VENTURE CAPITAL DEMAND IN DENMARK

English Summary

The Danish Investment Fund (DIF)

DIF is a financial organisation that contributes to the development of Danish business and trade.

Our mission is to strengthen development and innovation in the Danish economy by procuring financing for promising projects in small- and medium-sized enterprises.

Operating independently in the capital market, DIF facilitate the supply of venture capital in terms of start-up equity and high-risk loans. The financing is provided on commercial terms.

In the light of our mission, we have set ourselves the ambitious goal: to make the Danish market for finance of innovation the best-functioning one in Europe.

Our capital base is currently DKK 2,400 million, part of which we use for direct business funding, and part of which we use to co-finance venture funds. In addition, we manage VækstKaution, a national loan guarantee scheme for private companies.

1. INTRODUCTION

How much Venture Capital is needed to finance a newly established IT-company? - And what about an entrepreneurial company in the biotech industry? What are the results when the financing needs of innovative start-up companies are compared with the supply of Venture Capital? The answers to these questions can give an indication as too what is required to keep up the momentum, which the Danish Market for Venture Capital has experienced in the last couple of years. In this report we develop a model framework of the Danish venture capital market, which makes it possible to address the above questions.

Firstly, the report contains estimates of cash-burns across industries and stages of development. The variation is considerable. It takes about DKK 160 million (€ 22 million) to finance a biotech company from initial VC investment to exit, while a software company can complete the same development for DKK 50 million (€ 6.6 million).

Secondly, the analysis reviews the dynamics of the market for Venture Capital by quantifying the flow of newly established research-based companies from universities and other research institutions – across public incubators and the portfolio of Venture Capital funds and through to exit.

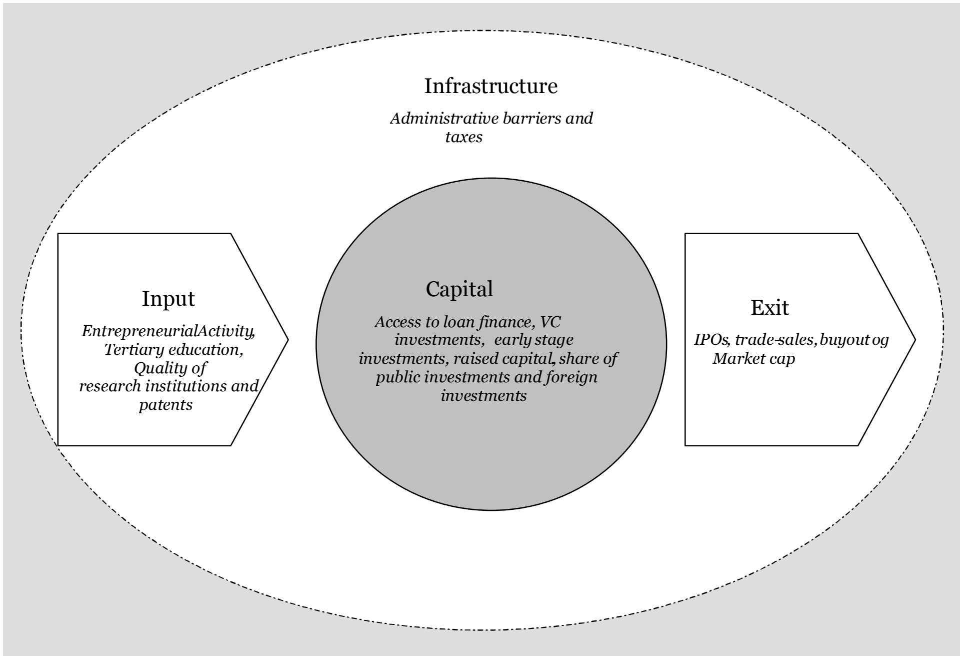
Thirdly, the data on cash-burns and the duration of development make it possible to draw a picture of how big the potential demand for Venture Capital in Denmark will be in the coming years – and with that how much capital the Danish VC investors need to raise. The challenge is massive. New investments in new projects demand an additional DKK 8.3 billion (€ 1.1 billion) if the momentum of the market development is to continue.

