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Regional Effects of Military Closures: The Case of Sweden*

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Abstract

This paper concerns the effects of military closures on the local growth pattern in Sweden during the last decades. The main issue is to analyze to what extent the closures have affected the subsequent average income growth and net migration rates at the local level. The analysis is based on a data set covering Swedish municipalities with military bases during the period 1983-1998. Our main finding is that the closures have not had any significant impact on the subsequent average income growth rate or the net migration rate in the affected municipalities compared to other municipalities. However, in accordance with previous studies based on Swedish data, we find the initial endowment of human capital to have a positive impact on the subsequent growth rate.

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1 Introduction

This paper deals with economic effects of military base closures. The main issue is to study the closures that took place in Sweden during the early 1990s and, conditional on a broad set of other potentially important determinants, analyze what effects this might have had on the subsequent average income growth and net migration rates in the localities. One motivation for the focus on average income growth and net migration is the fact that personal income is the main source of revenue for the local governments. Consequently, changes in the average income level and net migration rates will affect the local tax base and the local government's ability to independently from national subsidies and regional redistribution programs provide local public services such as child care, primary and secondary schooling, care for the elderly and social care.[1] In addition, the presence of a military base also involves a relationship between the state and the locality (region) in which the base is located. Historically, the decision where to locate military bases was based on military strategic motives. However, civilian economic activity has often flourished around the bases creating a certain economic structure and where the base itself has guaranteed both military and civilian employment. The state presence may therefore be seen as a form of directed program, affecting the localities' (and regions') ability to economic growth. In this sense, a closure represents a reduction in regional subsidies, implying tighter conditions for the localities (regions) and a potential strain on economic growth and the migration pattern.

Many military bases are located in sparsely populated areas with large out-migration. Within these areas, the military base is often one of the major working sites where a closure may have considerable effects on the local economy. As a typical Swedish military base has several hundreds of employees, one direct consequence of a closure is the loss of jobs in the region. In regions with weak labor markets this could cause out-migration and/or higher unemployment rates. In addition, the loss of a military base in the region may also affect subcontractors, the local housing market and local shopkeepers. Another possible consequence relates to the fact that a large number of young people will no longer commute to the region in order to do their military service. This might, for instance, affect the local and regional transport network. Therefore, considerations regarding the effects on the local economy have previously, in some cases,

[1] In Sweden, the local governments are the main provider of these services.

been superior to pure military and strategic considerations for the central government's decision on which bases to close down.

As in many other countries, the end of the Cold War has implied a change in the structure of Swedish armed forces. Therefore, during the past 10 years, 24 military bases have been closed at different locations in Sweden. As a consequence, the number of employees in the armed forces has decreased by 50 percent, from 52 300 in 1981 to 26 300 in 2001 (Statistics Sweden, SCB), and the number of persons doing their military service has decreased from 54 686 to 16 948 (The National Service Administration, Pliktverket). However, the real cost of the Swedish armed forces has decreased by less than one percent from SEK 45 325 millions to SEK 44 894 during the past decades (1981-2001).

Our analysis is empirical and most closely related to the literature on regional growth following the tradition of Barro and Sala-i-Martin (1991, 1992, 1995).[2] A part of this large literature has focused on a broader set of potential determinants of regional growth (see, e.g., Helms, 1985; Glaeser et al., 1992, 1995; Aronsson et al., 2001), including the effects of military expenditures (see the two surveys by Ram, 1995 and Braddon, 1995 and references therein). By applying this approach, we hope to add to the ongoing and future debates on this topic. For instance, as the effects on the local economy in some cases have been superior to pure military and strategic considerations, the closures have generated a large debate around compensating policy actions directed towards the affected municipalities. In order to design such a policy, it is important to understand what effects these closures may have on the local economy.

