

ENGLISH SUMMARY

Chapter 1: The Danish Economy

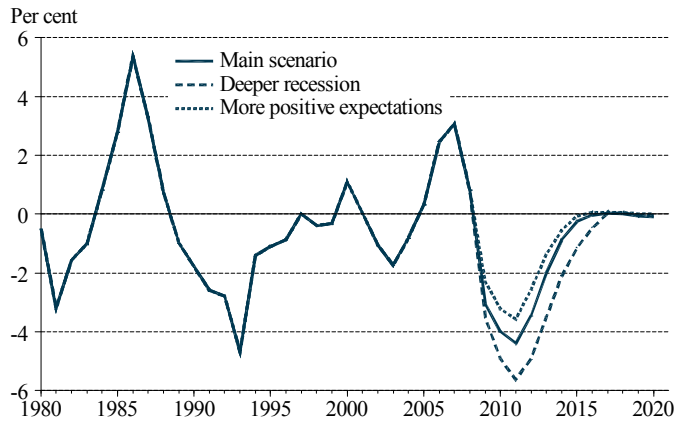
Since autumn 2008 the financial crisis has evolved into a severe downturn in the real economy for most of the world. The Danish economy is no exception and it has been hit as hard as many other economies. Thus, growth rates are expected to be negative and unemployment is expected to increase significantly despite the introduction of an array of monetary and fiscal measures.

In the 3 years preceding 2008 the Danish economy was characterised by high growth rates, decreasing unemployment and surpluses in the balance of payments and the government budget. This was followed by negative growth of one percent in 2008. In the second half of 2008 production fell significantly, caused by falls in both consumption and investment, as well as in trade. GDP growth in 2009 is expected to fall by another 3 per cent, which would be the biggest fall since the 1950s. Unemployment is expected to rise from an historic low of around 47,000 (1.6 per cent of the workforce) in the middle of 2008 to 165,000 in 2011.

There is considerable uncertainty surrounding the forecast. It is possible that the string of bad news about the Danish and international economies in the autumn could have led to something of an overreaction resulting in the large fall in consumption and investments. Since then a range of measures have been introduced to stabilise the financial markets, and fiscal policy has been eased substantially. Besides a direct effect of more money in the economy, the fiscal initiatives may generate more positive expectations, which furthermore may increase consumption and investment. However, experience from previous crises has shown that economic slowdowns tend to be long lasting when an economy is hit by a financial as well as an economic crisis at the same time. If the turmoil in the global financial markets continues, it will also affect the Danish economy considerably, and thus result in a more negative outlook. The uncertainty surrounding the future development is illustrated in

two alternative risk scenarios, see figure A. The more optimistic scenario implies higher growth and lower unemployment (145,000 in 2011) than the main scenario partly caused by more positive expectations. The more negative scenario refers to a more severe global downturn than anticipated in the main scenario, and unemployment increases to 200,000 in 2011 in this scenario.

Figure A Output gap



Note: Output gap is defined as the difference between actual and potential GDP as a percentage of potential GDP.

Source: Statistics Denmark, National Accounts and own estimates.

During 2008 private consumption decreased and fell markedly in the fourth quarter. Consumer expectations are still at very low levels, though a slight improvement has taken place. In the second half of 2009 private consumption is expected to rise, due, in particular, to the release of the savings in the Special Pension (SP) fund. The Special Pension fund was initiated in 1998 and suspended again in 1998 and 2004. From 1998 to 2003 it was mandatory to pay 1 per cent of gross salary into a personal SP account. The fund holds approximately DKK 49 billion and even though tax has to be paid when withdrawing the savings, private consumption may be stimulated extensively from this source. It is assumed that approximately one quarter of the savings will be spent on private consumption. Furthermore, tax

breaks in 2010 will stimulate private consumption in the years to come.

Up to mid-2007 house prices were increasing substantially, and this rise was larger than fundamental factors such as interest rates etc. can explain. Since prices peaked in 2007, real house prices have decreased 15 per cent, and by 2011 real house prices are expected to have decreased by around 30 per cent. Total investments also fell significantly in the second half of 2008. In the forecast period fixed business investment is expected to decline further, and along with falling house prices, residential construction is also expected to decline, see table 1.

The substantial fall in exports and imports in the second half of 2008 continued into 2009. The global downturn has resulted in a huge drop in world trade, which is expected to decrease by another 9 per cent in 2009, according to the WTO. Danish exports are therefore expected to decrease further. Since domestic demand is also expected to decrease, thus reducing imports, the surplus in the balance of payments will remain largely unchanged.

The fall in production is expected to lead to a significant decrease in employment. Over the period 2008 to 2011, employment is expected to decline by 170,000, which is far more than experienced in earlier downturns. Despite this development, employment in 2011 is only expected to be slightly lower than in 2005. A major portion of the decrease in employment is due to an expected decrease in the labour force as foreign workers return to their home countries.