But there is a solid foundation to build on. The last 4-5 years the Danish Market for Venture Capital has undergone tremendous change. The number of investors has more than doubled, the population of Danish firms financed by Venture Capital has more than tripled and the volume of investments has more than quadrupled. The development has been fuelled by the IT-boom in the late nineties – and the booming biotech industry. But the underlying growth has also been driven by a structural maturing process. As a result, the Danish Market has had above-average growth since the peak in 2000, compared to a steep decline in the majority of markets for venture capital around the world.

Model framework

The volume and composition of capital supply generally is a function of three main dimensions - the inflow of entrepreneurs and the commercialisation of academic research (Input), access to exit windows (Exit) and taxes and regulation (Infrastructure), see figure 1.

Figure 1. Critical factors for the market for innovation finance



Source: The Danish Investment Fund, Benchmarking the Market for Innovation Finance, 2003

However, Denmark, having only the sixth most developed market for venture capital in Europe (see Danish Investment Fund, 2003), is still lagging behind the leading countries. The vision of the Danish Investment Fund to make the Danish market for innovation finance the best-performing in Europe therefore still requires further effort in order to be realised.

This report highlights how this effort can be put into practise by selecting the segments of the market, where the supply of capital is inadequate.

2. SUMMARY

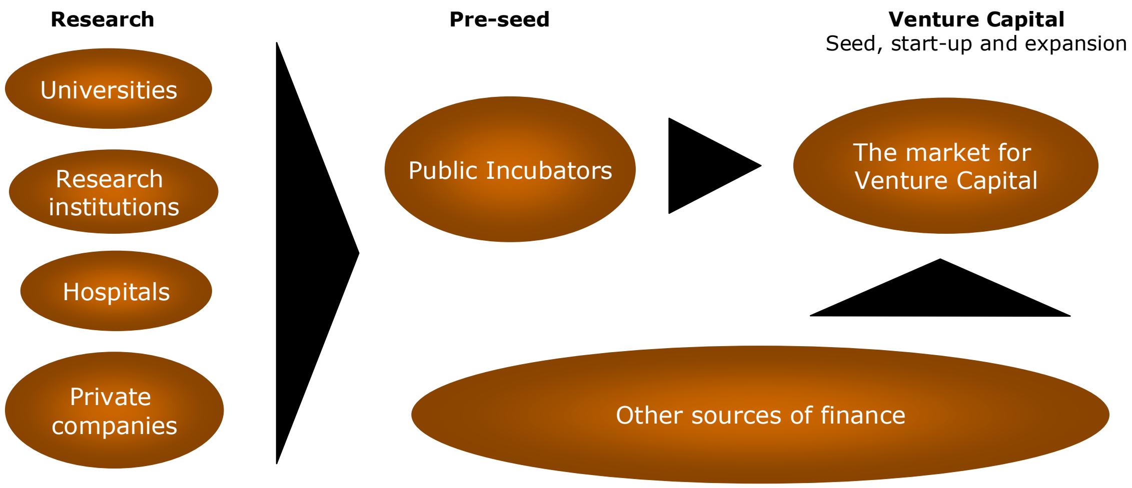
The Danish Market for Venture Capital has been characterised by considerable growth in the last couple of years. But is the current supply of venture capital sufficient to finance both the current portfolio and the future deal-flow? This report estimates the expected demand for venture capital in the period 2002-2008 and compares it with the current supply of venture capital in order to estimate the need for additional fundraising by Danish VC-Funds.

2.1 Background and methodology

The demand for venture capital is assumed to be a function of the number of companies, which are generated into the market and the probability that these companies are successful in continuing their development. Estimates based on a dataset of venture capital investments in the Danish market from 1990 to 2001 make it possible to forecast the current portfolio's need for capital – together with the capital needs of the new companies, which will be created in the coming years.

The supply of innovative companies to the market for Venture Capital is assumed to be positively correlated with aggregate research efforts in the economy and the number of patents created through these efforts, see figure 2. The reasoning behind this assumption is that patents are a measurable result of research and development (R&D).

Figure 2. Deal-flow for the market for Venture Capital



Source: The Danish Investment Fund

The forecast period extends to 2008 – which corresponds to the Investment period for a VC-fund, which raises funds in 2003/2004.

By comparing estimates of supply and demand of venture capital it is possible to analyse if the current supply of venture capital is sufficient to finance both the current portfolio – and the volume of potential new venture investments in the period 2002-2008.

