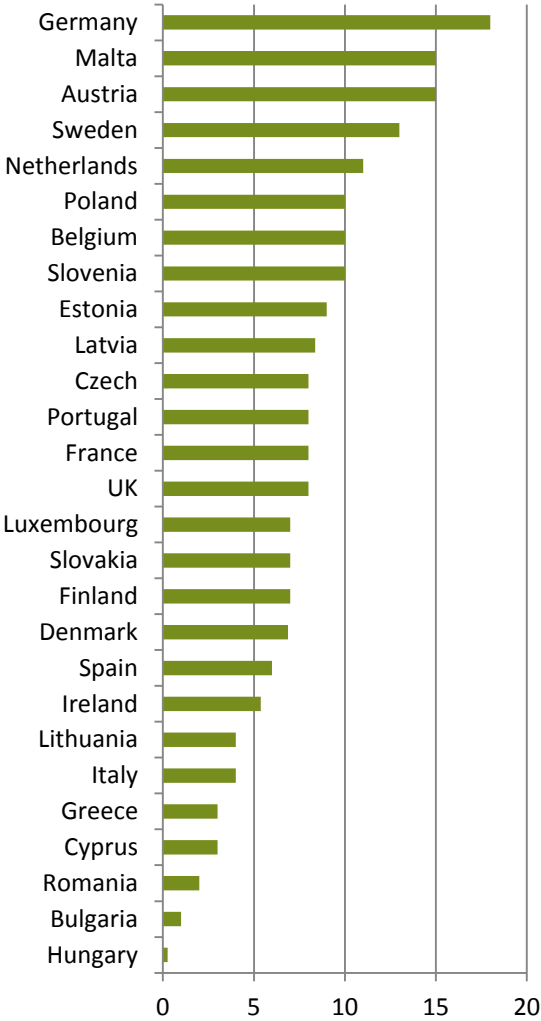


Source: World Bank Indicators Data

The Danish banking sector is one of the least supportive of SMEs in Europe, see Figure 6.29, which illustrates the necessity of government intervention in the loan market for small businesses.

FIGURE 6.29

Small business banking index



Source: Cowling, M, 2012, Survey of EU Experts.
Note: High score equals more supportive.
Note: EU Survey of Banking Sector Support for SMEs.
Note: The banking index comprises 9 items relating to (a) the presence of local banks, (b) banking sector concentration, (c) sophistication of the banking system, (d) the presence of public sector banks, (e) density of local branch networks, (f) the requirement for lending to be secured, (g) the availability of low-cost credit, (h) quality differences across banks, and (i) the extent to which entrepreneurs with good-quality lending propositions get funded by banks.

7 Literature/references

- Akerlof, G. (1970). "The Market for Lemons: Quality Uncertainty and the Market Mechanism". Quarterly Journal of Economics 84(3): p. 488-500.
- Allinson, G., Robson, P., Stone, I. (2013): "Economic Evaluation of the Enterprise Finance Guarantee Scheme". Department for Business Innovation and Skills.
- Arrow, Kenneth J. (1974). *The Limits of Organization*. Norton, New York.
- Avnimelech G. and Teubal, M. (2004): "Venture capital start-up co-evolution and the emergence & development of Israel's new high tech cluster". Economics of Innovation and New Technology 13(1):33-60.
- Bettignies, J. de and James A. Brander, (2007) "Financial Entrepreneurship: Bank Finance versus Venture Capital". Journal of Business Venturing.
- Brander, James A., E. Egan and T. F. Hellmann (2008). "NBER working paper series government sponsored versus private venture capital: Canadian evidence". NBER Working Paper Working Paper 14029.
- Bravo-Biosca, A. (2010): "Growth Dynamics Exploring business growth and contraction in Europe and the US". Research report: November 2010. London, NESTA and FORA.
- Bravo-Biosca, A., C. Criscuolo and C. Menon (2012): "What drives the dynamics of business growth?". OECD STI working paper, forthcoming.
- Brown, R., C. Mason and S. Mawson (2014). "Increasing 'The Vital 6 Percent': Designing Effective Public Policy to Support High Growth Firms". Nesta Working Paper No. 14/01.
- Burgel, O. and Murray, G. C. (2000): "The International Market Entry Choices of Start-Up Companies in High-Technology Industries". Journal of International Marketing.
- Colombo, M., Grilli, L. (2007): "Funding gaps? Access to bank loans by high-tech start-ups". Small Business Economics, 29. 25-46.
- Cornelli, F., Yosha, O. (2003): "Stage Financing and the Role of Convertible Securities". Review of Economic Studies.
- Cowling, M., Clay, N. (1995): "An Analysis of Factors Influencing Take-Up Rates on the Loan Guarantee Scheme". Small Business Economics, Vol.7, No.2. 141-152.
- Cowling, M. (1997): "Small business loan requests: Who gets the cash?". SME Centre Working Paper, No. 53. Warwick Business School, UK.
- Cowling, M. (1999): "The determination of bank-small business loan premia". Applied Economics Letters, 6(4). 291-293.
- Cowling, M. (1999): "The incidence of loan collateralisation in small business lending contracts". Applied Economics Letters, 6(5). 251-253.
- Cowling, M., Taylor, M., Mitchell, P. (2003): "Job Creators". Manchester School, LXV, 160-179.
- Cowling, M. (2007): "The Role of Loan Commitments in Credit Allocation". IES Working Paper, No.11. Institute for Employment Studies, University of Sussex.
- Cowling, M. (2007): "The role of loan guarantee schemes in alleviating credit rationing in the UK". Institute for Employment Studies Working Paper WP 7.
- Cowling, M. (2008): "An empirical test of the significance of credit rationing on the UK small firms loan guarantee scheme". Session IV. Partial Credit Guarantees: Experiences and Lessons. World Bank, Financial & Private Sector Development. Washington DC.
- Cowling, M. (2010): "The role of loan guarantee schemes in alleviating credit rationing in the UK". Journal of Financial Stability, 6 (1). 36-44.
- Cowling, M., Mitchell, P (2003): "Is the small firms loan guarantee scheme hazardous for banks or helpful to small business?". Small Business Economics, 21. 63-72.

