

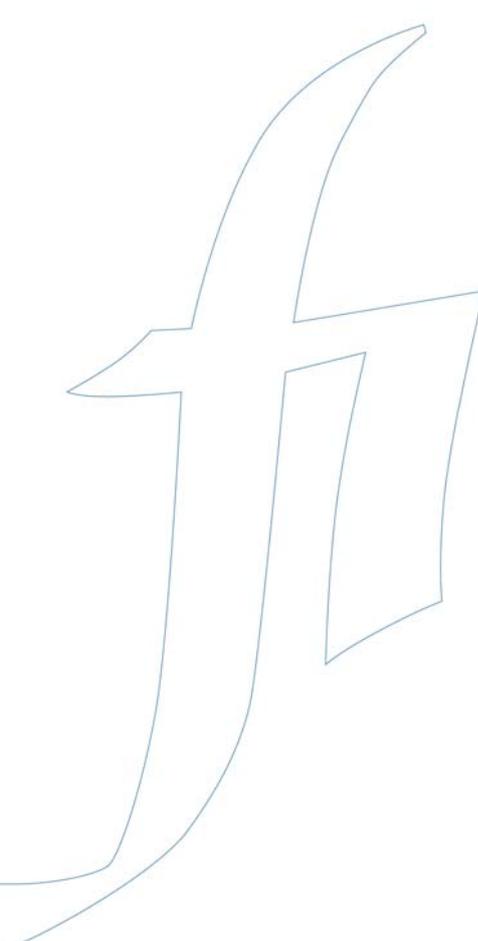


FINANSINSPEKTIONEN

Climate change and financial stability

7 MARS 2016





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Foreword

In the 2015 appropriation directions, Finansinspektionen was commissioned by the Government to investigate certain sustainability issues linked to the financial sector. One assignment pertained to sustainability aspects in the banks' lending, which was reported in November 2015, and the other assignment pertained to the problem and its link to financial stability. That part of the assignment is described in this report. FI will continue to work with sustainability issues in different ways in 2016.

Stockholm, 7 March 2016

Erik Thedéen
Director General

Summary

RISKS LINKED TO CLIMATE CHANGE ARE ON THE RISE

Climate change and climate policy will, in the coming decades, increasingly affect the global economy, and hence the financial sector too. Fundamentally, it is a case of a long-term structural change in global conditions not entirely dissimilar to that linked to demographic change, technological development and internationalisation.

There is considerable uncertainty about the effects of climate change, both in terms of its impact on the economy at large, and the financial sector. Two main risks can be identified, however. First, **the climate risk** grows as the global average temperature and sea levels rise, while at the same time extreme weather becomes increasingly common. A direct consequence of this course of events is that insurance costs will rise as claims for damages increase. At the same time, more indirect costs and risks emerge due to destroyed ecosystems, heightened health problems and lower productivity. It is assessed that an increase in the global average temperature of 2–3 degrees Celsius could lead to economic losses equalling up to 3 per cent of global GDP.

Forceful measures to bring down global emissions of greenhouse gases are needed to restrain climate change and curb climate risk. At the same time, increased climate-related taxes and more stringent regulation will lead to an extensive change in production and consumption patterns, giving rise to transition problems in segments of the economy. Hence, a **transition risk** emerges. For example, in order to have a 50 per cent chance of keeping the global temperature increase below 2 degrees Celsius, the combustion and release into the atmosphere of half of today's coal, oil and natural gas reserves will never be permitted. So, formerly financially valuable assets such as coal and oil, and companies operating in these sectors, will decline drastically in value. Such a course of events would affect the financial sector.

In Finansinspektionen's view, Sweden is less exposed to climate risk than many other parts of the world. The Swedish economy would probably, to some extent, benefit from a warmer climate, since productivity in e.g. agriculture and forestry would increase. Also, Sweden is much less exposed to natural disasters than many other countries. The transition risks are also considered lower than in other countries because activity with a profound climate impact does not feature much in Swedish industry. Because of this, Swedish banks, insurance companies and capital investors are not widely exposed to climate-related risk. At the same time, it is important to remember that Swedish industry and the Swedish financial sector, in this and other contexts, are highly dependent on what goes on in other countries.