The industries analysed in this report are selected in order to be able to compare data for venture capital investments with the patent activity:

- Biotech/ agriculture
- Biotech/medical
- IT/Telecom/Electronics
- Software
- Energy/environment/transportation
- Production technology/materials/construction/consumer goods

2.2 Source of innovations and public incubators

The importance of the supply of new projects to the Market for Venture Capital can be shown by analysing the volume of patent applications, which stems from public research institutions and private companies, together with the number of new companies generated each year in research extensive segments of the market.

Sources of innovation

The public research institutions can be divided into universities, sector-research and hospitals. However, the potential deal-flow to the market for venture capital is not only a result of public research. In fact, the majority stems from R&D-efforts in private companies.

By thoroughly tracking the points of origin for VC funded companies in Denmark it emerges that, in 2001, public R&D-expenditures led to about 75 new research projects where patents were filed to protect possible commercial rights. The private sector generated nearly 5800 companies in 2001 – of which 82 had applied for a patent.

Together these app. 6000 projects and companies constitute the yearly inflow of potential venture capital investments – however only a fraction is suitable for venture capital. Out of more than 6000 potential seed-investments – only 45 received venture capital. Nevertheless, the apparent correlation between the patent filings, the number of companies generated each year, and the number of venture investments is exploited in order to estimate the future volume of companies, which are eligible for venture capital.

Public incubators

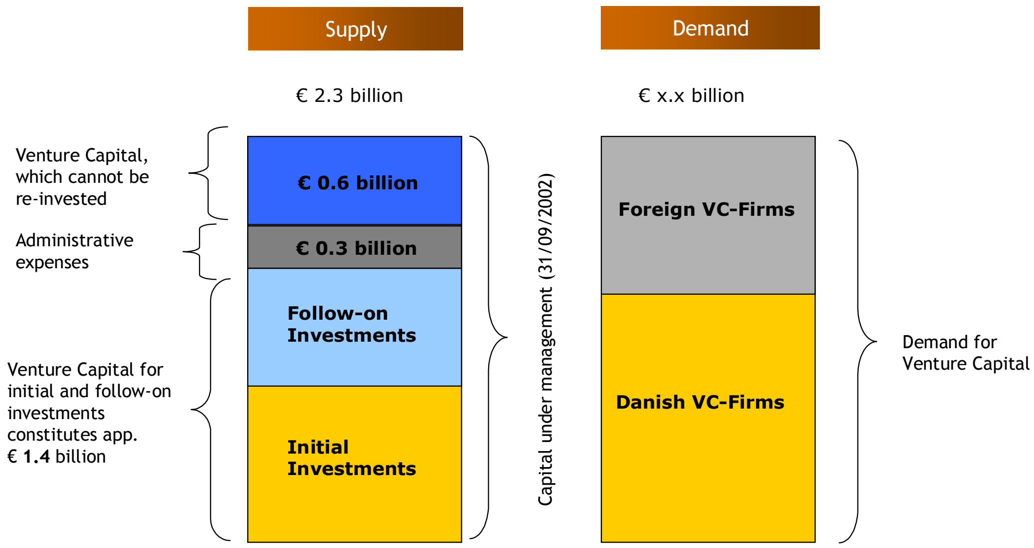
The eight public incubators in Denmark play a crucial part in the transformation of innovative ideas into commercial projects - by acting as a link between the research environments and the venture capital funds.

The public incubators generate a potential deal-flow for the commercial market for venture capital by making pre-seed investments in new companies. The inflow of projects to the public incubators together with the share of projects which receives venture capital is therefore a good indication of the potential deal-flow to the market for venture capital – stemming from this source.

2.3 Supply of Venture Capital

By the end of 2002 the Danish Venture Capital funds had app. DKK 17.2 billion (€ 2.3 billion) under management. Of this amount a substantial share cannot be reinvested because it is invested by closed-end funds. Furthermore VC funds have to reserve capital to cover administrative expenses. Therefore, the capital available for new investments is estimated to be DKK 10.1 billion (€ 1.4 billion), see figure 3. However, a number of foreign Venture Capital Funds invest in Danish companies. Approximately 1/3 of the investments in Danish companies in the last couple of years, have been undertaken by foreign VC-Funds.