- Cowling, M., Oakley, J. (2010): *"Economic Evaluation of the Transitional Loan Fund"*. Department for Business Innovation and Skills. UK.
- Cowling, M. (2010): *"Economic Evaluation of the Small Firms Loan Guarantee Scheme"*. Department for Business Innovation and Skills. UK.
- Cowling, M., Siepel, J. (2013): *"Loan Guarantee Schemes: Helpful or a Waste of Scarce Resources?"*. Technovation, 33. 265-275. <http://dx.doi.org/10.1016/j.technovation.2012.11.002>
- Cowling, M., C. Baden-Fuller, C. M. Mason, M. Hopkins and G. C. Murray (2009). *"From Funding Gaps to Thin Markets: UK Government Support for Early-Stage Venture Capital"*. SSRN eLibrary.
- Cowling, M., P. Bates, N. Jagger and G. Murray (2008): *"Study of the impact of the Enterprise Investment Scheme (EIS) and Venture Capital Trusts (VCTs) on company performance"*. HM Revenue & Customs Research Report 44.
- Cowling, M., L. Weixi, G. Murray, J. Seiple and P. Nightingale (2011). *"BIS EQUITY SCHEMES EVALUATION. B. o. B. I. a. Skills"*. London, UK.
- Craig, B., Jackson III, W., Thomson, J. (2007): *"Small firm finance, credit rationing, and the impact of SBA guaranteed lending on local economic growth"*. Journal of Small Business Management, 45 (1). 116-132.
- Craig, B., Jackson III, W., Thomson, J. (2005): *"SBA loan guarantees and local economic growth"*. Federal Reserve Bank of Cleveland Working Paper, 05-03.
- Craig, B., Jackson III, W., Thomson, J. (2006): *"Small firm credit market discrimination, SBA guaranteed lending, and local market economic performance"*. Federal Reserve Bank of Cleveland Working Paper, 06-13.
- Craig, B., Jackson III, W., Thomson, J. (2007): *"Small firm credit market discrimination, SBA guaranteed lending, and local market economic performance"*. Annals of the American Association of Political and Social Science, 613. 73-94.
- Cressy, R. (1996): *"Are business start-ups debt rationed?"*. Economic Journal, 106. 1253-1270.
- Cumming, D., G. Fleming and A. Schwienbacher (2009). *"Style Drift in Private Equity"*. Journal of Business Finance & Accounting 36(5-6): 645-678.
- Cumming, D. J. (2010). "Review Essay: Public Policy and the Creation of Active Venture Capital Markets and Some Comments on 'Boulevard of Broken Dreams: Why Public Efforts to Boost Entrepreneurship and Venture Capital Have Failed and What to Do About It,' by Josh Lerner." *Venture Capital: An International Journal of Entrepreneurial Finance*, Forthcoming.
- Cumming, D. J. and J. G. MacIntosh (2003): *"Mutual funds that invest in private equity? An analysis of labour-sponsored investment funds"*. University of Alberta; University of Toronto.
- Cumming, D. J., MacIntosh, J. G. (2006). *"Crowding out private equity: Canadian evidence"*. Journal of Business Venturing 21(5): 569-609.
- Da Rin, M., G. Nicodano and A. Sembenelli (2004). "Public Policy and the Creation of Active Venture Capital Markets" RICAFA Working Paper No 013.
- DAMVAD (2013): *"The Danish Growth Fund's (DGF) activities - Mapping the effects of DGF"*.
- Devinney, T. (1986): *"Rationing in the theory of the banking firm"*. Springer-Verlag. Berlin.
- Dimov, D. and Murray G. (2008). *"Determinants of the Incidence and Scale of Seed Capital Investments by Venture Capital Firms"* Small Business Economics 30(2): 127-152.
- E. R. A. C. (ERAC) (2012): *"Peer-Review of the Danish Research and Innovation System: Strengthening innovation performance"*. E. Commission. Brussels, Belgium and Copenhagen, Denmark.
- European Commission (2012a): *"European Commission SBA Fact Sheet 2012"*. Brussels, Belgium.
- European Commission (2012b): *"European Commission 2012 Peer-Review of the Danish Research and Innovation System"*. Brussels, Belgium.