STABILITY RISKS EXIST, BUT ARE PROBABLY LIMITED.

Financial firms are accustomed to managing risk. Long-term structural change in itself also seldom creates crises in the sense of a sudden and difficult course of change. At the same time, climate change partly presents new challenges and risks. Perhaps the greatest challenge for the financial sector is attempting to predict how fast and forcefully the global political system will act. If not much is done, climate change will be substantial, as will climate risk, while the transition risk will be smaller. If instead forceful measures are taken, the climate risk will be lower, but the transition risk greater. The later and more suddenly such changes occur, the greater the total risk will be to the financial system.

Although financial firms are used to managing risks, there is reason to believe that they can often take on greater risk than is in the interest of society. This is because the firms do not fully bear the socioeconomic costs of higher risk-taking. Also, many financial firms probably have a relatively short planning horizon, which might mean that they do not fully allow for climate-related risks that are far into the future. International studies also suggest that far too little consideration is given to environmental risks.

Increased knowledge about how firms manage climate and transition risks is needed, although on the whole Finansinspektionen is however of the opinion that the stability risks linked to such risks is currently limited.

SOUND RESILIENCE AND MORE INFORMATION ARE NEEDED

It is difficult to assess the probability of various specific events that could threaten stability, both in terms of content and timing, for which financial firms should allow. FI's regulation and supervision of the financial system therefore largely aims to strengthen the resilience of the financial system to shocks at a general level, for example through requiring the banks to hold solid capital buffers. The risks linked to climate change pose another argument for why **sound resilience** is important. However, FI does not believe that these risks mean that resilience currently needs strengthening.

However, FI sees a need for **increased information and transparency** in terms of climate-related risks in the financial sector. FI's report from last autumn on how the banks manage this in their lending also points to the need for transparency towards customers, the market and authorities. That also encompasses developing and creating uniform and accepted measures and definitions of risks and exposures. Here, common international standards would be of value.

FI also sees a need to develop knowledge about how climate risk may affect financial firms and the financial system. The firms also need to

develop different types of **stress tests and scenario analyses** to capture how vulnerability, in more tangible terms, could be manifested and obtain indications of potential preventive measures. A great deal of this work could and should be done by the financial firms themselves. In fact, this is well under way on many fronts, since it is also rational from a business point of view. FI is prepared to participate in such work, for example with different types of coordination initiatives.

Finansinspektionen and climate change¹

In the 2015 appropriation directions, Finansinspektionen was commissioned to analyse and, in a specific report, describe how environmental and climate change might affect financial stability in the long term. An analysis of how financial stability can be affected in the long term by the measures needed to keep the global average temperature change below two degrees Celsius is also included in the assignment. In addition, measures that might be needed to counteract negative effects on the financial system must be described.²

An important part of the foundation of the analysis and the conclusions drawn in this context is based on a report prepared by researchers at the Grantham Research Institute (GRI), commissioned by Finansinspektionen.³ That report is published concurrently with this one. The analyses and assessments made in GRI's report are the authors' own, and do not necessarily represent Finansinspektionen's view in all parts.

In 2016 Finansinspektionen will continue to work with climate-related matters, as commissioned by the Government in this year's appropriation directions.

1 In the work, Finansinspektionen consulted the Swedish Meteorological and Hydrological Institute (SMHI), the Swedish Environmental Protection Agency (Statens Naturvårdsverk), the Swedish Bankers' Association (Svenska Bankföreningen), Insurance Sweden (Svensk Försäkring), and the Riksbank.

2 Appropriation directions for the 2015 budget for Finansinspektionen Fi2015/3195, Ministry of Finance.

3 Bowen, A and Dietz, S, The effects of Climate change on financial stability, with particular reference to Sweden, 2016.

Climate change, risks and financial stability

A LONG-TERM CHALLENGE

On the whole, Finansinspektionen (FI) finds that climate and transition risks are lower for the Swedish financial sector than for many other EU countries. FI also finds that the stability risks linked to these risks are currently limited.