Unemployment has already started to increase from its historically low level of 47,000 in the middle of 2008, and is expected to increase further during 2009 and 2010. According to this forecast, unemployment will reach 130,000 by the end of this year, and in 2011 unemployment is expected to reach a peak of around 165,000. Thus, unemployment will continue to increase after production has begun to rise, since a turnaround in the real economy will not have immediate effects on unemployment.

The very low unemployment in recent years has led to higher wage increases, reaching 4.2 per cent in 2008. The wage increases declined in the second half of 2008 as a consequence of the severe downturn – even though normally there are lags between changes in unemployment and changes in the wage increases. The quick response is due to the abnormal business cycle, and wage increases are expected to decrease further in the coming years despite increasing productivity. Lower wage increases combined with the fall in prices of raw materials has led to an appreciable drop in inflation. Prices are expected to increase by approximately 1¼ percent this year and around 2 per cent in 2010-11.

The economic downturn is expected to reduce the general government budget balance. Automatic stabilisers such as reduced tax income and increased spending on unemployment benefits are expected to reduce the balance by around DKK 100 billion over the period 2008 to 2010. Furthermore, tax cuts and reduced earnings on oil production due to lower oil prices will also contribute to the general government budget deficit. In total, the general government budget balance will be reduced with approximately DKK 115 billion over the period 2008 to 2010. The public deficit will thus be around 3 per cent of GDP in 2010.

Table 1 Short-term outlook for the Danish economy

	Current	Per cent	Percentage change, volume				
	prices	of GDP					
	DKK bn.						
	2008	2008	2007	2008	2009	2010	2011
Private consumption	851,5	48,9	2,4	-0,1	-2,4	1,3	0,4
Public consumption	461,2	26,5	1,3	1,1	1,3	1,0	1,0
Gross fixed capital formation	376,3	21,6	2,9	-3,5	-8,7	-3,7	1,7
consisting of:							
Residential investments	107,8	6,2	4,8	-9,8	-9,9	-6,0	-0,3
Business fixed investments	237,4	11,8	4,4	-1,5	-11,3	-3,5	3,8
Public investments	31,1	1,8	-10,0	5,2	17,9	1,4	-4,0
Stockbuilding ^{a)}	13,1	0,8	-0,3	0,1	-0,2	0,0	0,0
Total domestic demand	1.702,1	97,8	1,9	-0,5	-2,9	0,2	0,8
Exports of goods and services	950,8	54,7	2,2	2,2	-7,7	0,7	3,5
Imports of goods and services	913,2	52,5	2,8	3,7	-8,1	0,9	3,1
GDP	1.739,7	100,0	1,6	-1,1	-2,9	0,1	1,1
Key indicators							
Consumer prices, percentage change ^{b)}			1,8	3,1	1,2	1,7	1,9
Unemployment, per cent ^{c)}			2,7	1,8	3,4	4,9	5,7
Current account, DKK bn.			12,0	35,4	27,9	25,2	24,4
Current account, per cent of GDP			0,7	2,0	1,6	1,4	1,4
General government financial balance, DKK bn.			75,1	63,2	-20,8	-50,7	-40,2
General government fin. balance, per cent of GDP			4,5	3,6	-1,2	-2,9	-2,2
Hourly wage costs, percentage change			3,9	4,2	3,2	2,4	2,1
Terms of trade, percentage change			-1,2	1,3	0,0	0,3	-0,2

a) The percentage changes are calculated as real change in stock building relative to GDP in the previous year.

b) Implicit private consumption deflator.

c) Percentage of the total labour force. National definition.

Note: The DKK/USD exchange rate is calculated as 5.64 in 2009 and 5.61 in 2010-11.

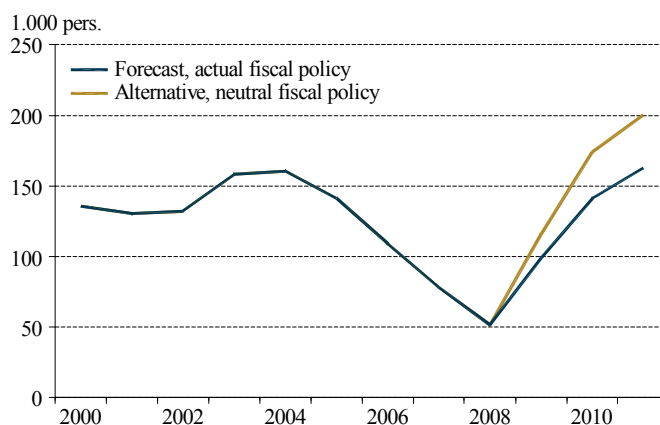
Source: Statistics Denmark, National Accounts and own estimates.

Policy recommendations

The uncertainty surrounding this outlook is larger than normal because of the difficulties in predicting the outcome of the international financial and economic crisis. Furthermore, the effect of fiscal policy is also more uncertain than normal. As mentioned earlier, the government has decided to release savings from the Special Pension (SP) fund. Some of these savings will stay in the SP fund, some will be transferred to other saving schemes and some will be spent on consumption. Depending on how much is spent on consumption, the release of the savings could lead to a boost in GDP growth in the range of 0 to 1 $\frac{3}{4}$ percentage points in 2009. In this forecast it is assumed that a quarter of the savings are converted to private consumption, evenly divided between 2009 and 2010, thus increasing GDP growth in 2009 by $\frac{1}{4}$ percentage point.