- European Commission (2013): *"Innovation Union Scoreboard 2013"*. Brussels, Belgium.
- European Private Equity and Venture Capital Association (EVCA) (2013): *"Yearbook 2012 - Activity Data on Fundraising, Investments and Divestments by Private Equity and Venture Capital Firms in Europe"*.
- European Private Equity and Venture Capital Association (EVCA) (2013): *"2012 Pan-European Private Equity Performance Benchmarks Study"*.
- Erlich, Y. (2001): *"The Israeli Venture Capital Industry"*. Presentation at London Business School, UK.
- Financial Conduct Agency (2014): *"The Financial Conduct Authority places consumer protection at the heart of Crowdfunding"*. Press Release 6th March 2014. London, FCA.
- Ghatak, M., Morelli, M., Sjostrom, T. (2002): *"Credit rationing, wealth inequality, and allocation of talent"*. London School of Economics Discussion Paper No. TE/02/441.
- Gilson, R. J. (2003): *"Engineering a Venture Capital Market: Lessons from the American Experience"*. Stanford Law Review Vol. 55, ((4)): p. 1067-1103.
- Gompers, P., Kovner, A. and Lerner, J. (2009): *"Specialization and Success: Evidence from Venture Capital"*. Journal of Economics & Management Strategy 18(3): 817-844.
- Graham, T. (2004): *"Graham review of the small firms loan guarantee – Final report"*. HM Treasury. London.
- Griliches, Z. (1992): *"The Search for R&D Spillovers"*. Scandinavian Journal of Economics 94: 29-47.
- Hakim, G. (1989): *"Identifying fast growth small firms"*. Employment Gazette, vol. 97, no. 1, pp. 29-41.
- Hanson, D. (1983): *"Introduction in Financing State and Local Economic Development"*, Part IV. Michael Barber. ed. Duke University Press, North Carolina.
- Hellman, T. and Puri, M. (2000): *"The interaction between product marketing and financing strategy: The role of venture capital"*. Review of Financial Studies 13: p. 959-984.
- Isenberg, D. J. (2010): *"The public policy forum 2012"*. Quebec City Conference October 24th, 2012.
- Jaffe, Adam B. (1996): *"Economic Analysis of Research Spillovers: Implications for the Advanced Technology Program"*. Economic Assessment Office, The Advanced Technology Program, National Institutes of Standards and Technology, U.S. Department of Commerce.
- Jensen, Michael C. and Meckling, William H., (1976): *"Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure"*. Journal of Financial Economics.
- Jääskeläinen, M., Maula, M. and Murray, G. (2007): *"Profit distribution and compensation structures in publicly and privately funded hybrid venture capital funds"*. Research Policy.
- Kaplan, S. N., Martel, F. and Stromberg, P. (2007): *"How do Legal Differences and Experience Affect Financial Contracts?"*. Journal of Financial Intermediation.
- Kenney, M. and U. von Burg (1999): *"Technology and Path Dependence: The Divergence between Silicon Valley and Route 128"*. Industrial and Corporate Change.
- Keuschnigg, C. and Nielsen, S. B. (2004): *"Start-ups, venture capitalists, and the capital gains tax"*. Journal of Public Economics.
- Klapper, LF., Mendoza, JC., Beck, T. (2007): *"World – Partial Credit Guarantee Survey"*. World Bank Microdata.
- Li, Y. and Zahra, S. A. (2012): *"Formal institutions, culture, and venture capital activity: A cross-country analysis"*. Journal of Business Venturing 27(1): 95-111.