Climate change is a global phenomenon, primarily driven by the use of fossil fuels. A fundamental problem is that individual consumers, firms or governments can neither identify nor have the incentive to address the combined consequences of the impact on climate this entails. In turn, this means that both national regulation and international agreements need to be reached to attain a reduction in emissions and a stabilisation of the global temperature. Political decisions and processes will thus be decisive in terms of the effects climate change, and measures to counteract it, will have on the economy and financial system.

Climate change and the risks it entails present a long-term structural change that will be a game-changer in many different ways for all parts of the economy, including the financial sector. It can also be expected to interact with other discernible long-term trends in the global economy, such as rapid technological development, demographic change and increased internationalisation.⁴

A discussion about climate change and the consequences of climate policy, both in general and more specifically to the financial sector, requires a high degree of humility. It is a case of a complex and unique challenge that will characterise society and the national economy for decades to come. Some risks and problems we can see today will perhaps be resolved more quickly and easily than we may currently expect, while at the same time other problems could emerge into which we have no insight whatsoever today.

Drawing up specific forecasts about how the financial sector, or any other part of the economy, will be affected over a horizon of several decades is hardly realistic. However, this should *not* lead to the conclusion that it would be meaningless to consider and analyse the problems and attempt to influence developments based on existing knowledge. On the contrary – thinking ahead is always necessary, despite the future always being uncertain. However, realising the unusually great uncertainties and the unusually long time horizon is a necessary part of a rational approach to climate change.

⁴ See e.g. Långtidsutredningen [“The long-term inquiry”] 2015 (SOU 2015:104) p 54, and 79 ff

CLIMATE RISK IS ON THE RISE

Risks to the financial system linked to climate change can be seen in two partially conflicting dimensions. So-called *climate risk* emerges when the absence of forceful measures against climate change lead to a sustained increase in the global temperature, with gradually rising sea levels, increased average rainfall and a greater incidence of extreme weather. Such changes can have substantial negative implications for the global economy; for example, it is considered that an increase in the average global temperature of 2–3 degrees Celsius could lead to socioeconomic costs equalling 3 per cent of global GDP.

Sharply higher average temperatures mainly affect the economy via non-market-priced assets such as human health and the ecosystem. However, the market prices of several commodities and services will also be affected, and hence so too the value of financial assets. In part, the supply of, and hence also the market price of, agricultural, forestry and energy products could be substantially affected by major temperature change. In part, the pricing of land and property could be affected by rising sea levels and increased difficulty in insuring such assets.⁵ In terms of the insurance sector, insured losses due to extreme weather events are already displaying a statistically significant, rising trend. To date, however, this is largely driven by an increase in the value of insured assets. However, the significance of climate change is on the rise.

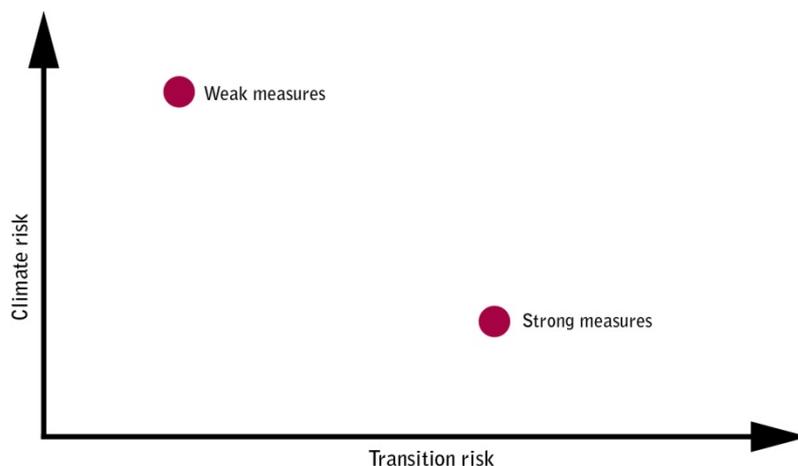
CLIMATE-RELATED MEASURES GIVE RISE TO TRANSITION RISK

If a rapid, forceful adaptation to limit climate change is conducted, a *transition risk* emerges.⁶ In such a scenario, decision-makers implement comprehensive and lasting changes in the structure of the global economy in order to limit activity that leads to carbon dioxide emissions, and to stimulate the production of goods and services with low or zero emissions. An example of this challenge is that emissions from the combustion of fossil fuels, currently accounting for around 80 per cent of the world's combined energy production, must be pushed down sharply. As in all extensive structural transformation, there will be winners and losers among owners of capital assets and owners of commodity reserves. This reflects the altered expectations of future income and earnings opportunities, which will have implications for pricing on financial markets.