It is estimated that fiscal policy will stimulate GDP-growth by 1 percentage point and reduce unemployment by 15, 000 in 2009. This is regarded to be an appropriate fiscal expansion and thus the chairmanship recommends no further fiscal easing this year. Besides the fiscal expansion in 2009, further expansion in 2010 is already planned. The new tax reform, which primarily transfers taxation from labour income to VAT and other taxes, is underfinanced in the short run, thus stimulating GDP growth. It is estimated that the combined fiscal expansions planned for 2009 and 2010 will reduce unemployment by almost 40,000 in 2011 compared to a situation with no fiscal expansion, see figure B.

Figure B Unemployment



Note: Alternative depicts an unemployment forecast assuming neutral fiscal policy over the period 2009-11.

Source: Statistics Denmark, National Accounts and own estimates.

The output gap is estimated to be about -4 per cent in both 2010 and 2011. In the more optimistic scenario, with stronger growth in domestic demand, the output gap is estimated to be about -3½ per cent in the same years. This indicates that even in the more optimistic scenario there will be a need for further fiscal expansion, and the chairmanship therefore recommends that fiscal policy be used to stimulate the economy in 2010 to increase GDP growth by 1 to 1¼ percentage points. It is estimated that current fiscal stimulus policies will increase GDP growth by approximately ½ a percentage point in 2010. Thus further fiscal expansions that will increase GDP growth by ½ to ¾ percentage points are recommended.

The planned fiscal expansion for 2010 primarily consists of tax cuts that form part of the planned tax reforms. This type of easing increases disposable income and some of it will be saved and thus not transformed to an increase in demand. Therefore, it is recommended that further fiscal expansions primarily consist of initiatives which boost demand more directly, such as public investments or subsidies to private investments. Investments are usually temporary and thus do not result in a permanent higher level of expenditure, which

makes them a preferred stabilizing tool. To achieve the desired increase in GDP growth of between $\frac{1}{2}$ and $\frac{3}{4}$ of a percentage point in 2010, public investment should be increased by DKK 15 billion.

It is unlikely to be possible to start suitable public sector investment projects worth DKK 15 billion in 2010. In order to stabilize the economy it may, therefore, also be appropriate to channel some of the stimulus to private investment projects. Private investments can be promoted through investment subsidies. It is recommended that such subsidies support private investments that will reduce green house gas emissions in those parts of the economy not covered by the EU Emissions Trading Scheme. In this way the investments can achieve both a short term stabilizing need and contribute to fulfilling Denmark's obligations to reduce green house gas emissions.

In addition to boosting investments, it is also recommended that funding for active labour market policy measures be increased. This will reduce the probability of large scale increases in long term unemployment and thus reduce the probability of an increase in structural unemployment.

The structural unemployment rate is estimated to be around 100, 000. Though this estimate involves some uncertainty, it is an important benchmark for short term stabilizing policies. At the moment the world economy is undergoing a period of very weak growth, and as a small open economy Denmark is unavoidably affected by the outside world. Therefore, it is highly unlikely that a sharp increase in unemployment can be avoided by very expansive fiscal policy measures. The chairmanship recommends moderate but expansive fiscal measures in order to dampen the increase in unemployment. Stabilizing the economy is not a free lunch, and it is important that the fiscal expansion does not severely jeopardize long term fiscal sustainability.

Labour market policy and a new reform

Recent research has shown that active labour market policies have beneficial effects on the unemployment rate. An

element of the active labour market policy in Denmark is that case workers have close contact with the unemployed. The unemployment rate in Denmark is increasing and if no extra resources are given to the employment service system, there is a risk that the active labour market policies in the coming years will not perform as well as they could. Increasing unemployment can lead to increasing structural unemployment. To prevent increasing structural unemployment, temporary additional resources should be allocated to the public employment services to allow them to maintain close contact with the unemployed and the timeliness of training programs.

In the recent years national employment policies in Denmark have been implemented through the Public Employment Service (PES) as a branch of the central government and through relatively autonomous local governments. The central government provides services for those receiving unemployment benefits, while the local governments provide services for those on social assistance. However, a new reform is planned and from August 2009 national employment policies will be implemented primarily through the local governments. It is clearly an advantage that firms needing employees will only have to contact one authority and the new one-dimensional system will ensure that the unemployed who receive social assistance get the same services as the unemployment benefit recipients. But the new system may result in different services being offered to the unemployed across the municipalities. The local governments will place the unemployed in five groups depending on their ability to work. When placing the unemployed in these groups, studies show that some local governments place up to 80 per cent in groups 1-3 (able to work), while other local governments only place 10 per cent in these groups, see *Danish Economy, fall 2007*. It seems highly unlikely that the ability of the unemployed ability to work should be so different across the municipalities.