- Lerner, J. and Khortum (2000): "Assessing the contribution of Venture Capital to Innovation". RAND Journal for Economics 31(4).
- Lerner, J. and Tag, J. (2012): "Institutions and Venture Capital". Swedish Entrepreneurship Forum.
- Lerner, J. and Hellmann, T. (2012): "The changing landscape on new venture finance". Presentation at the Quebec City Conference 24th October, 2012.
- Li, Y. (2006): "Banks, private money and government regulation". Journal of Monetary Economics, 53. 2067-2083.
- Lithander, J., A. Isaksson and J. Mansson (2010): "The State and Risk Capital - Interim Report 1: Procedural Description and Knowledge Survey". T. S. A. f. G. P. Analysis. Ostersund, Sweden.
- Luukkonen, T., Deschryvere, M. and Bertoni, F. (2013): "The value added by government venture capital funds compared with independent venture capital funds". Technovation 33(4-5): 154-162.
- Mollick, E. (2013): "The dynamics of Crowdfunding; an exploratory study". Journal of Business Venturing.
- Murray, G., M. Cowling and W. Liu (2010): "An Independent Econometric Analysis of the "Innovation Investment Fund Programme (IIF)" of the Australian Commonwealth Government: Findings and Implications". Canberra, Australia, Department of Innovation, Industry, Science and Research, Australian Government.
- Murray, G., Marriott, R. (1998): "Why Has the Investment Performance of Technology-Specialist, European Venture Capital Funds Been So Poor?". Research Policy 27(9): 947-976.
- Murray, G. C., Lingelbach, D. C. (2009). "Twelve Meditations on Venture Capital: Some Heretical Observations on the Dissonance between Theory and Practice When Applied to Public/Private Collaborations on Entrepreneurial Finance Policy". SSRN eLibrary.
- Napier, G., Hansen, C. (2011): "Ecosystems for High Growth Young Firms". FORA.
- NESTA (2012): "Crowding In". London, NESTA.
- NESTA (2013): "Access to Finance: Impacts of Publicly Supported Venture Capital and Loan Guarantees". NESTA Working Paper No.13/02
- OECD (1991): "Principles for evaluation of development assistance". Development Assistance Committee.
- OECD (2011): "Financing High Growth Firms: the role of angel investors".
- OECD (2013): "Credit Guarantee Schemes: A Tool to Promote SME Growth and Innovation in the MENA Region – report and guidelines". MENA-OECD Investment Programme Working Paper.
- OECD (2013): "Entrepreneurial ecosystems and growth-oriented entrepreneurship". OECD Paris.
- OECD (2013): "OECD Science, Technology and Industry Scoreboard 2013". Paris. France.
- OECD (2014a): "OECD Economic Surveys DENMARK". Paris, France.
- OECD (2014b): "OECD Country Report Denmark, 2014". Paris. France.
- Oviatt, B. M. and P. P. McDougall (2005): "Defining international entrepreneurship and modeling the speed of internationalization". Entrepreneurship Theory and Practice 29(5): 537-553.
- Pierakis, Y. and Collins, L. (2013): "Peer-to-peer lending to business: Evidence from Funding Circle". London, NESTA.
- Porter, M. E. (1990): "The Competitive Advantage of Nations". Harvard Business Review: 73-93.
- Riding, A. (2006): "Incrementality of SME loan guarantees". Small Business Economics, 29. 47-61.
- Rigby, J. and R. Ramlogan (2013): "Access to Finance: Impacts of Publicly Supported Venture Capital and Loan Guarantees". NESTA Working Paper No. 13/02.

- Rosa, C., D. Machado and K. Raade (2006): *"Profitability of venture capital investments in Europe and the United States. European Economy"*. Brussels, Directorate-General for Economic and Financial Affairs, European Commission.
- Ruhnka, J. C. and J. E. Young (1987): *"A Venture Capital Model of the Development Process for New Ventures"*. Journal of Business Venturing 2(2): 167-184.
- Sapienza, H. (1992): *"When Do Venture Capitalists Add Value?"*. Journal of Business Venturing 7(1): 9-27.
- Services, C. f. S. E. (2012): *"Evaluation of member State Policies to Facilitate Access to Finance for SMEs - Final Report"*. Kent, UK.
- Sofianos, G, Wachtel, P, Melnik, A (1990): *"Loan Commitments and Monetary Policy"*. Journal of Banking and Finance, 14, October. 677-689.
- Sohl, J. E. (2003): *"The private equity market in the USA: lessons from volatility"*. Venture Capital: An International Journal of Entrepreneurial Finance 5(1): 29 – 46
- Stiglitz, J. E. & Weiss, A. (1981): *"Credit rationing in markets with imperfect information"*. American Economic Review, vol. 71(3), pages 393-410, June.
- Swedish Agency for Growth Policy Analysis (2009): *"The State and Risk Capital Interim Report 1: Procedural Description and Knowledge Survey"*. Oster-sund, Sweden.
- The Treasury and the Department of Industry, I., Science, Research and Tertiary Education (2012): *"Review of Venture Capital and Entrepreneurial Skills - Final report"*. Canberra, Australia.
- Tykvova, T., Borell, M., Kroencke, T. (2012): *"Potential of Venture Capital in the European Union"*. Directorate-General for Internal Policies, Policy Department A, Economic and Scientific Policy, European Parliament. February, Brussels.
- Wadhwa, V., B. Rissing, A. Saxenian and G. Gereffi (2007): *"Education, Entrepreneurship and Immigration: America's New Immigrant Entrepreneurs, Part II"*. T. K. Foundation.
- Wilson, K. and F. Silva (2013). *Policies for Seed and Early Finance, Findings from the 2012 OECD Financing Questionnaire*. OECD Science, technology and Industry Policy Papers No. 9, Paris, OECD.

8 Glossary

Cornerstone investor: Usually large institutional investors or well-known individuals to whom a share of a future fund is allocated in order to signal to the market that the fund and its management team are an interesting investment and worthwhile for other investors.

Direct investment: Equity investments made directly by the investor in a company.

Entrepreneurial ecosystem: In a broader sense this refers to the environment affecting the local/regional entrepreneurship. Entrepreneurial policies aim to affect the ecosystem by adjusting the framework conditions.

Expansion capital: Capital invested in up-scaling a company or business model.

Follow-on investment: Secondary investments in a company made by the investor. Secondary investments will generally be larger than initial investments because they are typically made to enable the company to upscale its business, invest in R&D and enter new markets.

General partner: Owners of a partnership with unlimited liability. A general partner is also commonly a managing partner, which means that this person is active in the day-to-day operations of the business. Because any partner in a general partnership can act on behalf of the entire business without the knowledge or permission of the other partners, being a general partner offers poor asset protection.

Indirect investment: Equity investments made by the investor in a company through a fund managed by general partners. The investor acts as a limited partner in the partnership.