⁵ Carney, Mark, *Breaking the Tragedy of the Horizon – climate change and financial stability*, September 2015.

⁶ Also known as *carbon risk*.

Chart 1. Climate risk vs. transition risk



If the recently internationally agreed target of a global temperature increase of a maximum of 1.5 degrees Celsius⁷ is attained, the measures to achieve this would probably lead to the inability to use most of currently known oil, gas and coal reserves, rendering them worthless. The term used for this is “*stranded assets*”.⁸ Stranded assets can have major economic and financial implications. The fact that around 20 per cent of the companies listed on the London stock exchange operate in the commodity and/or energy extraction industry gives an indication of the scope. Furthermore, oil and gas companies are today very large borrowers on international bond markets. A sudden transition could therefore create problems and risks.

In some sense, it could be said that climate risk and transition risk are interchangeable. Unless sufficiently forceful climate policy measures are implemented, the transition risk will be lower, while at the same time the climate risk increases (Chart 1). Conversely, ambitious and effective climate policy could give rise to substantial transition risks, but a reduction in the climate risk. Of course, this does not mean that this could be considered two equivalent strategies to choose between. If climate policy is not conducted, climate-related problems would probably subsequently become so serious that they would nevertheless ultimately force drastic measures.

FINANCIAL FIRMS COULD FIND IT DIFFICULT TO MANAGE THE POLITICAL RISKS

The fact that climate risk and transition risk might have substantial implications for the national economy and hence the financial sector does not automatically mean that financial stability is jeopardised. Financial operations are affected by a series of different circumstances that can give rise to internal or external risks that must be continually monitored and managed. External risks include the challenges that can

⁷ http://unfccc.int/meetings/paris_nov_2015/meeting/8926.php.

⁸ Stranded assets are assets affected by unforeseen or premature impairment, devaluation or conversion into liabilities.

follow from structural change and a break in the trend of the national economy, such as demographic transition, the technology shift, political and social change, etc. Risk linked to climate change is one such external risk and bears, in that respect, many similarities with the external risks that financial firms are accustomed to managing.

One challenge for firms, investors and consumers of financial services in terms of climate change is attempting to predict how quickly and forcefully the global political system will act. If not much is done, climate change will be substantial, as will climate risk, while the transition risk will be smaller. If instead forceful measures are taken, the climate risk will be lower, but the transition risk greater as more assets are stranded. The ability of political systems – and not least expectations about their ability – to deliver clear and credible decisions and implement them will be crucial to how the situation unfolds. In this context, there are undoubtedly major challenges – an essential feature of a policy to sharply reduce carbon dioxide emissions must be largely about reversing, using taxes and subsidies, the price relationship between fossil and non-fossil energy.⁹ It could also be a case of investing in research to develop new technologies and extensive investment in non-fossil energy production and distribution.

The extent to and rate at which international and national political systems will manage to implement such a transition are uncertain. In that perspective it is clear that the plans published by e.g. oil companies are inconsistent with agreed climate targets. Hence, there is a clear risk that transition costs will be substantial if measures to fulfil the targets are implemented. Conversely, failure to fulfil the targets poses greater climate risk.

CLIMATE AND TRANSITION RISKS CAN POSE STABILITY RISKS

Structural change usually leads to a gradual adaptation of both production and financial operations. Such change can be very significant indeed and far from unproblematic, but does not usually lead to crises – in the sense of shifts that are sudden, unforeseen and difficult to manage and that have major implications for society. The risk of the core functions of the financial sector being disabled or seriously disrupted is also low.