The local governments will also be taking over the financing of unemployment benefits, with the central government compensating local governments for these expenses in a way that gives the local governments incentives to reduce

unemployment. However, reimbursement of unemployment benefits for the unemployed who are in training programmes is higher than for the unemployed who receive unemployment benefits. This difference in reimbursements may encourage local governments to activate the unemployed in training programmes too early and too often. This model of financing therefore implies a risk that labour market policies will be planned in consideration of local governmental budgets rather than with the aim of reducing unemployment. This model of financing also involves more uncertainty in local governmental budgets. If a municipality suddenly loses a lot of employment, e.g. if a big local firm closes, the local government can be compelled to reduce expenses in other areas or increase its tax rate

An effective labour market needs an employment service system that provides a good match between firms and the unemployed. However, a local government will save expenses on unemployment benefits if it matches the firm with an unemployed person from its own municipality instead of a more qualified person from another municipality.

The current employment service system has delivered good results, whereas the outcomes of the new system are unknown. In 2007 the intention was that a few local governments should test the new system and this system would be evaluated at the end of 2010. It is recommended that any decision about the local governments taking over the employment service system be postponed until it is documented that the local governments can deliver results that are at least as good as results from the old system. It is also recommended that a more thorough study of how an appropriate model of financing could be designed is carried out. During the last ten years the active labour market policy has been evaluated and developed on the basis of solid empirical evidence. The new reform deviates from this practice.

Tax reform and sustainable fiscal policy

The Danish parliament has passed a tax reform bill that reduces labour income taxes. The reforms are underfinanced in the short run, but taxes on energy usage, pollution and other sources will be gradually increased to finance the labour income tax cuts in the longer run. The chairmanship would have preferred more sweeping changes to the energy taxes with a more direct focus on the Danish energy and climate policy goals, see *Economy and Environment 2009*. The tax reforms include an increase in taxes on electricity consumption. This is a bad policy measure because the production of electricity is included in the EU Emissions Trading Scheme, thus the electricity tax might reduce Danish electricity consumption, but it will not reduce the total green house gas (GHG) emissions of the entire European Union. On the contrary, the higher electricity tax gives incentives for households and corporations to substitute the more expensive electricity heating with sources of heating that are not included in the EU Emissions Trading Scheme, such as oil burners, etc. This will lead to more GHG emissions at the European level and at the same time makes it harder for Denmark to reach its GHG reduction goals for the part of the economy not included in the EU Emissions Trading Scheme. Furthermore, the electricity tax reduces Danish competitiveness.

Owner occupied dwellings are taxed more favourably than other kinds of savings due to the tax freeze and the fact that 33 per cent of interest payments can be deducted from personal income taxes. The tax reforms include a gradual reduction in the deductibility of interest payments. This will lead to a more neutral taxation of capital income. Unfortunately the tax reforms do not include a reduction in the very high personal capital income tax and the tax system still favours owner occupied dwellings over other forms of investments. The chairmanship has recently suggested more sweeping changes to the Danish capital income tax system, see *Danish Economy, Autumn 2008*.

The tax reforms are fully financed in the long run if the positive labour supply effects of lower labour income taxes

are disregarded. The increase in labour supply is estimated to increase the general government budget balance by about DKK 5½ billion a year in the long run, thus improving fiscal sustainability. The central government's 2015-plan for fiscal sustainability implies that labour supply should be increased through policy reforms such that the long run general budget balance is improved by about DKK 14 billion. The tax reforms supply DKK 5½ billion of the required DKK 14 billion, thus there is still a need for reforms that will improve fiscal sustainability.

Both the economic downturn and the expansive fiscal measures result in a worsening of the general budget balance and an increase in public debt. Besides the problem of increasing debt, public expenditure is growing more than assumed in the 2015-plan. A concrete target in the 2015-plan is that public expenditure must not amount to more than 26½ per cent of structural GDP in 2015, but it is estimated that this target will be exceeded by more than 1 percentage point in 2009. The latest development in the financial markets has also resulted in a significant erosion of pension savings, which will result in less income from the pension yield taxation in the future.

Recent events and the likely future economic circumstances are deteriorating the prospects for fiscal sustainability compared to the assumptions made in the 2015-plan. Growth in public expenditure needs to be restrained in the years to come in order to bring it below the target. Furthermore, there is still the need for labour market reforms or other measures that will improve the general government budget balance. At the moment there is a policy dilemma between the desire for short term stabilization and the need to ensure long run fiscal sustainability. This dilemma underlines the importance for a fiscal easing to be temporary, meaning that an increase in public expenditure to stabilise the economy must later be met by a period of lower than normal expenditure.

Chapter II: Denmark and the EURO

January 1 2009 was the ten-year anniversary of the third stage of the European Monetary Union (EMU) and the introduction of the euro. The period since then has been characterised by relatively stable economic conditions in the euro area, except for shorter periods when some countries have found it difficult to live up to the fiscal rules in the EMU. Overall, monetary policy has worked appropriately and inflation has been stabilised at a level around 2 percent. The ongoing financial and economic crisis is the first real challenge for Euroland.