Initial investment: The first investment in a company made by the investor. Venture capitalists generally make initial investments to enable the company to develop its business and prove to the market that it is scalable.

Limited partner: A partner whose liability is limited to the extent of the partner's share of ownership. Limited partners generally do not have any kind of management responsibility in the partnership in which they invest and are not responsible for its debt obligations. For this reason, limited partners are not considered to be material participants.

Pari passu: In finance, the term refers to loans, bonds or classes of shares that have equal rights of payment, or equal seniority. In addition, secondary issues of shares that have equal rights with existing shares rank *pari passu*.

Seed: The initial capital used to start a business. The amount of money is usually relatively small because the business is still in the idea or conceptual stage. Such a venture is generally at a pre-revenue stage and seed capital is needed for R&D to cover initial operating expenses until a product or service can start generating revenue, and to attract the attention of venture capitalists.

Syndicated loans: A loan offered by a group of lenders (called a syndicate) who work together to provide funds for a single borrower. The main goal of syndicated lending is to spread the risk of a borrower defaulting across multiple lenders (such as banks) or institutional investors like pension funds and hedge funds.

Venture capital: Money provided by investors to start-up firms and small businesses with perceived long-term growth potential. This is a crucial source of funding for start-ups that do not have access to capital markets. It typically entails a high risk for the

investor, but has the potential for above-average returns.

9 Appendix

9.0 Appendix A: Interviews

As part of the evaluation a series of interviews was conducted with key stakeholders in the Danish VC environment (see Appendix B for complete list of interview respondents). This includes those companies who have had access to VC, trade organisations and other VC providers and intermediaries.

Respondents were identified in cooperation with DGF and the Ministry of Business and Growth. A total of 30 key people were interviewed.

The interviews were conducted in person or by telephone. Given the differences in the respondent group, it was decided not to develop a questionnaire or interview guide.

The purpose of the interviews was to:

- provide knowledge and insight on the Danish VC market;
- to elaborate on the results of the completed questionnaire; and
- gain insight into the dynamics of the Danish VC market, and the role of Vækstfonden.

The interviews in themselves provide some knowledge but also contributed knowledge to the evaluators, and also helped to qualify the interpretation of the results of the quantitative studies and the results of the survey.

However, the primary outcome of the interviews was a better understanding of the role of DGF in the Danish VC market, based on the input from different VC market stakeholders, both public and private.

9.1 Appendix B: Interview respondents, VC

TABLE 9.1
Interview respondents

Name	Title	Company/Institution
International		
Alexander Von Frankenburg	CEO	High Tech Gründerfonds Program (HTGF)
Jan Dixel	Senior Policy Adviser	Dutch Ministry of Economic Affairs
Ken Cooper	Investment Director	Formerly, Capital for Enterprise Board and now The Business Bank
Pertti Valtonen	VC Counsellor	Finnish Ministry of Economics
Rory Early	CEO	Formerly, Capital for Enterprise Board and now The Business Bank
Tom Honeyman	Former Senior Policy Manager VC programme Innovation (retired in 2013)	Department, Ministry of Industry Science, Technology and Research, Canberra
Danish		
Peter Damgaard Jensen	CEO	PKA
Lars Bruhn	Business Angel, Chairman and Founding Chairman DVCA	-
Lars Stigel	CEO	Ostjysk Innovation
Martin Vang Hansen	CFO	Danish Growth Fund (DGF)
Jannick Nytoft	CEO	DVCA
Jimmy Fussing Nielsen	Managing Partner	Sunstone Capital
Christian Motzfeldt	CEO	Danish Growth Fund (DGF)
Ditte Rude	Head of Analytics	Danish Growth Fund (DGF)
Florian Schönharting	Chief Investment Officer	Nordic Biotech
Henrik Nohr Poulsen	Head of Equities	Industriens Pension
Jørgen Rosted	Former Permanent Secretary, Ministry of Business & Growth (Retired)	-
Soren Hansen	Head of Private Equity	Industriens Pension
Susanne Kure	Head of FoF-Investments	Danish Growth Fund (DGF)
Thomas Weilby Knudsen	General Manager	NorthCap Partners
Torben Möger Pedersen	CEO	PensionDanmark
Ulrich Jorring	Head of Direct Investments	Danish Growth Fund (DGF)
Ulrik Spork	Managing Partner, Former Chairman DVCA	Novo A/S

9.2 Appendix C: Interview respondents, loans and guarantees

A number of interviews were conducted with key players in relation to DGF's loan and guarantee activities as part of the evaluation.

A list of the interview respondents can be seen in Table 8.2 below.

TABLE 9.2

Interview respondents in relation to DGF's loans and guarantees

Name	Company/Institution
Vagn Holm	Nykredit
Poul Friis	Danske Bank
Sine Wrom Jensen	Nykredit
Sidsel Dyrholm	DI – Danish Confederation of Industries
Søren Friis Larsen	DE – Danish Chamber of Commerce
Jacob Theil	The Danish Federation of Small and Medium Sized Enterprises (Håndværksrådet)
Camilla Ley Valentin	Queue-IT

Source: DAMVAD

Note: Some of the interview respondents were interviewed in relation to both VC and loans and guarantees.