Fundamentally, however, long-term changes too can suddenly mature and have a major impact in a short space of time. Besides this type of “ketchup effect”, entirely unexpected events can also occur, or the dawning realisation of the approach of some form of tipping point, i.e. a situation in which certain consequences will be irreversible. This could force rapid and drastic interventions. What these could consist of in tangible terms, and how the effects would be manifested for the financial sector, will of course be purely speculative. For example, there is practically no reasonably accurate information about the eco-

⁹ An alternative or complementary method could be to use regulations to limit the scope of (or prohibit) certain consumption of certain production methods, etc.

conomic effects of an increase in the average temperature of more than three degrees Celsius, and the analyses that do exist give widely varying results. The fact that it could be a matter of drastic change, for example in terms of extreme weather phenomena, is close at hand, as is the assumption that this would force drastic transition measures. Such an unexpected and dramatic course of events could create conditions for economic and financial crises.¹⁰

Although the risk of, for example, a sharp transition in climate policy that leads to financial instability is low or difficult to predict, financial firms or regulators should have some contingency. Financial crises are seldom, so the probability of a crisis is, in a statistical sense, always low. But, when the unexpected nevertheless occurs, the socioeconomic costs are often tremendous. Therefore, both firms and authorities have reason to ensure that the financial system is substantially resilient in general in the event of major shocks occurring.

The transition risk posed by comprehensive climate-related measures to oil companies and their owners and lenders is an example of a risk that might be underestimated. It can be observed that the drop in the oil price in the past year, from just over USD 60 to USD 35 per barrel, i.e. a drop of just over 40 per cent, has had a clear impact on the value of such companies and has also caused growing credit losses for exposed banks. A transition to zero carbon dioxide emissions would basically mean the global market price¹¹ of oil dropping to zero, which ought to have widespread consequences. On the other hand it can also be observed that while the price decline that has occurred to date has indeed affected oil companies and oil-producing countries, it has not affected financial stability.

International research indicates that the risk assessments performed by, for example, firms in the financial sector regarding climate change have not been sufficiently tangible and thorough. Hence, the firms can take on greater risk than is in the interest of society. One reason could be that the firms do not fully bear the socioeconomic costs of higher risk-taking. Also, such entities tend to have horizons that are far too short to take account of the significance of climate risk for end customers and society. Also, the long horizons are a general problem both in terms of climate and transition risk. Analyses of financial stability problems, as well as economic assessments in general, rarely have time horizons that extend beyond one or a couple of years.¹² From this point of view, it is therefore too early to eliminate the prospect of climate and transition risks potentially threatening financial stability.

10 ESRB, "Too Late, Too Sudden: Transition to a Low-Carbon Economy and Systemic Risk", February 2016.

11 Provided, however, that consumer prices are buoyed at a high level using taxes.

12 See e.g. Mark Carney's speech with the poignant title in this context: "Breaking the tragedy of the horizon"

Climate change and the Swedish financial sector

CLIMATE RISK – SWEDEN'S EXPOSURE IS LOW

The economy in northern Europe is considered to be less vulnerable to direct climate change than large parts of the rest of the world.¹³ This is partly due to the fact that there are certain positive effects for an economy in a climate that is actually cooler than is optimal for economic activity. The Swedish economy is thus one of those in Europe that is the least directly vulnerable to climate change.¹⁴

The *insurance sector* is the area of the financial sector that is perhaps most directly and tangibly affected by climate risk, in the form of claims for damages for storms, floods, drought, etc. On an international front, a clear trend in that direction has been visible for some time, mainly as a consequence of increased flood damage.¹⁵ To date, however, this has mainly been a reflection of an increase in the values of insured objects. The trend is less clear in Sweden, and since the risks related to extreme weather are considered to be much lower in Sweden than in many other parts of the world, the impact ought to be lower. However, Swedish insurance companies might be affected through their international engagements. The international link is also of significance to other parts of the financial sector. The size of such effects is however difficult to judge. It is clear, however, that international trade and investment could generally even out climate-related costs between countries.¹⁶

Where Sweden is concerned, exposure to climate-related risk is generally low, both in absolute terms and compared with other countries. As shown in a study conducted by Finansinspektionen in the autumn of 2015, the Swedish banks generally have high and growing awareness of the credit and reputational risks associated with climate and other sustainability matters.¹⁷ The study ascertains, however, that transparency in terms of how such risks are worked with and managed can and should be improved.¹⁸

13 Ciscar, J.-C. et al., 2011. Physical and economic consequences of climate change in Europe. Proceedings of the National Academy of Sciences, 108(7), pp.2678–2683.

