

Macroeconomics and Social Effects: Can They Be Measured?

The Case of South Korea and Denmark

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1. Introduction

This paper falls into two parts. Firstly, it deals with the causes of the economic crisis in South Korea as an example of the impact and features of the Asian crisis. One of the problems Asian governments and international organisation alike had to face was the poor inability to anticipate and evaluate the social effects of the crisis. The aim of the paper is to discuss the option of learning from the Danish experience in attempting to estimate the social effects of economic crisis in Korea. The Danish experience is used to illustrate possible ways of identifying and quantifying social effects of modifications in economic policy, though it must be conceded that Korea models its social policy more on that of Germany.¹

The first section of this paper will examine the various explanations of the Korean crisis. In the second section the Danish experience in modelling and estimating social effects of changes in economic policy will be demonstrated. In the last section conclusions will be drawn as the possible emulation of the Danish experience in modelling social effects in a Korean context and the requirements to data.

2. Causes of the crisis in South Korea

In 1997-98 the Republic of Korea was hit by its second economic crisis since the country moved from a slow, debt ridden economy to a fast-lane regional economic power in the course of three decades. When Park Chung

¹ This paper was originally to be presented at a conference organised by the World Bank, Flexibility vs. Security? Social Policy and the Labour Market in Europe and East Asia, Seoul in December 2000. However, the presentation was postponed to a later World Bank conference, to be held in June 2001 in Barcelona. For security reasons this conference did not take place. It is a revised version of the original paper.

Hee took power in 1961 following a coup d'état nobody knew that the economic records of the Republic of Korea would be come so prosperous and finally gain the country a reputation as one of the fastest growing economies of the world. Only in 1980 and then again in 1997 did the country face a set-back in economic growth terms.

There were few indications that Korea would fare as badly as it did in 1997–1998, though Krugman is often quoted for having predicted the crisis in Asia in a famous article in *Foreign Affairs* in 1994. More to the point was probably his observation that rapid growth looked hollow, particularly because there was no sign of exceptional *efficiency* growth (Krugman 1994). Asian countries' economic growth reflected substantial investment, not efficiency gains.² This was the reason the high growth could not continue. A leaked report from the Bank of Korea in 1996 may be the first time that recession was flagged as a realistic threat (Oh 1999: 197). Hanbo Steel Industry, the country's second largest steelproducer, went bankrupt in January 1997 and later came the liquidity problems of Kia, the country's third largest car producer (Chang et al. 1998). By all major criteria, Korea had followed a conservative macro-economic policy, but the macro-economic performance masked the structural weaknesses. During 1997 the negative structural weaknesses became all too apparent. The debt/equity ratio was more than 400%, while in most developed countries the ratio is less than 200% (*Far Eastern Economic Review*, 30 April 1998). According to the IMF, official data provided incomplete information on the external debt position and the stock of foreign reserves. Illiquid deposits in offshore Korean banks were included in its foreign reserves and debt contracted by offshore entities was not shown in Korea's external debt (IMF 2000a: 6). One particularity of the Korean crisis was that micro-economic weaknesses were not manifested in any macro-economic figures.

The needs for emergency financing were obvious, and in December 1997 the Korean government sought an IMF and World Bank bailout to avert national bankruptcy. The exchange rate came under pressure because of bankruptcy or near bankruptcy of two major *chaebols* and the Korean government failed to reassure speculators through intervention in the exchange market. This is a story repeated in most countries where the exchange rate comes under pressure. In December 1997 the foreign reserves had shrunk to 9 billion US\$ or less than one month's worth of imports (Kim D. 1999: 467). Thus, only emergency financing could prevent the immediate risk of a debt moratorium. Liberalisation of the financial sector and a greater degree

² The argument is challenged by Chang et al. (1998: 742) who demonstrates that profitability before interest payments was not low in Korea by international standards. The problem is high interest payments.

of transparency in financial transactions, not least the government's withdrawal from any involvement in the commercial banking system, were supposed to help lift the economy (IMF 1998). The principal measures included a twenty percent increase in the call rate, a substantial decrease in the stock of net domestic assets up to the year 2000, a raise in the ceiling on foreign ownership of Korean companies to 50% and liberalisation of import items. To counter the negative effects, unemployment benefits were to be extended to cover all firms with more than 5 employees (IMF, *Letter of Intent*, February 1998).