The empirical analysis in this paper is based on a data set covering 35 Swedish municipalities, which have either had a military base during the whole period 1983-1998 or been affected by a closure. The paper complements previous studies on regional growth and migration using Swedish data (Westerlund and Wyzan, 1995; Persson, 1997; Aronsson et al., 2001; Lundberg, 2005) by introducing information on closures of military bases and analyze the effects of such actions. To the best of our knowledge, there are only a few studies with a regional perspective on the relationship between military closures and regional growth and migration (Hooker and Knetter, 2001). In

[2]Among others, see Blanchard and Katz (1992), Borjas et al. (1992), Glaeser et al. (1992), Sala-i-Martin (1996), Persson (1997), and Terrasi (1999). A more critical review of some of the empirical findings is found in Quah (1996).

addition to the information on closures, we make use of a broad set of other potentially important determinants of average income growth and net migration. We recognize the close relationship between regional economic growth and population movements by estimating two equations; one describing the rate of average income growth and one describing the net migration rate. By estimating these two equations, it is (at least to some extent) possible to relate parameter estimates in the income growth equation to changes in labor supply and/or the composition of the labor force.

The rest of the paper is organized as follows. Section 2 contains a description of the empirical set up. Empirical matters, including data, empirical specification and results are presented in Section 3. The paper concludes with Section 4.

2 The empirical setup

From a local government point of view, the effects on the average income level and net migration rate, which affect the local tax base, is of major concern as it might affect the local authority's ability to provide public services. However, the average income growth and net migration rates are most likely to be affected by other factors besides the close down of military bases which must be taken into consideration and controlled for. In empirical studies of regional growth it is common to include different indicators of 'economic opportunities' within the region.[3] For instance, high income levels and endowments of human capital are within this literature often assumed to be associated with positive externalities which tend to 'spill over' between individuals. Together with measures of employment (or unemployment), these two variables are also often included to reflect the degree of social stability within a region. In general, the initial average income level is expected to be positively correlated with the subsequent net migration rate while a negative correlation with the subsequent average income growth rate is taken as evidence of the hypothesis of conditional convergence; that initially 'poor' regions tend to 'catch up' with initially 'richer' regions.[4]

Measures of the initial endowments of human capital are expected to be positively correlated with both the subsequent average income growth and net migration rates.

[3]Among others, see Treyz et al. (1993), Westerlund and Wyzan (1995), Fagerberg et al. (1997), Aronsson et al. (2001), Davies et al. (2001), and Lundberg (2005).

[4]This is often referred to as the Barro and Sala-i-Martin type of empirical growth models; see Barro and Sala-i-Martin (1991, 1992, 1995).

Measures of unemployment are likely to reflect the probability for a potential migrant of receiving the average income level in a specific region. High unemployment rates in a region may have a positive effect on the subsequent average income growth if those who are unemployed tend to migrate to other regions in order to find jobs. Given this, initially high unemployment rates are expected to be negatively correlated with net migration and positively correlated with the subsequent average income growth.

The local governments in Sweden are to a large extent self-governed and responsible for their own budgets[5] which means that even if the national government imposes many obligations on the local governments, they are at least in formal terms free to adjust the local income tax rate and to decide how much to spend on child care, education, and care for the elderly. It is natural to assume that the local governments themselves, through their fiscal policy, try to make themselves more attractive and increase the average well being of their inhabitants. For example, the local income tax rate is one factor that might influence migration between municipalities located in densely populated areas near major cities, where the decision to move does not necessarily mean that people change their place of work (Westerlund and Wyzan, 1995). Similarly, the local government's consumption per capita may be used as an indicator of the present service level. In addition, as the expansion of the public sector in Sweden to a large extent has been driven by decisions made by politicians at the national level, the national government has felt a need to equalize financing opportunities and economic conditions among municipalities. For example, the grant-in-aid program to local governments aims to compensate municipalities with relatively small tax bases. Moreover, the localization of new universities and university colleges has in many respects been driven by regional development policy; see, e.g., Helms (1985), Glaeser et al. (1995), and Aronsson et al. (2001).

The growth pattern may also depend on factors that relate to the level of political stability and social factors. For example, in an analysis of economic growth based on a cross-section of countries, Barro (1991) shows that political instability negatively affects growth. Glaeser et al. (1995) provide more evidence that point to the importance of political and social factors for growth in US cities. Finally, demographic factors such as population density and the age structure of the population could be used to control

[5]Nowadays the local governmnets are by law forced to balance their budgets, something they were not before 2000.

for potential production of scale and demography.