Denmark has, in the past decade, conducted a fixed exchange rate policy vis-à-vis the euro as a natural extension of the similar policy vis-à-vis the Deutschmark in the preceding years. This fixed exchange rate policy has strongly contributed to maintaining a low and stable level of inflation in Denmark. The fixed exchange rate policy implies, however, that Denmark cannot conduct an independent monetary policy, but judging from the past decade, this does not seem to have been a problem. Hence, there are no reasons for Denmark to abandon its fixed exchange relationship towards the euro at this time. On the contrary, abandoning the fixed exchange regime could result in Denmark losing some of the gains achieved through an increased level of trade. Going forward, the fixed exchange-rate policy can be continued either through maintaining the current arrangement of pegging the Danish kroner to the euro or by entering the third stage of the EMU.

The question of whether Denmark should replace the kroner with the euro remains an important issue in the public debate in Denmark. The chairmen of the Danish Economic Council share the view that this choice is a political issue rather than just a question of economic matters. However, it is clear that a decision about joining the euro will, in many respects, change Denmark's economic conditions.

Maintaining the fixed exchange rate policy versus joining the euro

The Chapter on Denmark and the EURO has compared the current situation with one where Denmark becomes a full EMU member. This will affect the economy in a number of areas. The following areas have been commented upon in the present Report:

1. Reduced transaction costs
2. One-off transition costs
3. One-off price increases
4. Increased seignorage
5. Increased level of foreign trade
6. Changes in interest rate spreads and in investment and saving behaviour
7. Increased domestic competition
8. Consequences for the fiscal framework
9. Denmark becomes part of the ECB objective
10. Securing the gains obtained through the fixed exchange rate
11. Option value of keeping the Danish kroner

These areas are considered to be the most important ones and are elaborated upon in the following. Besides the direct economic consequences of introducing the euro in Denmark, the changed political position may also affect economic circumstances in an indirect way. However, such indirect consequences are left untouched in the report, since their economic consequences are extremely difficult to assess.

The saved transaction costs for Denmark because of the elimination of currency exchange are estimated – rather uncertainly – to be a little more than 0.1 per cent of GDP annually. The one-off transition costs in the form of reprogramming of IT systems, teller machines, etc, are also difficult to estimate, but are expected to be less than the present value of the saved transaction costs.

In the current EMU countries, introduction of the euro was accompanied by a modest one-off extraordinary price

increase. This may be due either to a natural adjustment because of menu costs or to a temporary increase in the mark-up levels of firms due to decreased competition. It is recommended that competition authorities follow events closely in order to ensure a proper competitive level in the event of a possible future euro change-over.

Should Denmark become a full EMU member, the seignorage from the issuance of kroner notes will disappear. Instead, Denmark will receive a share of the seignorage from the euro. Presently, the net gain is calculated to be around 0.07 per cent of GDP annually. This may rise in the future if the euro gains an increased position as an international reserve currency. On the other hand, the net gain may decrease if poorer countries with a disproportionate share in the seignorage revenue join the EMU in future, or if cash payments are less used in the future in the euro area.

If Denmark joined the euro area, Denmark's trade, especially with the euro zone, must be expected to increase. The trade effect is expected to materialise via three main channels. Eliminating transaction costs associated with operating in multiple currencies will make trade more profitable. Elimination of exchange-rate volatility, thereby removing uncertainty in returns and profit due to exchange rate fluctuations, is expected to increase trade. The effect should be small, however, because of Denmark's very credible fixed exchange rate policy. Lastly a common currency increases price transparency.

An analysis of the impact on trade of the euro is presented in the present report. The analysis shows that exports between the euro zone countries have increased by more than 20 per cent from 1995-1998 to 2002-2006 compared with the trade between 10 OECD countries outside the EU, see column I table 2. Substantial, but smaller effects are also found on the trade between the euro zone and outside countries. The main results can be found in table 2¹.

1) The analysis is inspired by Flam and Nordström, see Flam, H. and H. Nordström (2007): Explaining large euro effects on trade: the extensive margin and vertical specialization.

The estimated euro effect on trade is not of the same size for all the euro zone countries. If the euro area countries are split up in two groups: One group, the core, containing those countries that conducted a consistent fixed exchange rate policy vis-à-vis the DM during the 1990s (Austria, Belgium, France, the Netherlands and Germany) and one group, the periphery, containing those countries that did not (Finland, Italy, Ireland, Portugal and Spain), the impact of trade is much larger for the former. Exports from the core to the euro zone increased 30 per cent more than the trade between the 10 outside countries did from 1995-1998 to 2002-2006, while exports from the periphery to the euro zone only increased by just about 10 per cent in the same period. The core countries have also experienced a much bigger effect on trade with outside countries than have the periphery countries. This indicates that the exceptional increase in trade that the euro zone has experienced since 1999, cannot entirely be attributed to the euro. The effect on trade caused by a change in exchange rate policy is presumably long-run, and the estimated effect on trade might be due to the exchange rate policy during the 1990s.