While IMF and the World Bank adhered to the view that the crisis was triggered by overregulation and lack of transparency, or just too much state involvement, other explanations blamed the external debt financing or the financial liberalisation that preceded the economic crisis. Was the crisis really a crisis of overregulation or was it simply that liberalisation per se fostered conditions favourable to creating crises?

The first type of explanation could be dubbed the financial panic theory. Verneroso and Wade (1998) claim that high levels of domestic savings and the government's wish to make an assault on major world industries constituted an impetus for massive lending. As the Korean government removed controls on company lending the debt/equity soared. Since 1995, when the US dollar appreciated vis-à-vis the won, repayment obligations had become increasingly difficult to comply with. Krugman adds that a government guarantee of all foreign loans is a very dubious instrument in a period of increasing debt underwriting ('head I win, tails the government lose', Krugman 1998: 3). However, in the run-up to the crisis all forms of investments were booming, even the non-guaranteed (Krugman 1999a). So the 'over-borrowing' or the fragility of the banking system, presented as two different explanations, are rejected (abandoning his earlier support for the moral hazard or 'over-borrowing' argument), though Krugman still ends up focusing on the foreign debt problem. Between favourable and unfavourable exchange rates, the demand for loans in foreign currencies is high and any sudden depreciation of the domestic currency could bring firms to the brink of bankruptcy; an effect strong enough to outweigh the direct effect of the depreciation on export competitiveness (Krugman 1999b). So the foreign short-term debt should have been discouraged in the past is the conclusion of the proponents of the financial panic theory.

The crony capitalism explanation (or 'Too Big to Fail') is closely related to financial panic theory. According to this explanation, lenders (first and foremost the *chaebols*) were running no risk before the crisis, since the government would always rescue them, because the *chaebols* bought government favours through political contributions. This inflating asset bubble finally led to the crisis. Chang and Park (2000: 122f) argue that corruption

in Korea is a “generalised rather than a cronyistic one”. They also quote ‘Transparency International’ as having disclosed figures showing a decrease in the corruption index on the eve of the crisis (from 1992 to 1996). The government and *chaebols* were highly interconnected (so-called Korea Inc.) through ex-ante investment co-ordination and ex-post facilitation of industrial restructuring in the past, but this was not analogous to preventing *chaebols*’ bankruptcy. Many *chaebols* disappeared during the 1960s and 1970s. It was since the mid-1980s, when gradual liberalisation was initiated, that the 10 major *chaebols* remained stable (ibid.: 126). More surprisingly is maybe the observation that insider ownership of the 30 major *chaebols* rose after the crisis and that 80 % of bond issuing in 1998 was secured by the top 5 *chaebols* (ibid.: 103 and 118). A new governance structure for Korea’s corporate sector is also still lacking – Ahn describes the current government attitude to *chaebol* reform as administered restructuring rather than market-induced restructuring (Ahn 2001: 468). The point here is simply to emphasize that if the Korean economy, at least to some extent, is back on track again and the *chaebols* are becoming even more dominant (despite the dismantling of Daewoo), the crony capitalism argument is not so convincing.

Other observers find the financial explanation, whether it emphasises crony capitalism or over borrowing, inadequate to fully capture the causes of the crisis in Korea. According to Demetriades and Fattouh (1999) the closed environment in the 1980s would have prevented speculation from turning into a full-blown crisis, as it did in 1997. They support the view of a ‘self-fulfilling prophecy’ due to expectations of a forthcoming depreciation leading to capital flight, tremendous decline in international foreign reserves and bankruptcy of many big firms. The government guarantee in 1997 of all foreign debt is singled out as the greatest policy error of the Kim Young Sam government. But why should firms be interested in taking on foreign currency loans if the risk of depreciation is that immanent; government guarantee of debt or not? In the balance of payments, net short-term capital went from a surplus of 13 billion US\$ in 1996 to a deficit of 27 billion US\$ in 1997 (IMF 2000b). No other item displayed such an oscillation in the years of crisis; it may be linked to the fear of the private foreign sector of providing fresh short-term money to the constrained Korean firms. Capital flight is normally included in the item ‘net errors and omissions’, though despite a deterioration in the years of crisis it never reached more than 6 billion US\$. Obviously a problem, but unlike to other Asian countries capital flight never became the main issue in the Korean version of the Asian crisis.