To be more specific, define the average income growth rate between two periods in time $t-T$ and t as $y_{i,t} = \ln(Y_{i,t}/Y_{i,t-T})$ where Y is the average income level and the net migration rate as $m_{i,t} = \ln\left(\left(L_{i,t-T} + \sum_{k=t-T}^{t} mig_{i,k}\right)/L_{i,t-T}\right)$, where mig is net migration. Based on this, the following two equations are to be estimated

$$y_{i,t} = f^{y}\left(c_{i,t-s}, EO_{i,t-T}, LP_{i,t-T}, ng_{i,t-T}, PS_{i,t-T}, DS_{i,t-T}\right) \tag{1}$$

and

$$m_{i,t} = f^{m}\left(c_{i,t-s}, EO_{i,t-T}, LP_{i,t-T}, ng_{i,t-T}, PS_{i,t-T}, DS_{i,t-T}\right) \tag{2}$$

where c and ng contain information on military closures and intergovernmental grants, respectively, and the vectors EO, LP, PS and DS relate to indicators of earning potential or economic "opportunities", local policy variables, the political stability, and demographic structure, respectively.

As recognized by Treyz et al. (1993), Barro and Sala-i-Martin (1995, chapter 11), and Fagerberg et al. (1997), net migration and average income growth are interdependent and determined simultaneously. High income growth in municipality i indicates high earning potential, which might attract migrants and possibly increase labor supply, leading to a positive effect on net migration. Even if migration itself is expected to have a moderate effect on average income growth, those who move to municipality i may be relatively more productive than average. If this is the case, then there is a positive correlation between the rate of net migration and average income growth. Hence, following Fagerberg et al. (1997), Aronsson et al. (2001), and Lundberg (2005), equations (3) and (4) are estimated simultaneously.

3 Data, empirical specification and results

3.1 Data

The data set used in this study originates from official statistics provided by Statistics Sweden and refers to 38 Swedish municipalities (localities) which have either been the host of one or more military bases during the whole period 1983-1998 and/or have been

affected by a base relocation or closure.[6] In the beginning of the time period there were about 60 military bases and in 1998 they were reduced by 13. Most of the closures and relocations of military bases took place in the 1990s. Due to limitations in data availability over time, we are restricted to analyze the effect of closures and relocations that took place in 1992 and 1994. Table 1 contains a list of military bases that have either been closed or relocated in 1992 and 1994. In contrast to the other municipalities, Gotland, Göteborg and Malmö are responsible for the provision of health care, which is normally provided at the county level. This makes it difficult to obtain comparable data for these municipalities, and they are therefore excluded from the empirical analysis. Due to changes in the size of the jurisdiction, Örebro is also excluded from the empirical analysis. This leaves us with a data set containing 35 municipalities.

TABLE 1 ABOUT HERE

Table 2 contains descriptive statistics of the variables included in the data set. All monetary values are deflated by the national consumer price index (1980 = 100). Closure ($c_{i,t-s}$) is a dummy variable capturing municipalities with a military base which has been closed or relocated. The variable takes the value one for the year when the event takes place and the subsequent years, where the length of the effect is assumed to be either $s = 3$ or $s = 5$.

Indicators of economic opportunities (EO) are represented by the initial average income level (Y), the initial endowments of human capital ($hucap$) and the initial unemployment rate ($unemp$). The average income level is defined as the average real income among municipal residents assessable for national tax and measured as total personal income (employment income and income of business) minus general deductions and deductions for loss, denoted in thousand SEK per capita. Data are corrected for the tax reform in 1991 regarding income of capital. Human capital ($hucap$) is captured by the share of inhabitants with university education. Data on the amount of inhabitants with a university education prior to 1985 is not available. Therefore, data on human capital for 1983 and 1984 are calculated based on a regression (OLS) of $hucap_{i,t}$ on a constant, $hucap_{i,t-1}$, $hucap_{i,t-2}$, $hucap_{i,t-3}$, $hucap_{i,t-4}$, $hucap_{i,t-5}$, $hucap_{i,t-6}$.[7] The unemployment rate ($unemp$) is measured as the share of unemployed inhabitants.