14 Prudential Regulation Authority, 2015. The impact of climate change on the UK insurance sector: a Climate Change Adaptation Report by the Prudential Regulation Authority, London.

15 Bowen-Dietz p.32

16 OECD, 2014. OECD Environmental Performance Reviews: Sweden 2014, Paris.

17 Finansinspektionen, Environmental and sustainability perspectives in credit granting to companies, November 2015

18 Finansinspektionen, Environmental and sustainability perspectives in credit granting to companies, http://www.fi.se/upload/90_English/20_Publications/10_Reports/2015/sustainability_perspectives_credit_granting.pdf

THE TRANSITION RISK IS LOWER IN SWEDEN THAN IN OTHER COUNTRIES

Sweden is already a low-emissions economy today.¹⁹ Sweden's carbon dioxide emissions per capita are much lower than the global average, and also lower than the average in the OECD. For example, carbon dioxide intensity in the Swedish economy is the second lowest out of OECD member countries. High utilisation of renewable energy sources and nuclear power are important reasons for this.

Environmental pricing has been a part of Swedish environmental policy since the 1990s and industry has therefore had time to adapt to climate policy. Sweden was one of the first countries to tax carbon dioxide emissions, and the Swedish carbon dioxide tax is highest in the world²⁰. This has led to major research and development initiatives and changed product technologies in energy-intensive sectors such as the pulp industry.

Sweden has ambitious long-term environmental targets according to which it shall not have any net emissions of greenhouse gases in the atmosphere in 2050, and a fossil fuel-free fleet of vehicles in 2030. At the same time, the fact that Sweden has already carried out important measures poses a challenge, in the sense that the lowest-hanging fruit has already been picked, and further measures might entail gradually higher costs, in terms of the transition in production and consumption.

To date, savings have not found their way to sustainable investment to any great extent. This can be explained by the fact that the pricing of greenhouse gases does not fully reflect the established climate targets. It probably also reflects the fact that the return requirements of private investors is high in relation to the priorities of society. The long horizons in question (compared to what is normal in other economic contexts) further complicate this. There might thus be problems related to how the market functions that make a transition more difficult. At the same time, financial markets provide a possibility to weigh in future outcomes and asset values, which gives a better distribution over time. Replacing market mechanisms with regulation is therefore rarely the best solution. On the other hand, measures might be needed in order for the markets to be able to better deal with the specific problems posed by climate adaptation.

THE TRANSITION RISKS OF OTHER COUNTRIES AFFECT SWEDEN

If there are major drops in the world market prices of fossil fuels, in parallel with a decline in trading volumes, this would have negative effects on the possibility of fossil-exporting countries to import other goods and services. The effect will probably be particularly high for

¹⁹ OECD, 2014. OECD Environmental Performance Reviews: Sweden 2014, Paris.

²⁰ SOU 2015:104, p144f

Russia and countries in the Middle East.²¹ Norway will also be affected because the oil and gas sector make up a substantial part of Norwegian GDP and the majority of Norwegian exports. Because Sweden has extensive exports to Norway and also to Russia to some extent, a weaker economy in these countries will have a negative impact on the Swedish economy. On the other hand, Sweden has relatively low exports to other oil and gas exporting countries, such as Saudi Arabia and Nigeria.

In terms of the Swedish *banks'* exposures to transition risks abroad, a similar picture emerges. Substantial exposures actually exist only towards Norway, while exposures to Russia are limited. This also applies to more indirect exposures that can emerge through participation in syndicated loans together with other banks. Here too, the exposures have a very limited scope. In terms of the domestic exposures to carbon dioxide-intensive industries and companies, the exposures are also low, which is a natural consequence of the low share of carbon dioxide-intensive production in Sweden.

The stock exchanges of Russia, the US, the UK and China combined account for almost 80 per cent of the world's listed fossil fuel reserves.²² Although the Stockholm stock exchange only accounts for a small part of listed fossil fuel reserves, Sweden's financial institutions will nevertheless be exposed to potentially stranded assets through ownership of assets traded on the major stock markets. This might affect both the insurance sector and pension funds, to the extent their portfolios contain such assets.