Contrary to the United Kingdom and Sweden, Denmark was among those countries that had a consistent fixed exchange rate against the DM during the 1990s. Unlike the United Kingdom and Sweden, Denmark has experienced an increase in exports of the same magnitude as the core countries after 1999, relative to the trade between seven outside countries. This emphasizes that the increase in exports after 1999 among the core countries, to a large extent, might well be caused by the consistent fixed exchange rate policy during the 1990s and that the full impact on trade from a change in exchange rate policy takes time to show up. There might be some trade effects caused by the EMU as well, and these effects could increase in the years to come.

Increased trade increases GDP. The effect on GDP of an exceptional rise in international trade by 30 per cent is thought to be of a much smaller magnitude. The effect on GDP from increased trade is caused by the rise in productivity that is a result of greater international specialisation.

Simple calculations estimate that an increase in trade by 30 per cent may lead to a 0.5 per cent rise in GDP.

Table 2 Trade effects of the euro, per cent.

	I	II	III	IV
Export within euro zone	22 *	24 *	-	
- Export from core to core	-	-	25 *	27 *
- Export from core to periphery	-	-	34 *	35 *
- Export from periphery to core	-	-	8	10
- Export from periphery to periphery	-	-	15 *	16 *
Export from euro zone to outside countries	15 *	16 *	-	
- Export from core to outside countries	-	-	31 *	37 *
- Export from periphery to outside countries	-	-	0	4
Export from outside countries to euro zone	9 *	10 *	-	
- Export from outside countries to core	-	-	10 *	12 *
- Export from outside countries to periphery	-	-	7	4
Export from DNK to euro zone	-	-	-	32 *
Export from DNK to outside countries	-	-	-	27 *
Export to DNK from euro zone	-	-	-	3
Export to DNK from outside countries	-	-	-	16
Export from SWE to euro zone	-	-	-	9
Export from SWE to outside countries	-	-	-	-3
Export to SWE from euro zone	-	-	-	10
Export to SWE from outside countries	-	-	-	-13 *
Export from GBR to euro zone	-	-	-	-3
Export from GBR to outside countries	-	-	-	-9
Export to GBR from euro zone	-	-	-	6
Export to GBR from outside countries	-	-	-	-9

Note I: Base estimation. The euro zone countries (AUT, BEL (incl. LUX), FIN, FRA, DEU, IRE, ITA, NLD, PRT, ESP) are compared to a reference group of 10 outside countries (AUS, CAN, DNK, JPN, NZL, NOR, SWE, CHE, GBR, USA).

II: As I – but with a correction for the effect of the single market.

III: As I – but euro zone countries are split in core-countries (AUT, BEL, FRA, NLD, DEU) and periphery-countries (FIN, ITA, IRE, PRT, ESP). The core consists of those euro zone countries that had a consistent fixed exchange rate against the DM during the 1990s.

IV: Euro zone split into core-countries and periphery-countries. Effects are estimated individually for DNK, SWE and GBR. The reference group of outside countries consists of NOR, CHE, AUS, CAN, JPN, NZL and USA.

* indicates statistically significant effects on trade in 2002-2006 relative to 1995-1998.

Source: The estimation is carried out using data from Flam and Nordström 2007. The estimation period is 1995-2006. The estimator is based on a difference-in-difference estimator with fixed effects.

Should Denmark become a full EMU member, the part of the interest rate differential vis-à-vis the euro area that is due to exchange rate risk would disappear. However, it is not possible to say definitely whether this would lead to higher, unchanged or lower Danish market interest rates in the long run. Based on the interest rate on government bonds in Denmark and comparable EMU countries such as the Netherlands, Finland and France in recent years, the difference does not seem noteworthy. Nor is it possible to say whether full EMU membership would lead to a higher or lower capital stock or a higher or lower level of national savings. The welfare effect of removing exchange rate risk for capital movements between Denmark and the euro countries nevertheless leads to a unanimous welfare gain because it improves the possibilities of utilizing international capital markets fully. This is expected to lead to a more appropriate intertemporal resource allocation concerning the choice between consumption and savings in Denmark.

A side effect of increased trade may be that some firms that supply goods and services to the Danish domestic market may experience increased competition from abroad and consequently lower their own prices. This increase in competition levels may ultimately lead to lower structural unemployment and a more efficient allocation in production on different sectors.

A future full Danish EMU membership may also entail some changes for the conduct of fiscal and monetary policy. Regarding fiscal policy, Denmark is already committed to respecting the restrictions of the stability and growth pact. However, the peer pressure from other EMU members will probably increase if Denmark joins fully. What is more, fines for failure to conform to the pact are only paid by full members, even though experience so far shows that fines are rarely, if ever, used in practice. This peer pressure is considered advantageous for Denmark because it would contribute to a more sustainable fiscal policy in the future. Denmark will also be able to participate in the consultations between the EMU countries' finance ministers. On the other hand, Denmark presently is subject to another disciplinary

mechanism from the financial markets because of our present fixed exchange rate policy: Policy makers are forced to maintain sound economic policies in order not to endanger the stability of our monetary policy. This disciplinary mechanism – which would be lost in the case of full EMU membership – is normally considered to be positive, though, in some cases, it might restrict the opportunities of the Danish government to conduct an appropriate fiscal policy.