Liberalisation of the Korean economy, including dismantling of the selective industrial policy, started in the 1980s. According to Chang (1998), government industrial policy was not responsible for overinvestment in the

years prior to the crisis. It was the abolition of industrial policy that opened the field for non controlled foreign debt creation (Wade 1999: 8 talks about government failure to correct market failure of investment allocation). So when the IMF/World Bank recommend stepping up the liberalisation process, the effect should be exactly the opposite of what is required. In Chang's view the poor financial regulation is an important cause of the crisis. Crisis signs of high corporate debt-equity ratios based upon short-term capital inflow could have to do with abolition of industrial policy and liberalisation of capital movements. But mutual guarantees among the *chaebols* were a secret weapon, enabling them to get fresh capital with minimal collateral (Mathews 1998), so the lack of transparency was maybe more the cause of the huge accumulation of short-term debt. It could seem ironical that the IMF insisted on strengthening supervision and control of the financial sector by application of measures to reduce the use of mutual guarantees and publication of financial statements of listed companies (IMF, *Letter of Intent*, February 1998). The structural adjustment loan programme seems designed to overhaul the entire economic model of Korea including the previous deregulation of the financial sector without supervision. Corsetti holds that 'imbalances and difficulties in the financial sector are a contingent public liability, which is real even if it is not reflected in official data on budget deficits until a crisis occurs' (Corsetti 1998: 29). He recognises that strengthening supervision and regulation of the financial sector could reduce the credibility of the policymakers' commitment to liberalisation.

According to the IMF, financial institutions lacked independence and were encouraged by the Korean government to use credit for selected sectors and industries. Weak controls led to over-investment in the corporate sector. Deteriorating export prices aggravated the situation, to which should be added the unwise practice of Korean financial institutions of making risky investments abroad (IMF 2000a). The World Bank regards the liberalisation of the external capital account in the 1990s as an encouragement to the buildup of short-term borrowing as the origin of the crisis. Short-term borrowing was liberalised while long-term borrowing remained controlled. Also, equity flows were subject to restrictions and corporation borrowing still needed government approval (World Bank 1999: 24). Low profitability of Korean firms was another underlying weakness of the Korean economic model. When decreasing foreign confidence in the ability of the Korean government to stay clear of the crisis became quite obvious, the won came under pressure. The Bank of Korea's intervention to protect the won from depreciation did not pay off and eventually an emergency package was signed with the IMF and the World Bank. The general liberal or free-market approach defended by the IMF and the World Bank had a taint of admission

of a far too hasty liberalisation of the capital account. As part of the stand-by credit of December 1997, the Korean government committed itself to recapitalizing the commercial banks overseen by a Supervisory Authority at the Ministry of Finance.

The main problem with this neo-liberal interpretation of the crisis is that Korea's economic success for so many years is difficult to explain, if government intervention in corporate investment decisions is singled out as the main error. Why did the Korean model not break down before 1997 when government intervention was at its highest?

The economic crisis in Korea is more than a financial crisis and it is probably more than a matter of demolishing or redirecting industrial policy towards other entities than the *chaebols*. The Korean model per se is called into question and in the view of some observers neither the neo-liberal (IMF-World Bank approach) nor the industrial deregulation (abolition of industrial policy) explanations fully recognise the dynamics of the Korean crisis. Hart-Landsberg and Burkett (2001: 404) argue that these, apparently opposed explanations, only differ on the importance and desirability of industrial policy. Wade for example is quoted as blaming democracy in Korea for having lost focus on national economic policies and being steered by the short-term interests of shifting coalitions (ibid.: 412). The underlying state-*chaebol* relationship can only be understood in class terms. However, this alternative explanation is not elaborated adequately, concentrating exclusively on the trade and current account deficits and the asserted dependence on technologies from abroad. Hart-Landsberg and Burkett do not link these purely economic explanations (increasing technology dependency) to class theories. Yet, class theories are what was missing in other crisis explanations, according to the authors. In the end they come close to suggesting an explanation similar to the financial one, but now coupled with a technology aspect.

In retrospect, neither the financial panic model nor the liberalisation process or government intervention explanation give a full picture of the Korean crisis. Had Korea either been fully liberalised or still functioned as a governed market economy, the 'correct' interpretation of the causes of the crisis might have come out clearer. Now, an economy in transition such as the Korean could be blamed for anything, like not doing things fast enough or doing them too hastily. Even years after the outbreak of the crisis none of the three explanations can be discarded as being totally implausible.