9.3 Appendix D: Institutions for benchmarking

Country/Institution	Description	Focus	Investment types
Germany			
High-Tech Gründerfonds	<p>High-Tech Gründerfonds (HTGF) consists of two funds: Gründerfonds I, which operated from 2005 to 2011, and Gründerfonds II, founded in 2011. The total fund volume is more than EUR 570 m (Gründerfonds I: EUR 272 m, Gründerfonds II: EUR 301.5 m), and the capital is mainly financed by the German Ministry of Economics and Technology together with KfW.</p> <p>The main objective of HTGF is to reduce the financing gap of seed investments, primarily for German high-tech enterprises in life science, materials science and information technology. The investment by HTGF should make it easier for investees to attract private venture capital afterwards, e.g. via the network of HTGF. Another goal of the investment strategy is to increase the supply of high-skilled jobs.</p> <p>HTGF makes direct seed investments. These are combinations of equity provision and subordinated convertible loans with a term of 7 years. Currently HTGF invests up to 2 m. EUR in risk capital per company, of which EUR 0.5 m is available in the initial financing round. Furthermore, HTGF collaborates with coaches and investment managers, who provide strategic and operational support for the portfolio companies.</p>	<p>Aim at improving and expanding the possibilities of the companies to attract private venture capital.</p> <p>Focus is limited to in life science, materials science and information technology.</p> <p>Only investment in the start-up phase.</p>	Direct investment and loans.
ERP-EIF Dachfonds	<p>The European Recovery Programme (ERP)-EIF Dachfonds was established in 2004 by the German Ministry of Economics and Technology (BMWi40) and the European Investment Fund (EIF). EIF manages the venture capital activity on behalf of BMWi and the ERP. Initially both BMWi and EIF invested EUR 250 m in the fund. In 2010, they doubled the total amount to EUR 1 bn.</p> <p>The Dachfonds functions as an FoF, thus its principal aim is to support the foundation and financing of venture capital funds. These funds must invest in early- and development-stage technology SMEs based in Germany. The investment period is up to 5 years with a subsequent disinvestment period of up to 10 years, although it is extendible. From 2004 to 2012, the Dachfonds supported 26 VC funds.</p> <p>In addition to provision of capital, the Dachfonds also helps the funds in shaping and optimising their investment proposals. This is done by sharing experience and providing expertise regarding structuring, raising and managing a fund.</p>	<p>Focus on domestic high-tech SMEs.</p> <p>Consulting in addition to financing.</p> <p>Support/improve venture capital market.</p>	Fund-of-funds investments. No direct investments, loans or guarantees.

⁴⁰ Bundesministeriums für Wirtschaft und Technologie

KfW Mittelstands-bank	<p>KfW Mittelstandsbank is part of the government-owned KfW Banking Group and was established in 2003 in the wake of the merge between KfW and DtA (Deutsche Ausgleichsbank).</p> <p>The objective of the Mittelstandsbank is to promote German SMEs, which are in the seed or start-up phases, including individual entrepreneurs and start-ups. To improve the financing situation for these enterprises, the Mittelstandsbank supplies both loans, guarantees, mezzanine financing, advice and fund-of-funds investments, e.g. through the ERP Start Fund and German SME Equity Fund.</p>	<p>Objective of promoting domestic SMEs.</p> <p>No specific focus on the development of a self-sustaining venture capital market.</p>	<p>Wide range of products, including both loans, guarantees, advice and fund-of-fund investment.</p>
Sweden			
Industrifonden	<p>Industrifonden was founded in 1979 by the Swedish state with a one-off payment. The fund acts on market conditions, and today the capital under management amounts to EUR 405m, of which EUR 169m have been invested.</p> <p>A unique feature of the fund is its “evergreen” status. This means that there is no fixed closing date. Thereby the foundation can have a long-term perspective and does not have to sell off an investment at an inappropriate time.</p> <p>Originally, Industrifonden was set up with EUR 112m EUR to support large firm exports. However, over time the mandate of the fund has changed to SMEs. The purpose of this shift was to share the risk with private sector venture capital funds and fill the funding gap. The investments are targeted SMEs in start-up and expansion phases within IT, telecom, internet/media, electronics, industry and Cleantech.</p> <p>Industrifonden invests in the form of equity and loans (e.g. options and convertibles). Besides, they provide technical and commercial competences.</p>	<p>SME focus but limited industry scope.</p> <p>Aims to fill the funding gap on VC markets.</p>	<p>Only direct investments – no FoF or fund investments.</p> <p>Evergreen fund.</p>
Almi	<p>Almi was founded in 1994 as an amalgamation of regional public financial institutions. In 2012 approximately 3,600 companies was provided loans worth SEK 2.1bn and Almi made 50 new investments in companies. The total portfolio includes 119 companies. A majority of the portfolio companies (95%) are start-ups or are in the early stage/expansion phase. In 2012 more than 4,500 new companies were established with some sort of help from Almi.</p> <p><i>Loans:</i> Almi complements the market by providing risk bearing loans. Almi's role is to take slightly larger risks. To compensate for the higher risk and to avoid competing with the private market, Almi charges higher interest than the average bank rate. Almi offers corporate loans, micro-loans and financing for companies operating in international markets, as well as specifically adapted forms of financing for innovators. Credit is provided in collaboration with other credit providers and the banks are important partners.</p>	<p>The overall objective of Almi is to promote the development of competitive SMEs and stimulate new enterprise with the aim of creating growth and innovation in Swedish business.</p>	<p>Loans (subordinate), VC (seed and expansion) and Incubation.</p>
Norway			
Investinor	<p>Investinor started in 2008 as an evergreen investment company, owned and funded by the Norwegian government. The company is organised into two divisions: a Venture Team, which handles many, but smaller investments and a Growth Equity Team, which encompasses few, but larger investments. In 2012, the fund managed a capital stock of NOK 462m of which approx. NOK 107m were invested in portfolio companies.</p>	<p>No explicit SME focus.</p> <p>Broad industry focus.</p>	<p>Direct investments. No funds-of-fund or fund investments.</p> <p>Subordinate loans.</p>