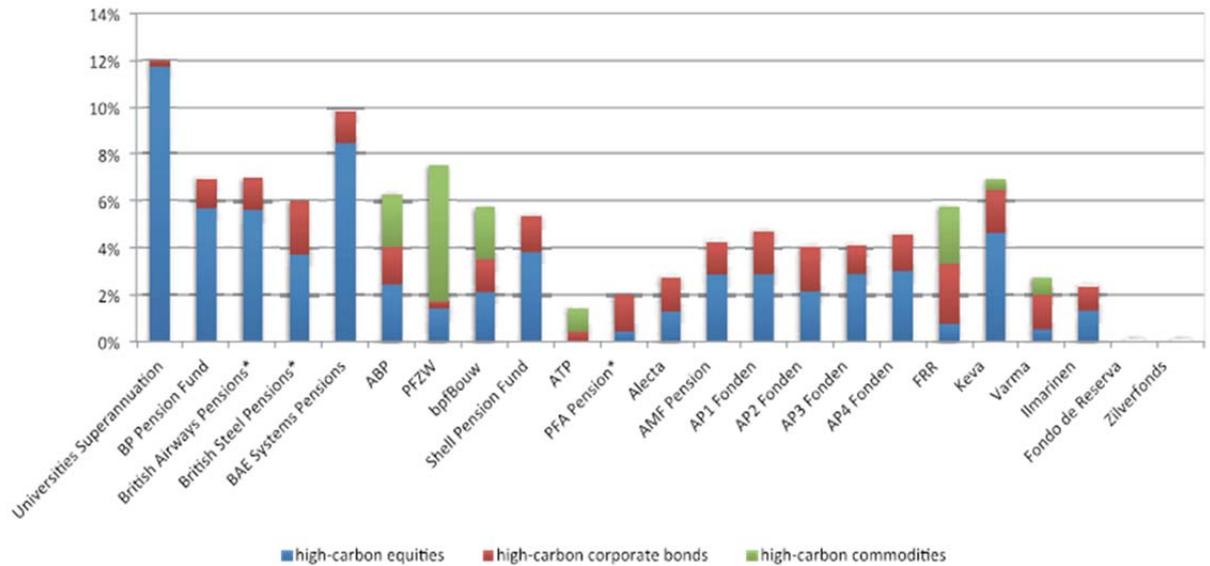
On an aggregate basis, however, *Swedish pension funds* tend to have lower exposures to assets with high carbon dioxide emissions than the pension funds of other countries. The major Swedish pension managers – the Swedish national pension funds (the AP funds), AMF and Alecta – have quite a modest share of assets invested in carbon dioxide-intensive companies in an international comparison (Chart 2). Because the AP funds have, since 2001, been explicitly commissioned by governments to incorporate ethical and environmental aspects into their investment decisions, they have also worked actively and consciously with climate aspects.²³

21 Aboumahboub, T. et al., 2014. On the regional distribution of climate mitigation costs: the impact of delayed cooperative action. *Climate Change Economics*, 05(01), p.1440002, <http://dx.doi.org/10.1142/S2010007814400028>. EBRD, 2011. *The Low Carbon Transition: Special Report on Climate Change*, London. Massetti, E. & Tavoni, M., 2011. The cost of climate change mitigation in Eastern Europe and the former Soviet Union. *Climate Change Economics*, 2, pp.341–370.

22 Carbon Tracker, 2012. *Unburnable Carbon: Are the World's Financial Markets Carrying a Carbon Bubble?*, London.

23 Work with the environmental and ethical targets was evaluated as part of a public inquiry (SOU 2008:107; "Ethics, the environment and pensions").