Figure 3. Demand for and supply of venture capital



Source: The Danish Investment Fund

The future demand for venture capital is made up of the total demand for capital needed to finance the current portfolio until exit – and the corresponding demand from new companies which are expected to emerge in the future. To make a valid projection of the demand for venture capital it is necessary to estimate the demand for funding in individual companies, the survival rate of these companies and the average number of years it takes to develop a company.

The data-material of the Danish Investment Fund – covering venture investments in Danish companies since 1990 – makes it possible to evaluate these three parameters for all development stages and industries.

Companies within the biotech/agriculture and biotech/medical industries spend a long time in the seed stage – on average 3.8 years. Compared to software companies, which take one year to pass through the seed stage, see table 1.

Table 1. Number of years in stage of development

SECTOR	Seed	Start-up	Expansion	Total
Biotech/ agriculture	3,8	1,9	1,8	7,5
Biotech/medical	3,8	1,9	1,8	7,5
Energy/environment/transportation	1,8	3,2	4,8	9,8
IT/Telecom/Electronics	2,6	2,3	2,3	7,2
Production technology/materials/construction/consumer goods	1,8	3,2	3,7	8,7
Software	1,0	2,3	1,9	5,2

Source: The Danish Investment Fund

The share of companies leaving the VC portfolio – either through trade-sale/IPO or liquidation – is also estimated across industries and stages of development. The portfolio companies within the industries biotech/agriculture and biotech/medical have the lowest annual exit probability in the seed stage, see table 2.

Table 2. Exit probability

SECTOR	Seed	Start-up	Expansion
Biotech/ agriculture	**15%**	30%	35%
Biotech/medical	**15%**	30%	35%
Energy/environment/transportation	25%	20%	20%
IT/Telecom/Electronics	**20%**	**25%**	30%
Production technology/materials/construction/consumer goods	25%	30%	20%
Software	**30%**	30%	35%

Source: The Danish Investment Fund

The annual cash-burn for all industries is highest in the start-up phase. The variation is however considerable – from app. DKK 7.5 million (€ 1 million) within IT/Telecom up to DKK 31 million (€ 4.2 million) in the biotech/medical industry, see table 3.

Table 3. Annual cash-burn (€ million)

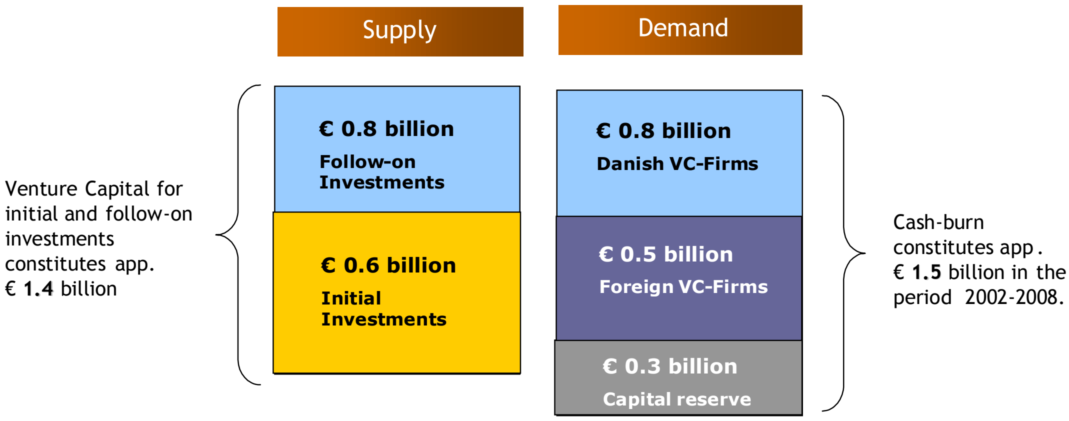
SECTOR	Seed	Start-up	Expansion	Total
Biotech/ agriculture	-0,5	-2,2	-0,6	-7,1
Biotech/medical	-1,9	-4,2	-3,8	-22,0
Energy/environment/transportation	-0,7	-1,1	-0,1	-5,3
IT/Telecom/Electronics	-0,2	-1,0	-1,2	-5,6
Production technology/materials/construction/consumer goods	-0,1	-1,8	0,0	-5,9
Software	-0,2	-1,5	-1,5	-6,6

Source: The Danish Investment Fund

In periods of low economic growth – and when VC-funds have achieved a sufficient level of diversification in their investments, they are inclined to concentrate their efforts developing the existing portfolio rather than making new (initial) investments. As a result, it is assumed that investors will allocate capital to follow-on investments before they make any new investments.