Concerning monetary policy, Denmark already follows the monetary policy of the European Central Bank (ECB). In the case of full EMU membership, however, the Governing Council of the ECB will also take account of economic conditions in Denmark when deciding on appropriate policies. As Danish GDP makes up about 2½ per cent of the total euro area GDP, this difference is modest, but still noteworthy.

Thus far we have described the first 9 of the 11 differences between the present Danish exchange-rate policy and full EMU membership. They all implicitly assume that Denmark will continue maintaining a fixed exchange rate vis-à-vis the euro in any case. Most of these 9 differences imply an advantage in the case of full EMU membership. Even though, when considered in isolation, some differences imply a disadvantage or have uncertain consequences for Denmark, it is judged that taken together, Denmark will experience a net economic advantage by replacing the kroner with the euro, when the alternative to full EMU membership is conducting a permanent fixed exchange rate policy outside the EMU. The net gain will probably be modest, however, not least because Denmark via its consistent exchange-rate policy has already harvested a large part of the benefits obtained by the formation of the euro.

However, if Denmark continues to have an independent currency, this does not mean it will always be able to, or want to maintain the fixed rate policy. It is possible that Denmark would either involuntarily be forced away from the present policy following a speculative attack against the Danish kroner, or that policy-makers some time in the future may voluntarily want to replace the present monetary

policy with something else. In this case, the most obvious alternative would be to introduce an independent inflation target to be monitored by the Danish Central Bank, in line with monetary policy in, e.g., Sweden, Norway and the United Kingdom. With an inflation target, monetary policy would directly address the economic conditions in Denmark, and speculative attacks on the currency would be eliminated. Higher volatility in the exchange rate might harm Denmark's foreign trade, however.

Securing the gains obtained through the fixed exchange rate policy

The higher level of exchange rate volatility compared to the countries in the euro zone will presumably imply less trade and less capital flows across the borders. The trade analysis in the present report indicates that Sweden's and the United Kingdom's trade has not benefited as much from the introduction of the euro as Denmark's trade has. Hence, Denmark will most likely lose this benefit if forced to give up the fixed exchange rate policy due to an indefensible speculative attack on the currency. Given that Denmark has managed to defend the fixed exchange rate policy through many financial and exchange-rate crises so far, including the current financial crisis, the risk that Denmark will have to give up the fixed exchange rate policy must be considered to be low. However, the possibility cannot be completely excluded. By full-scale membership of the EMU, Denmark will effectively protect itself from future speculative attacks. A full-scale membership can, therefore, definitively secure the gains with respect to trade and access to credit that Denmark has obtained through a steady fixed exchange rate policy. The value of securing these gains is small, however, since the risk of an indefensible speculative attack appears minor.

Option value of an individual currency

By full-scale membership of the EMU, Denmark loses an option value in the sense that it will be either impossible or at least very costly to change the monetary-policy regime. This could be relevant if, at some time in the future, it

should turn out to be beneficial to cut the strings to the euro. Although unlikely, it is in principle possible to imagine future situations where Denmark should consider giving up the fixed exchange rate policy and instead conduct monetary policy according to an inflation objective. This could be the case if a systematically expansive fiscal policy in the euro zone led to a significant accumulation of public debt. It is possible to imagine that the member countries in such a situation will prefer an inflationary monetary policy and that the ECB – in conflict with the rules – could find itself forced to accept a high, and thereby also volatile, level of inflation. This would imply a permanent welfare loss compared to a situation where inflation is low and stable. With a high and unstable level of inflation above a certain threshold, this welfare reduction can more than offset the efficiency gains obtained through joining the euro. Under such circumstances the option value will be positive. To make it beneficial to maintain the current fixed exchange rate policy compared to entering the euro zone requires the possibility of euro zone inflation becoming high and unstable to be large.

Furthermore, it is a possibility that Danish economic circumstances could change in a way that would make full-scale membership of the EMU less beneficial. It is difficult to give specific examples of this, but a possible example is a fundamental change in Denmark's trade pattern that reduces our affiliation with the euro zone. Such a shift in the trade pattern would reduce the efficiency gains and thereby increase the value of maintaining the possibility of introducing an inflation-targeting monetary policy.

On the other hand, it is difficult to imagine a situation where Denmark is hit by an asymmetric shock large enough to make the option value positive. Despite the fact that a change in the nominal exchange rate could reduce the adjustment costs, the long-term costs would be the same regardless of the exchange-rate regime. Since introducing an inflation-targeting objective will imply a permanent loss of efficiency gains, it appears unlikely that these reduced adjustment costs, which a floating currency could bring about, can offset the permanent loss. The implication is that,

most likely, the possibility of a large asymmetric shock is not large enough to render the option value positive.

None of the events that may raise the option value of maintaining the Danish kroner to an appropriate level appear likely. Perhaps the most relevant scenario is one where fiscal policy and public debt among the euro zone countries force the ECB to conduct a monetary policy that – against the rules – allows high and unstable inflation. This scenario cannot be completely excluded because many of the euro zone countries have significant troubles with their fiscal sustainability due to future demographic challenges.