	<p>In addition to lending, Investinor invests venture capital directly into highly competitive and promising private Norwegian companies in the other early stage and expansion stage. It invests on a commercial basis and on equal terms with private investors. The portfolio companies should aim for international growth, but the industry focus is quite broad: ICT, Oil and Gas, Marine, Maritime, Life Science, Cleantech and Travel and Tourism.</p> <p>As a principle, the fund executes an active ownership strategy by taking stakes in the portfolio companies. However, their equity ownership share is always less than 50%, and they invest in collaboration with other investors (syndicate investments).</p>	Active ownership strategy when investing directly.	Commercial investment objective.
Finland			
Finnerva	<p>Finnerva established in 2003 by the Finnish state. It is divided into Veraventure (2003), which manages regional venture capital investments, and Seed Fund Vera (2005), which handles seed investments. Finnerva also manages InvestorExtra, which was launched in 2008 and is a business angel network intended for private investors.</p> <p>Finnerva is specialised in high-risk financing, specifically for early-stage SMEs and regional research policy measures. In the long term, operations must be self-sustainable.</p> <p>It provides loans, guarantees, venture capital investments and export credit guarantees for the start, growth and internationalisation of enterprises (max. EUR 0.5m in initial financing round). Direct investments consist of direct share capital investments and subordinated loans. The ownership share is minor, as it varies between 10 and 40%. In 2012, direct investments totalled EUR 17m. Through Veraventure Finnerva makes use of the fund-of-funds principle for support of regional industrial policy and to ensure that growth enterprises can obtain financing via venture capital investments. The fund invests jointly, not only with other funds but also private investors.</p>	<p>SME focus.</p> <p>Primarily early-stage investments.</p> <p>Purpose of enhancing venture capital market</p>	<p>Both direct and indirect investments as well as loans.</p> <p>Provide export-credit guarantees.</p>
Finnish Industry Investments (FII)	<p>Finnish Industry Investment (FII) Ltd is a government-owned investment company. FII promote Finnish business, employment and economic growth through venture capital and private equity investments.</p> <p>Finnish Industry Investment invests in Finnish companies, both directly and through private equity funds. FII invest in rapid growth, internationalisation, spin-offs, major industrial investments, as well as sectorial, corporate and ownership restructurings.</p> <p>FII is part of the Finnish national innovation system, which seeks to stimulate Finnish industry and promote the development and deployment of new technology, while creating new growth companies, jobs and wellbeing. FII contributes to the innovation system services by providing venture capital and private equity financing to companies. The key principle is to work hand-in-hand with private investors from Finland and abroad, to share risks while boosting the availability of funding, investment expertise and networks.</p> <p>Since 1995, FII have made investments totalling DKK 7.5bn. The portfolio currently comprises altogether 510 companies. Continuous and growing investment activity has been secured by internal cash-flow financing and governmental equity injections. Finnish Industry Investment's operations are governed by law and must be profitable in the long-term.</p>	Focus is on companies in the growth and internationalisation stages	<p>Both direct and indirect investments.</p> <p>Utilizes financial instruments such as equity, subordinated loans, convertible bonds or mezzanine financing.</p> <p>Initial investment size varies between DKK 3.75 and DKK 75m.</p> <p>Pari passu</p>