3. Social impacts of the economic crisis

If observers were taken by surprise by the dramatic collapse of Korea in late 1997, the country's rapid recovery came no less as a revelation to observers of Korean affairs. There was an unexpected turn around in the economic position in 1999. Economic growth increased by 10%, and the structural performance criteria were all overachieved. One of the performance criteria, net domestic assets, was even adjusted down substantially, due to an unexpected improvement in the international reserves.

Most of the reforms on which the IMF insisted are concluded or in progress. One important advantage that Korea had compared to for example Thailand was that the incoming government under the president elect Kim Dae Jung exploited the legislative vacuum in 1998 between his election and inauguration to pass all the controversial reforms (Haggard 2000: 133), reforms that ended government guidance of financial institutions and authorised foreign investors to buy up Korean businesses, including the *chaebols*.

Regardless of the cause of the crisis, the economic downturn spelled into unemployment and social distress. In order to cope with the negative social effects the Korean government extended the unemployment insurance to include firms with fewer than 5 employees in 1998. In addition a public works programme was initiated to enroll jobless workers not eligible for unemployment benefits. Under a livelihood protection programme persons earning less than US\$ 190 per month were entitled to receive financial subsidies from the government. The number of people receiving these subsidies increased from 330,000 in 1998 to 650,000 in 1999 (*Korea Herald*, 27 December 1999).

A study by Moon, Lee and Yoo (1999), a background paper for the Asian Development Bank, provides more details about the unemployment pattern. Those with less than upper secondary education experienced the greatest percentage increase in unemployment (*ibid.*: 10). The poverty rate is supposed to show the proportion of the population with an income under the basic minimum of the country. It is estimated that the poverty rate increased from 3% in late 1997 to 7.5% in the third quarter of 1998 (*ibid.*: 20). Government expenditures on health declined by nearly 50% from 1997 to 1998 (*ibid.*: 31).

A basic problem common to the Korean government and other Asian governments as well to international organisations is the lack of impact assessment of the economic crisis. The onset of the crisis undoubtedly triggered a dramatic upturn in unemployment and a sharp rise in poverty. However, the real impact of the crisis on social indicators is hard to quantify in the absence of proper monitoring of poverty. This would require at

least a household survey to trace the impact of the crisis and policy changes on income distribution and living conditions. Denmark is one country where economists have attempted to quantify the social effects of changes in the economic policy.

4. Social impact of economic policy reforms: the Danish experience

Denmark is a small, open economy. Because of an extensive and highly specialised welfare system politicians have been eager to measure the social effects of any changes in taxes, pensions or unemployment benefits. Though the models in use were never designed to quantify social effects of external shocks comparable to the economic crisis experienced by Korea and other Asian countries, it would be possible to modify one of the models for this purpose. The idea in the following is to present the features of the two Danish social linkages models and to outline the requirements on data. Data requirements are probably the area where most work needs to be undertaken in order to be able to measure the social effects of macro-economic changes.

Table 1: Size of the public sector in South Korea and Denmark

	South Korea	Denmark
GDP per capita (US\$, 1998)	8,600	33,000
Central government expenditure as per cent of GDP (1995–97)	11.0	25.0
Tax revenue as per cent of GDP (1998)	17.0	33.0
Public expenditure on health as per cent of GDP (1996–98)	2.5	6.7
Public expenditure on education as per cent of GDP (1995–97)	3.7	8.1
Population aged over 65 as per cent of total population (1998)	6.2	15.0

Source: UNDP 1999: *Human Development Report*

The Danish and Korean economies are of course quite unlike. In terms of overall government consumption the role of the Korean government is relatively small compared to Denmark, but the Korean government intervenes

more directly in the economic development of the country. Note that the gap in expenditure on education is less notable than in the case of health. Investing in human capital has always been vital to the Korean government, whereas the welfare state is still an embryonic stage compared to Europe, in particular to the Nordic countries.

4.1 The DREAM model by Statistics Denmark

DREAM (Danish Rational Economic Agents Model) is a CGE model developed and run by Statistics Denmark. It is designed to assess the social impact of changes in welfare instruments, like tax reforms, modification of pension regulations or ageing of the population. Agents in the model include households, private firms, governmental producers, pension funds, the public sector and the foreign sector.

A representative household sample is constructed. Information is based on the register of persons and workplaces in Denmark and it counts for 10% of the entire labour force. Income is divided into wage income, unemployment benefits, pensions and inheritance incomes. Unfortunately, wealth data are incomplete in Denmark, and so one major source of household income is at present missing in the model.