Summing up

To evaluate the economic benefits for Denmark of joining the euro one has to compare the benefits mentioned above of doing so – including the value of securing the already obtained gains of the fixed exchange rate policy – with the disadvantages of giving up the flexibility of being able to change monetary policy relatively quickly and at low costs. Hence, there are three elements in weighing up the costs and benefits: First, there is a positive, though presumably modest, efficiency gain of giving up the fixed exchange rate policy and introduce the euro. Second and third, one has to weigh up two stochastic elements. The first element is the risk of Denmark having to give up the fixed exchange rate policy because of a successful speculative attack, while the second one is the possibility of Denmark voluntarily wanting to give up the fixed exchange policy vis-à-vis the euro in a situation where monetary policy in the euro zone turns out to lead to high and unstable rates of inflation.

On the one hand, Denmark can insure itself against speculative currency attacks by adopting the euro. On the other hand, Denmark can insure itself against the risk of high and unstable inflation in the euro zone by maintaining its own currency. This is equivalent to weighing up the value of two insurances against each other.

Should Denmark maintain the current fixed exchange rate policy – and therefore insure against a situation where the

EMU leads to a high and unstable level of inflation – it corresponds to paying an insurance premium. This premium consists partly of the costs inherited by missing out on the efficiency gains that follow from full-scale membership and partly of the gain that follows from eliminating the risk of a successful speculative attack. The value of the insurance depends on the possibility that Denmark – some time in the future – should want to introduce an independent monetary policy regime and on the possibility and costs of leaving the euro and re-introducing the Danish kroner.

In this respect it may be of specific relevance whether a decision to join the euro is irreversible or whether a euro zone country is able to leave the monetary union if extraordinary circumstances arise in favour of this. The treaty clearly indicates that a decision is definitive, but independent observers now and then discuss the possibility that one or more euro zone countries may end up in a situation where they want to leave. If leaving the monetary union is possible, it would reduce the option value of maintaining an own currency compared to a situation where a decision to join is irreversible.

Concluding remarks

Denmark has a long tradition of conducting a fixed exchange rate monetary policy. Since the introduction of the silver standard in 1838, which in 1873 was replaced by the gold standard, Denmark has only experimented with a floating currency for shorter periods during and right after the First World War, forced to do so by the extraordinary circumstances imposed by the war. When the international fixed exchange rate system – based on the gold standard – broke down during the economic crisis of the 1930s, Denmark chose to conduct a fixed exchange rate policy vis-à-vis its most important trade partner, the United Kingdom. After the Second World War a fixed exchange rate policy was carried out within the Bretton Woods framework, and when this broke down in the beginning of the 1970s Denmark tried to maintain the fixed exchange rate policy vis-à-vis its most important trade partners within the EEC/EU. Denmark occasionally adjusted the exchange rate, however

since 1987 Denmark has kept an unchanged central parity, first vis-à-vis the German Deutschmark and later the euro.

Hence, the Danish political system has for long periods revealed a preference for conducting fixed exchange rate policies. Naturally, on this basis presumably there are economic net benefits of joining the euro if the alternative is to introduce inflation targeting. However, the size of the net benefit is modest compared to total income e.g. because Denmark has already reaped most trade gains through the consistent fixed exchange rate policy.

However, there is a risk that Denmark could lose these gains if it was forced to give up the fixed exchange rate policy due to a successful speculative attack. This matter speaks in favour of Denmark joining the euro to secure the already obtained gains.

On the other hand, it cannot be excluded that the ECB's monetary policy in the future could lead to high and unstable rates of inflation and that Denmark therefore no longer prefers to maintain its fixed exchange relationship with the euro zone. In this case there may be a so-called option value for Denmark in maintaining its own currency. This option value must be weighed up against the value of securing the gains as well as against the efficiency gains that Denmark could obtain by entering the EMU fully.

The value of securing the gains as well as the option value is extremely difficult to quantify since they depend on many uncertain factors, including the possibility of the Danish kroner being attacked so severely that the fixed exchange rate policy breaks down and that monetary policy in the euro zone leads to a high and unstable level of inflation. Furthermore, the option value depends on whether it is possible, in practice, for a country to leave the euro once it has entered, and at what economic and political costs this would happen.

The possibility of such events must come down to subjective assessments. The analysis does, however, give reason to believe that both the value of securing the gains and the

option value of maintaining a Danish currency are modest. The same goes for the efficiency gains that are obtainable through full-scale membership. Should all euro zone countries live up to the fiscal guidelines, it is, given the expected efficiency gains, difficult to imagine that there are economic arguments for not joining the euro.

So to sum up, the chairmanship assesses the economic consequences of Denmark's replacing the kroner with the euro as being small, but it is likely that there is a modest economic net benefit of joining the EMU fully. Therefore, the question about a full-scale Danish membership should be decided from political considerations about the role Denmark should aim for in future European cooperation, rather than from narrow economic considerations.