[6]The total number of municipalities in Sweden has varied between 285 in 1993 and 288 in 1998.

[7]This model explains 99.9 percent of the variation in *hucap*.

The municipal income tax rate (tax) and local public expenditures (exp) are included in the category of local policy variables (LP). The income tax rate is defined as the tax payment per 100 SEK and local public expenditures are defined as local government operating costs per capita, measured in million SEK.

Intergovernmental grants per capita ($grants$) are measured in million SEK. In contrast to more recent closures, there were neither special grants awarded nor relocations of governmental job opportunities to those municipalities that were directly affected by military closures or relocations that took place in 1992 and 1994.

Indicators of political stability (PS) are represented by a Herfindahl index, defined as $herf = \sum_{p=1}^{P} SH_p$, where SH_p is the share of representatives from party p in the local council. Finally, demographic structure (DS) is controlled for by including population density ($dens$) measured by the number of inhabitants per square kilometer, the share of inhabitants aged 15 or below ($young$), and the share of inhabitants older than 65 (old).

TABLE 2 ABOUT HERE

Let us take a closer look at the descriptives of average income growth, net migration, the income level, and density for those municipalities directly affected by a closure (Table 3) or relocation (Table 4) of a military base in 1992 and 1994. All municipalities, except Karlsborg and Hässleholm, have initial income levels that are higher than average in Sweden, both before and after the closures or relocations. It is interesting to note that Kristinehamn has a lower than average income level in the period after the military unit I2 was relocated to Kristinehamn from Karlstad. Note also that the initial income level in Uddevalla turned from above national average to below national average after the closure of the military base within the municipality.

TABLES 3 AND 4 ABOUT HERE

3.2 Empirical specification

Let us specify the two equations to be estimated. The effect of a closure may be more or less persistent, which we will try to capture by allowing for different lengths of the effect of the closures, $c_{i,t-s}$, for municipality i; here, $s = 3$ and 5.[8] To avoid endogeneity

[8]We have also estimated the equations with $s = 2$, 4, and the whole time period after the closure. This does not change the qualitative results.

problems, which may arise when $T > 1$ and a closure takes place during this period, annual growth rates of average income and net migration are used, i.e. $T = 1$.

The average income growth rate is assumed to develop according to

$$\begin{aligned} y_{i,t} &= \alpha^y + \beta_c^y c_{i,t-s} + \beta^y \ln(Y_{i,t-1}) + \delta_{hucap}^y \ln(hucap_{i,t-1}) + \\ &\quad \delta_{unemp}^y \ln(unemp_{i,t-1}) + \delta_{tax}^y \ln(tax_{i,t-1}) + \\ &\quad \delta_{exp}^y \ln(exp_{i,t-1}) + \delta_{grants}^y \ln(grants_{i,t-1}) + \\ &\quad \delta_{herf}^y \ln(herf_{i,t-1}) + \delta_{dens}^y \ln(dens_{i,t-1}) + \\ &\quad \delta_{young}^y \ln(young_{i,t-1}) + \delta_{old}^y \ln(old_{i,t-1}) + \varepsilon_{i,t}^y \end{aligned} \tag{3}$$

and the net migration rate according to

$$\begin{aligned} m_{i,t} &= \alpha^m + \beta_c^m c_{i,t-s} + \beta^m \ln(Y_{i,t-1}) + \delta_{hucap}^m \ln(hucap_{i,t-1}) + \\ &\quad \delta_{unemp}^m \ln(unemp_{i,t-1}) + \delta_{tax}^m \ln(tax_{i,t-1}) + \\ &\quad \delta_{exp}^m \ln(exp_{i,t-1}) + \delta_{grants}^m \ln(grants_{i,t-1}) + \\ &\quad \delta_{herf}^m \ln(herf_{i,t-1}) + \delta_{dens}^m \ln(dens_{i,t-1}) + \\ &\quad \delta_{young}^m \ln(young_{i,t-1}) + \delta_{old}^m \ln(old_{i,t-1}) + \varepsilon_{i,t}^m \end{aligned} \tag{4}$$

Note that individuals migrating into (out of) municipality i can either come from (go to) another municipality or abroad. Consequently, the sum of net migration levels over the municipalities is not necessarily equal to zero.