The aggregated cash-burn of companies in the current portfolio held by Danish VC funds is DKK 11.3 billion (€ 1.5 billion). This cash-burn can be financed first by the companies' capital reserves (€ 0.3 billion), and, second, by VC-funds. Of the DKK 8.9 billion (€ 1.3 billion), which should be financed by VC-funds, it is assumed that the Danish VC-funds will invest app. DKK 5.4 billion (€ 0.8 billion). With an initial venture capital supply of DKK 10.1 billion (€ 1.4 billion), provided by Danish VC-funds – the capital available for new investments will be app. DKK 4.7 billion (€ 0.6 billion), see figure 4.

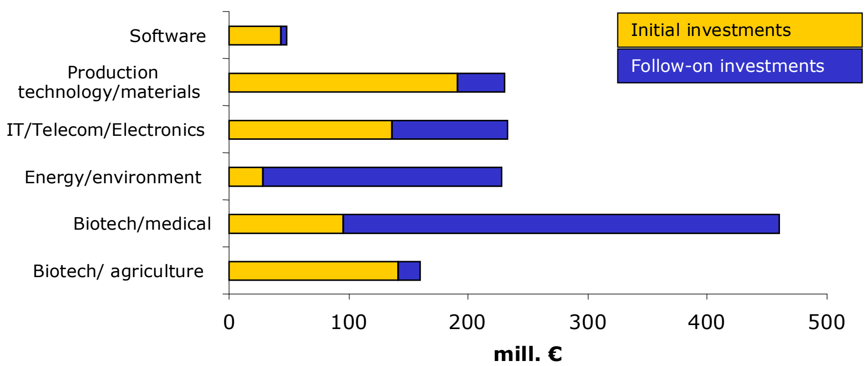
Figure 4. Supply of and Demand for Venture Capital



Source: The Danish Investment Fund

Of the initial capital available for venture capital investments (€ 1.4 billion), 54% has to be reserved for follow-on investments. However, there is considerably variation across industries. Within the software industry, app. 90% of the initial DKK 1.7 billion (€ 250 million) has to be reserved for follow-on investments, se figure 5, while the corresponding figure for the biotech industry is nearly 80%.