Chart 2. Pension funds, international: share of investments in fossil-related companies 2012



Source: Bowen-Dietz p 29

In 2015 the AP funds went one step further and started to report their carbon footprints uniformly. This will be reported based on three variables:

- The absolute carbon footprint for the equity portfolio, equaling the owned share of the companies' total emissions
- Carbon dioxide intensity, equaling absolute carbon footprint in relation to the share of ownership of the companies' market value
- Carbon dioxide intensity, equaling absolute footprint in relation to the share of ownership of the companies' turnover

For the *fund management companies*, there is no cohesive picture of carbon footprint. However, the issue has attracted growing attention, as manifested in the Swedish Investment Fund Association taking the initiative for companies to increase their transparency in this respect. It can also be mentioned that the 2014 Fund Inquiry was commissioned, in a supplementary directive, "...to also propose measures to improve the provision of information and comparability regarding how fund managers integrate sustainability aspects into their management, such as environmental and climate issues..."²⁴

On the whole, at present FI does not view climate and transition risks as a substantial threat to financial stability in Sweden. Swedish financial firms appear to be less exposed to both climate risk and transition risk than is the case for firms in many other countries. At the same time, there are major knowledge gaps, both in Sweden and abroad, that need to be filled in in order to make a more accurate assessment.

24 Dir. 2014:158

Perceivable measures to manage the risks

The political system and environmental policy have an important part to play in reducing climate and transition risks. International cooperation is crucial in reducing climate risk. Transition risk is of a more national nature because the risks and transition needs differ from country to country. In this context, a clear and credible link between established environmental targets and measures (such as carbon dioxide taxes) is key to reducing uncertainty and mitigating transition risk.

FI's mission is to safeguard a stable financial system and sound consumer protection on financial markets. In other words, FI does not have an explicit primary objective of generally reducing climate and transition risks.²⁵ However, Finansinspektionen must in all circumstances take account of how developments in other areas might make attaining its objectives more difficult, or easier. In other contexts, this can pertain to housing policy, regional development, inflation, taxes, the labour market, etc. The climate issue falls into this array of surrounding conditions and surrounding risks. The supervisory work must therefore include monitoring to ensure that financial firms manage this risk adequately too.

FI does not currently find that specific regulation and supervision measures to manage climate or transition risk are motivated. The risks are not sufficiently large and clear to justify such specific actions. Instead, focus should turn to the financial firms having solid financial and operational resilience to these types of risk in more general terms – as for other risks of an external nature. This conclusion may change as new, more specific information emerges on these risks.

STRESS TESTS

Finansinspektionen can see an advantage in the banks and other financial firms including consequences of higher frequencies of natural disaster, and also stranded asset classes, in scenario analyses and stress tests. Such analyses can ensure a rapid assessment of potential threats to financial stability and provide an indication of how one should act to manage such risks. However, such analyses should probably initially be of a more qualitative nature than the types of stress tests conducted today. One aspect is for example the extent to which different climate and transition scenarios could affect the firms' business models.

²⁵ In the 2016 appropriation directions, however, FI has been commissioned to identify and investigate the possibilities of the authority to contribute to sustainable development. See http://www.fi.se/upload/10_Om%20FI/10_Verksamhet/Sa%20stysr%20FI/2016/regleringsbrev-fi-151218.pdf.

One type of analysis could be to estimate how much the price of fossil fuels would be affected, for example based on the temperature target of 1.5 degrees Celsius²⁶, and based on certain policy measures being taken, and to convey this from the real economy to the financial sector. Given that there is a trade-off between climate risk and transition risk, this suggests that integrated analyses could be of value, in which these converse risks can be balanced.

There is a lot to suggest that the work on this type of stress test or scenario analysis is best done by the firms themselves. FI is prepared to assume responsibility as a coordinator to ensure that the tests are put in place and conducted based on common scenarios. Ideally and in time, international coordination of methods for scenarios and stress tests is desirable.

REPORTING OF DATA

Stress tests regarding climate risk require information about carbon dioxide exposure. Therein, a consistent, comparable and reliable form of reporting should be developed. Many firms already report data today to some extent, but the reporting forms have not been systematised in a generally accepted format. This should be harmonised both nationally in each industry and internationally. In this respect, work is currently under way in various international forums, such as the *Financial Stability Board* (FSB). Harmonisation facilitates comparability and hence the possibility of raising awareness among both consumers and decision-makers.

²⁶ http://unfccc.int/meetings/paris_nov_2015/meeting/8926.php.



Finansinspektionen
Box 7821, 103 97 Stockholm
Besöksadress Brunnsgatan 3
Telefon +46 8 408 980 00
Fax +48 8 24 13 35
finansinspektionen@fi.se

www.fi.se