Studies of the relationship between aid and trade and the fiscal implications of emigration and HIV/AIDS interventions

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Abstract

This thesis consists of three studies; two on fiscal effects of demographic change and one on the correlation between international aid and trade flows.

**Fiscal Implications of Emigration.** This study examines the fiscal effects of emigration. A dynamic macroeconomic framework is used. The net present value of the fiscal effects of different types of individuals’ emigration decisions is calculated. Individuals are differentiated with relation to age, gender, education, being immigrants or born in Sweden and how long they choose to stay abroad in case of emigration. The study explores how the fiscal effects of emigration are contingent on these different personal characteristics and it is applied to the case of emigration from Sweden in 1998. The estimated aggregate fiscal cost is SEK 11.6 billion or 0.62% of GDP. This cost is significantly larger than the cost of immigration.

**Fiscal Implications of AIDS in South Africa.** The number of people living with HIV is alarmingly large. In addition to the incomprehensible human suffering of those directly affected, AIDS also has large, negative economic effects. In this paper, I study the fiscal implications of the HIV/AIDS epidemic in South Africa in a standard neoclassical growth model. I find that an antiretroviral program is to a large extent self financing. An improvement in dependency ratios and health care cost savings would pay for Rand 144 billion of a full epidemiological intervention. The indirect effect through the changing demographic structure will be more important than the direct health care cost saving effect. I also explore different taxation policies. Households would be willing to sacrifice an amount equal to 12% of GDP in the first period to be subject to an optimal (Ramsey) fiscal policy rather than an alternative fixed debt to GDP policy. The optimal policy implies an increase in government debt during the peak of the epidemic.

**Tied Aid, Trade-Facilitating Aid or Trade-Diverting Aid?** Donor aid is often regarded as being informally tied (aid increases donor-recipient exports) and this effect is, in general, interpreted as being harmful to aid recipients. However, in this paper, using a gravity model, we show that aid is also positively associated with recipient-donor exports. That is, aid increases bilateral trade flows in both directions. Our interpretation is that an intensified aid relation reduces the effective cost of geographic distance.

We analyse the effects of various foreign development assistance variables on both recipient and donor exports. We find a particularly strong relation between aid in the form of technical assistance and exports in both directions,
thus supporting our interpretation that market knowledge through interpersonal relations is an important driving force for exports. The link between donor exports and aid is particularly strong in the case of exports to Sub-Saharan African countries while the relation between recipient exports and aid seems to be robust across regions. While the statistical relations between aid and trade seem robust to changes in the specification and time-periods, it is intrinsically hard to provide clear evidence of a causal relation. Our sample includes all countries for which data is available during the period 1990 to 2005.
To Oscar & Rebecca
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Introduction

The first two papers in this thesis are case studies of how demographic change affects fiscal flows. In the first article, the fiscal effects of emigration from Sweden are explored using a dynamic accounting framework. Since the propensity to emigrate differs between different age groups and between people of different educational backgrounds, the profile of the emigrating population will not be the same as that of the Swedish population in general. Since emigrants will, on average, have contributed more to the government budget than the average Swede, the net fiscal effect of emigration becomes quite large as compared to the counterfactual situation of no emigration. In fact, I estimate the aggregate fiscal cost for those who emigrated in 1998 to about 0.6% of GDP.

This article can be seen as a complement to the literature on the fiscal effects of immigration. When studying the migration literature, I noticed that there was a number of papers on the fiscal effects of immigration but I could not find any on emigration. From a policy perspective, it might be more interesting to look at the effects of immigration than those of emigration because governments could more easily influence immigration flows. However, emigration flows and associated return migration can also to some extent be influenced and therefore, there is a value added to exploring the effects of emigration.

The analysis does not take into account the potential long-term productivity effects of emigration. In this sense, it is similar to studies of the fiscal impact of immigration. However, this is also a reason for treating the results with caution.

The second paper, *Fiscal Implications of AIDS in South Africa*, is also about estimating the fiscal impact of people leaving an economy. However, there are ways of influencing the number of people leaving the economy because of HIV/AIDS. That is, there are measures for reducing the spread of HIV as well as for postponing the development of AIDS for those already infected, which include awareness raising campaigns, mother to child transmission prevention and provision of antiretroviral drugs. These measures have the potential of reducing both physical suffering and emotional traumas for directly affected individuals and families. But, in addition, there are significant fiscal gains from providing different forms of HIV/AIDS related prevention and treatment.

At the end of the emigration project, I started to explore the possibilities of doing something useful on the subject of the fiscal impact of aids. I started by
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looking at age profiles for people dying of AIDS. First, I thought I had mixed up my data because the age profile of people dying of AIDS in South Africa in the year 2000 was very similar to the age profile of emigrants from Sweden in 1998. As it turned out, I had not mixed up the data and I guessed that AIDS would have a negative fiscal impact in South Africa like emigration does in Sweden. In both cases, we have people leaving the economy in their most productive age, with the difference that in the case of AIDS, they will never return. Others have studied the more direct fiscal effect of AIDS and different intervention policies on health care costs, while my study also includes the effect of a changing population age profile on the overall government budget.

Methodologically, the second paper differs from the first in that the estimations are based on the output from a dynamic growth model (while the first was based on a dynamic accounting framework). In some sense, this makes the second paper more interesting from an economics point of view, but it also makes it more difficult to introduce different kinds of heterogeneity in the model. When working with a dynamic accounting model where most behaviour is deterministic, there is virtually no limit to the heterogeneity that could be introduced. In this sense, the first two articles are nice contrasting examples of dynamic-model based fiscal estimates. In both models, I have had to make some heroic assumptions, although these assumptions have different characteristics in the two cases.\(^1\)

Basically, what I do in the article on AIDS is to evaluate different epidemiological interventions from a fiscal point of view. I find that a full roll-out of antiretroviral drugs will, through its positive impact on the age-structure and the dependency ratio, to a large extent be able to pay for itself. With antiretroviral drugs, people in their most productive age will have a higher probability of surviving, working and paying taxes.

The final paper, on correlations between aid and trade, is a somewhat different animal. It is an empirical study performed on a panel of 184 countries. The idea springs from a general interest in development issues and development cooperation, an interest which I share with my colleague Jan Pettersson with whom this study is jointly performed. It is also a topic in which the Swedish government (in particular Sida) and other development cooperation partners have a great interest. For some years, the development community, under the auspices OECD/DAC and WTO, has spent considerable effort on improving the trading capacity of poor countries.

Our work is an effort to contribute to the knowledge on how aid and trade relate to each other. Previous studies show that bilateral assistance and donor

\(^1\)For example, in the accounting modelling approach, it is assumed that consumption, leisure and intertemporal allocation are deterministic (although subject to a life-time budget constraint) while in the growth model, used in second article, these are decisions that are subject to the households’ optimisation. However, in the second article, there is much less individual heterogeneity. There is one household with two different types, working and not working, and there is no differentiation as concerns sex, education, skill and earning capacity, etc.
export are positively correlated. Different kinds of tying of aid (formally or informally) have usually been provided as an explanation for this result. What we find in our study is that the relationship between development assistance and donor import from recipients is similar to that between aid and donor export. That is, bilateral development cooperation is positively correlated with trade flows in both directions. We hypothesize that bilateral development cooperation facilitates bilateral trade in the sense that it spills over in market knowledge and business relationships. When disaggregating aid into Technical Assistance (more intensive in interpersonal contacts) and other forms of aid, we find that Technical Assistance explains a large share of the correlation between aid and trade, thus supporting our hypothesis that it is aid as a contact creator that is of importance for trade relations.