Specification of firm behaviour follows standard rules. A two-factor production function includes labor and capital inputs. The value added plus materials yield the gross output. It is assumed that the firm finances its investments by a combination of debt and retained profits. This is an exogenous function.

The general conditions for Danish pension entitlements are possession of Danish nationality and at least 3 years of permanent residence in Denmark between the age of 15 and 67 years. Only persons having attained the age of 67 are entitled to an old age pension. The old age pension consists of a basic amount, a pension supplement and a special pension supplement for single pensioners. Early retirement pension is awarded to persons between the age of 18 and 67 whose earning capacity is limited by at least half due to permanent physical or mental disability.

Historically, the labor market pension schemes in Denmark were initiated by academic employees in the 1950s. Today all employees of the formal labor market are covered by pension schemes. In DREAM the pension contribution ratio of all wage incomes is equal to the average ratio defined as total pension contributions divided by the total wage sum. At any given time there are two types of members of the pension fund: contributing and receiving members. Some members become disabled before age of retirement and are then treated as receiving members. In addition, the pension

fund supports spouse pensions, i.e. payments of pensions to non-members. The number of members is calculated as the total of new members multiplied by a probability function of survival. For a given generation, actual pensions are calculated so that the discounted value of contributions is equal to the discounted value of payments. If the economy is not subject to major external shocks and only persons are net contributors to the pension fund, the stock of wealth will increase to a constant level within a time span of 78 years (100–22; the minimum age for contribution to the pension fund is 22 years). The pension fund contributes to the accumulated stock of capital of Denmark from which the private firms draw for funding their investments.

Foreign capital is perfectly mobile in the model. The exchange rate is fixed (the Danish krone is pegged to the Euro) and the domestic and foreign pre-tax are assumed to be identical. Only imports can change over time, the export function is estimated exogenously.

The DREAM model was used at least on two occasions to analyse the welfare effects of a tax reform and the ageing of the Danish population. The tax reform of 1993 was introduced to reduce the capital income tax and the effective average income tax, increase the capital gain tax and initiate the deployment of green taxes. The net effect was positive in terms of higher domestic consumption (the utility function is given by private consumption), but since the gross effects tend to counteract each other, the final net effect was marginal, though positive. As regards the ageing of the Danish population, the net effect (in the period of 2001–2075) was assessed by a combination of three modifications: 1) the automatic increase in the tax revenue from increased labor market pension receipts (contributions are deductible but when pensions are paid out the eligible persons are taxed), 2) the increase in public expenditure due to the change in the demographic composition of the population (increased demand on health services), 3) the reduced number of persons in the work force. It was shown that in a particular period, from 2010 to 2035, tax revenues will fall short of the increase in public expenditures.

The DREAM model is behavioural and has the advantage of including a very detailed income specification of the households. The disadvantage is that the corporate sector needs further extension. At present the behavioural equations of the private firms do not include risks and the funding of investments is fixed somewhat arbitrarily (approximately 60% of the funding stems from domestic bonds). In an Asian context this part of the model would have to be modified and extended considerably to give a clear picture of the social effects of changes in macro-economic variables. The foreign sector is weak and most variables are exogenous in the DREAM model, re-

flecting the fact that Denmark is a small, open economy. Here too modifications would be necessary should the model be adapted to Asian countries.

4.2 The law model of the Ministry of Economic Affairs

The model is non-behavioural and is used to assess changes in income or resource consumption (electricity, water and heating) of new laws to be passed by parliament. It consists of a database and an act of law(s) converted into computer language. The basic database, updated each year, is a 3 % random sample of the Danish population (177,000 people). The model demonstrates the immediate effects of law amendments, but due to the fact that the model is non-behavioural, long-term, dynamic effects will not show. The following topics are covered by the model: unemployment benefits, housing subsidies, daycare payments, social assistance, income taxes, sick pay and family types. In general all inputs are based on real data provided by Statistics Denmark. The only exception is the family type sub-model, where the idea is to show patterns for a typical sort of family. An example is a couple with two incomes, one child and tenants of a dwelling. Average income and public benefits data are entered into the model to show the outcome for a typical Danish family. Since these are average figures, the outcome is 'fictitious' like the results in behavioural models. Family data can be modified to show the development of any family structure. The topics can be combined to demonstrate the effects of e.g. taxes on housing subsidies and daycare payments for all employees or for a typical family.