United Kingdom			
Capital for Enterprise Ltd. (CfEL)	<p>The UK BIS-owned (Department for Business, Innovation and skills) Capital for Enterprise Ltd (CfEL) started in 2008. From 2014, CfEL will work through the recently government-established Business Bank, which also includes SME policy teams within BIS and new private sector expertise.</p> <p>CfEL is an independent asset manager and is in charge of managing BIS' financial schemes (VC funds and loan guarantees). CfEL is the largest single VC fund investor in UK, and the company aims at giving advice on how to pursue Government policy on the SME finance market. CfEL wants to design, develop and deliver SME financial interventions, and acts as the centre of expertise on management of finance measures to support SMEs across the UK.</p> <p>Among others, the schemes under management are</p> <ul style="list-style-type: none"> • <i>Enterprise Capital Funds</i> consisting of 12 funds that provide investments to fast growing businesses, • <i>UK Innovation Investment Fund</i>, which is a venture capital fund investing in technology based businesses with prospect of high future growth, • <i>Enterprise Finance Guarantee</i>, whose objective is to offer loan guarantees from the UK Government to lenders offering credit to SMEs. 	SMEs	<p>Fund-of-fund investments.</p> <p>Loan guarantee schemes.</p> <p>No direct investment or loan engagement.</p>
The Netherlands			
Innovation Fund SME+	<p>The Innovation Fund SME+ started in 2012 as a follow-up on previous innovation funds established by the Dutch government. Until 2015 a total of EUR 500m is available for investments.</p> <p>The fund finances innovation and fast-growing businesses, focusing on later-stage investments, where knowledge is converted into final products. Investees are both small and large high-tech enterprises.</p> <p>Innovation Fund SME+ consists of three pillars. First of all the Innovation Credit, a government secured loan program for SMEs, which stimulates development projects with a high financial risk both regarding development of products, processes and services. The credits are provided directly to the companies. Second, the SEED Capital scheme offers loans to closed-end venture capital. It helps emerging technology and creative businesses to find investors that can help them convert their ideas into marketable products. Lastly, FoF, which invests to improve the financing opportunities for rapidly growing innovative enterprises with a high risk. This fund is managed by the European Investment Fund, which partially finances the fund.</p>	<p>Invests in both small and large enterprises.</p> <p>Much focus on later-stage investments.</p>	<p>Loans, fund investments and fund-of-funds investments</p>
International			
European Investment bank	<p>The European Investment Fund (EIF) was founded in 1994. It is a public-private partnership with the European Investment Bank (EIB), the European Union and 25 financial institutions from EU member states as its owners. EIB and EU hold 62% and 30% of the shares, respectively. EIF is part of the EIB group and within this group the exclusive provider of venture and growth capital to member states in EU, EFTA as well as candidate and potential candidate countries.</p>	<p>Improve SMEs' access to financing.</p> <p>Prioritise high-tech enterprises.</p>	<p>EIF works through a fund-of-funds structure.</p> <p>equity products, debt products (guarantees and securitisation),</p>

	<p>The focus of EIF is to support Europe's SMEs by helping them to access finance to foster EU objectives of entrepreneurship, growth, innovation, R&D, employment and regional development. In addition, EIF should generate an appropriate return for its shareholders. It aims at investing in funds targeting early-stage enterprises, which are likely to develop or apply advanced technologies in industries and services. EIF's expertise lies in the Life Sciences, Cleantech and ICT sectors.</p> <p>As indicated above, EIF acts on the fund-of-funds principle, where it takes significant minority stakes. It divides its products into four categories: equity products, debt products (guarantees and securitisation), microfinance and regional development.</p>	<p>Sciences, Cleantech and ICT sectors.</p>	<p>microfinance and regional development</p>
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9.4 Appendix E: Survey

Methodology

To assess how companies that received funding from the Growth Fund assess the significance of this funding, a survey has been carried out. The survey is conducted via Enalyzer's web-based survey platform.

The survey respondents were identified as companies that have received indirect funding from DGF. Direct funding is either loans, guarantees or direct equity investments from DGF. A total of 631 companies were identified and received the questionnaire. Subsequently, a reminder was sent out via the web-based survey platform to companies that did not respond.

In total, 103 companies (17%) completed the questionnaire.

Questionnaire

Questionnaire for companies that received funding from DGF as either loans, guarantees or VC.

The questionnaire is adapted and translated from the web-based version developed on the Enalyzer.com platform.

Question 1.

What is the company's specific commitment in relation to DGF? (Multiple X allowed).

- We received a Get Started loan (KIG loan) from the Growth Fund through our bank
- We received a guarantee from the Growth Fund
- The Danish Growth Fund invested in our company

Question 2.

How does the capital injection by the Danish Growth Fund affect the future growth potential of the company?

- The capital increase has meant that the company is experiencing positive development and has the potential to generate more jobs in the near future
- The capital increase has meant that the company is experiencing positive development and has the potential to generate more revenues in the near future
- The capital increase has meant that the company is experiencing positive development and has the potential to increase exports in the near future

The respondents could choose one of the following five options (fully agree, agree, either or, disagree, fully disagree) or answer, "don't know".

Question 3.

How does DGF's funding of the company influence possible development in the short term? (tick one X per sub-question).

- The capital injection has meant that the company has been able to make new investments
- The capital injection has meant that the company has been able to develop new technology, products or knowledge
- The capital injection has meant that the company has been able to increase the number of employees
- The capital injection has meant that the company has been able to increase productivity
- The capital injection has meant that the company has been able to increase revenue
- The capital injection has meant that the company has been able to increase sales to export markets

- The capital injection has enabled the company to “open” new export markets
- The capital injection has enabled the company to cover capital shortfall

The respondents could choose one of the following five options (fully agree, agree, either or, disagree, fully disagree) or answer, “don’t know”.

Question 4.

What effect did DGF’s capital injection have on the company?

- The company could have attracted alternative capital/financing and realised the company in the same form and scale without capital/funding from the Growth Fund
- The Danish Growth Fund’s commitment had a positive impact in terms of attracting other investors or providing to access other debt financing
- The Danish Growth Fund’s commitment was essential for attracting investors and/or financing.

The respondents could choose one of the following five options (fully agree, agree, either or, disagree, fully disagree) or answer, “don’t know”.



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