Figure 5. Venture Capital for initial and follow-on investments



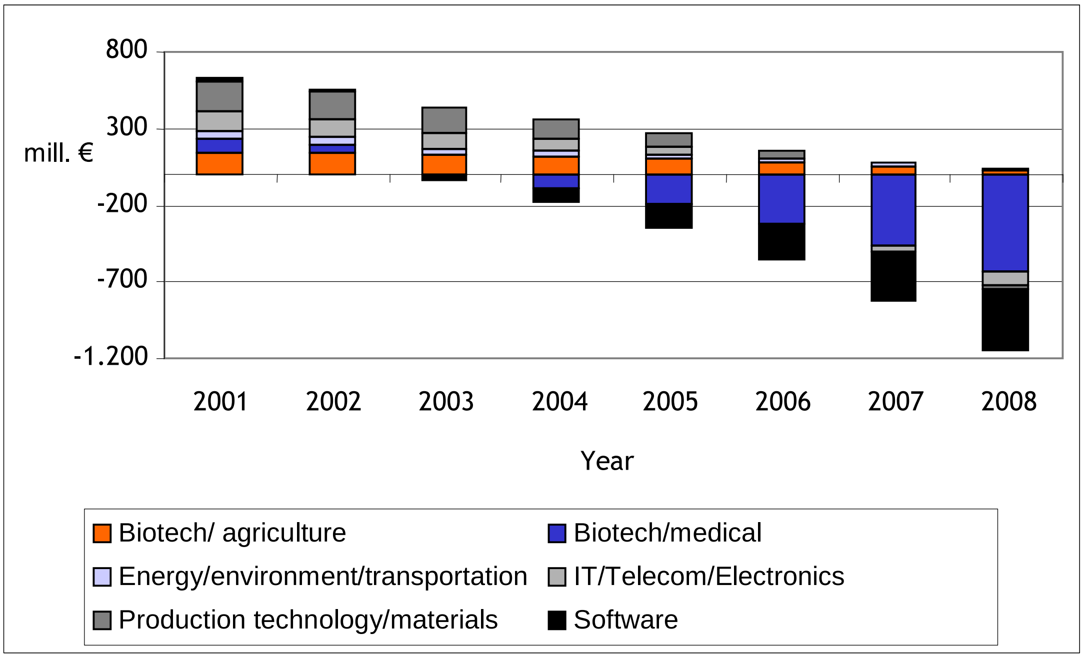
Source: The Danish Investment Fund

2.4 Demand for Venture Capital

To evaluate if the remaining venture capital supply of DKK 4.7 billion (€ 0.6 billion) is sufficient to finance the future deal-flow, three scenarios are set up – low-, baseline and high-growth. The volume of companies financed by venture capital in the future is assumed to be correlated with the research activity.

In the ***low-growth scenario*** it is assumed that R&D-expenditures and the corresponding patent-activity is unchanged in the period 2002-2008 compared to 2001. Under the assumption of a constant relationship between R&D, patents and new potential venture investments – the future yearly deal-flow is assumed to be constant at app. 145 companies. A deal-flow of this size will create an annual cash-burn of app. DKK 4.5 billion (€ 0.6 billion) for the current portfolio and new investments. Of the DKK 32 billion (€ 4.3 billion) aggregated cash-burn in the period 2002-2008, DKK 2.4 billion (€ 0.3 billion) is expected to be financed by the current portfolio companies capital reserve, while DKK 18 billion (€ 2.5 billion) and DKK 11 billion (€ 1.5 billion) are expected to be financed by Danish and foreign VC-funds respectively. With an initial venture capital supply of DKK 10.1 billion (€ 1.4 billion) – the need for future fundraising, by Danish VC-funds is DKK 8.3 billion (€ 1.1 billion) before 2008, see figure 6.

Figure 6. Venture Capital reserve (ultimo) – low-growth scenario



Source: The Danish Investment Fund

In the ***baseline-growth*** scenario, public R&D expenditures are assumed to increase by 6.1% annually towards 2010 where they will amount to 1.0% of GDP. Meanwhile, the private R&D expenditures are assumed to increase by 1.9% annually. In 2010 the public and private R&D expenditures combined, will amount to 3.0% of GDP. With an R&D activity of this magnitude, Danish VC-funds will have to invest app. DKK 19 billion (€ 2.6 billion) in their current portfolio and the future deal-flow combined. This will create a need for future fundraising of app. DKK 9.3 billion (€ 1.3 billion) before 2008.

In the ***high-growth*** scenario, R&D expenditures are assumed to increase steadily towards 2010 where they will amount to 3.8% of GDP. With an R&D activity of this magnitude, Danish VC-funds will have to invest app. DKK 21 billion (€ 2.8 billion) in their current portfolio and the future deal-flow combined. This will create a need for future fundraising of DKK 10.7 billion (€ 1.4 billion) before 2008.

In order to finance the current portfolio – together with the potential deal-flow – the need for future fundraising by Danish VC investors falls in the range of DKK 8.3 – 10.7 billion (€ 1.1 – 1.4 billion) between now and 2008. Thus, in order to satisfy the capital demands of new companies – and to continue the development of the Danish market for Venture Capital – this analysis illustrates that the need for future fundraising by Danish VC-funds can reach DKK 10.7 billion (€ 1.4 billion) by 2008. The need for future fundraising appears to be greatest in the biotech industry. Here the excess capital demand, which is expected to be financed by Danish VC-Funds, is DKK 4.7 – 5.5 billion (€ 0.6 – 0.7 billion).

To the extent that the investment activity in 2001, which is used as base year, was excessive high, the future demand for venture capital estimated here will of course be to high. But the conclusion remains clear. The vision of the Danish Investment Fund to make the Danish market for finance of innovation the best-performing in Europe still demands a determined and focused investment effort. The investment activity of the Danish Investment Fund will help to cover some of the demand for venture capital. Likewise the Danish Investment Funds capital investments in other VC-funds will increase the supply of venture capital. However, the Danish Investments Fund cannot do it alone. It is crucial that other Danish and foreign investors raise additional funds to cover the demand for venture capital in the industries – and development stages – where the current supply of capital seems insufficient to meet future demand.

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