Each year a random sample is selected from registers covering all Danish households. Information from various files are merged into one file, so it contains socio-economic variables on income, taxes, public transfers, employment data, pension contributions, use of daycare institutions, education, real estate property, housing allowances, vehicles and resource consumption. In some cases more than 1,000 variables are specified for each person in the sample. A first run of the model shows the situation *ex ante*, i.e. prior to any law amendments. In a second run the relevant variables or parameters are modified according to the law amendment and the outcome is calculated. Data come from Statistics Denmark which has compiled data from various sources (Customs and Tax, the Directorate General for Employment, Local Government data etc.). An example of converting law text into computer language is given in Box 4.2.

The idea of the law model is to show the income distributional consequences of law amendments. In a highly regulated and complex society such as the Danish, it is difficult to analyse the effects of even small law amendments without the use of quantitative models.

Box 4.2: Example: Calculation of Housing Subsidy

Purview (from Act on Individual Housing Subsidy)

§ 21. Housing subsidy is calculated as the difference between, on the one hand, 75 per cent of the annual housing expense, cf. chapters 2 and 3, with an addition of DKK 4,000, cf. § 72, subs. 1, item 10, and, on the other hand, 22.5 per cent of the household income after § 8 above an income limit of DKK 95,000, cf. § 72, subs. 1, item 11. If there is more than one child in the household, the income limit will be increased pursuant to the first clause by DKK 25,000, cf. § 72, subs. 1, item 12, for each child in excess of one child up to and including four children.

Same text in program code

```
IF calculation year > 2004 THEN DO;
Income limit = 95000 + 25000 *
MIN[MAX(0, Number of Children),3]
Housing Subsidy = MAX[0,
ROUND ((75 * (housing expense + 4000) - 22.5 * (Household income -
income limit)) /100, 12)];
```

END;

Source: Danish Ministry of Economic Affairs 2000

The greatest advantage of the Danish law model is the exactness of the calculations. It requires very good and detailed data on the household economy. However, only the social effects of law amendments can be quantified. An external shock to the economy will need to be translated into government by-laws to mitigate the social effects, if one wants to analyse the social effects within the framework of a law model. The direct effects of external shocks are not directly measurable in the law model.

5. Conclusion

Politicians and policymakers in Asia and in international organisations have a keen interest in trying to quantify the social effects of economic crises. Based on a short review of the Danish experience in estimating social effects, three types of problems should be solved before proper estimation is likely to be feasible. Firstly, better household data are required, preferably

not only in the form of surveys but also time series of various household characteristics. In Denmark data are drawn from official registers on income, tax bills etc. Secondly, in an Asian context the foreign and corporate sector structures should be modified substantially. The complexity of the Danish household economy due to the welfare system of public transfers and a large range of direct taxes forced model builders in Denmark to concentrate on the household sector. This resulted in less attention to specification of the foreign and corporate sector. Yet these sectors are key factors in Asia, as the crisis has demonstrated persuasively. Even the household economy should be modified. In Korea a high percentage of adult personal savings are earmarked for children's tutorial expenditures, a particularity of no relevance in Denmark. Thirdly, the specification of the foreign and corporate sectors in economic models is highly linked to what is deemed as the most appropriate crisis explanation. It makes quite a difference whether the major impact is supposed to come from international financial flows or from the often murky interrelationship between state-financial institutions-private companies triangle that one finds in Asian countries. Translating these issues into model terms could engender some problems. Finally, the Danish experience suggests that as the Asian economies become more complex in social security terms and in relation to tax structure, law models might become quite valuable in future economic policy making.

One should not lose sight of the fact that Korean society, with its Confucian values, constitutes a different cultural setting. Cultural and religious values are difficult to translate into model terms and the Danish experience in modelling the social effects of changes in macro-economic policy is no exception to this rule. The question of loyalty to elderly people and to the supervisor at work is so obviously a fundamental rule in Korean society that models should probably illustrate this feature. But how that could be done in practice is a much more difficult issue.

Notwithstanding these modelling problems, data requirements to model social impacts will encompass at least the following areas:

- reliable, regularly updated income data
- data on household size
- income tax rates
- unemployment data
- corporate financing structure (partly missing in Denmark)
- estimation of sickness frequency by type of household or by income group

As many data will not be available initially household surveys will need to be conducted.

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