It is reasonable to believe that the average income level is an endogenous variable. Therefore, as a first step, we estimate reduced form equations for the average income level, $Y_{i,t-1}$. To be able to identify the whole equation system, we need instruments that influence the choices made by the municipalities and the private sector, respectively, although they have no direct effects on the growth rate (other than via $Y_{i,t-1}$). These estimation results are then used to form predictors for $Y_{i,t-1}$, which will replace this (potentially endogenous) variable in equation (3), when $y_{i,t}$ is estimated in the second step. In the first step regression, we use two measures of the industry structure of the municipality as instruments: the share of the work force in agriculture and industry, respectively. The two equations (3) and (4) are estimated simultaniously using 2sls where information on the local industrial structure (the share of agriculture and industry) to instrument for $Y_{i,t-1}$.

3.3 Results

Parameter estimates of equations (3) and (4) are presented in Tables 5 and 6 respectively. Two models are presented in each table, one with a 3-year effect of a closure of a military base (column one), and one with a 5-year effect (column two). Note that the parameter estimates are quite similar in the two models.

TABLES 5 AND 6 ABOUT HERE

Using a 3-year effect, β_c^y, (first column in Table 5) our results suggest a negative correlation between the average income growth ($y_{i,t}$) and the closure ($c_{i,t-3}$). This result implies that municipalities which have experienced a closure have had a slower average income growth rate during the first three years after the closure compared to other municipalities. However, this effect is not significant on the 95-percent level and the estimate change sign when we allow for a 5-year long effect (second column in Table 5). In order to make further interpretations of these results we turn to the effect of military close downs ($c_{i,t-3}$) on net migration ($m_{i,t}$), presented in Table 6. These results indicate a negative and non significant correlation between net migration and the close down of a military base, a result which is not either sensitive to the length of the effect. Based on these results we conclude that the close down of military bases has had no significant effect on the subsequent average income growth and net migration rates. One potential explanation for these results is a latent excess demand on the local labor market. That is, those previously employed at the military bases have now found new employment within the region, either in the private or the local public sector. Another potential explanation is that those previously employed at the military base move out and are replaced with others leaving the composition (skilled versus unskilled) and size of the labor force unaffected which, in turn, leave the average income growth rate unaffected.

The results presented in Table 5 strongly suggest a negative correlation between the initial average income level ($Y_{i,t-1}$) and the subsequent average income growth rate ($y_{i,t}$). This is in line with previous studies based on Swedish data (Persson, 1997; Aronsson et al., 2001; Lundberg, 2005). Therefore, we conclude that our results support the hypothesis of conditional convergence across Swedish municipalities. Further explanations of these results could be obtained by looking at the effects on net migration. In Table 6, the estimate suggests a positive correlation between $Y_{i,t-1}$ and $m_{i,t}$.

Together with the negative correlation between $Y_{i,t-1}$ and $y_{i,t}$, the interpretation is that high initial income levels attract migrants, which has a positive effect on labor supply. This, in turn, tends to have a moderate effect on the average income growth. However, this result should be interpreted with caution as the positive correlation between the initial average income level and net migration is not significant.

The parameter estimate of initial endowment of human capital (δ^{y}_{hucap}) suggests a positive effect on the average income growth rate ($y_{i,t}$). According to Table 6, there is also a positive correlation between $hucap_{i,t-1}$ and $m_{i,t}$. This suggests that the initial endowment of human capital attracts relatively highly skilled individuals, which has a positive effect on the average income growth rate.

Further, our model predicts a negative correlation between the initial unemployment rate ($unemp_{i,t-1}$) and the subsequent net migration rate ($m_{i,t}$). In combination with the insignificant effect of the initial unemployment rate on the subsequent average income growth, these results indicate either that out-migration has been high enough to adjust labor supply within these regions, and/or that the proportion of skilled/unskilled has remained relatively constant.

Next, we turn to the local and national expenditure and revenue variables. According to our results, the initial income tax rate ($tax_{i,t-1}$) affect both the average income growth ($y_{i,t}$) and the net migration rate ($m_{i,t}$), intergovernmental grants ($grants_{i,t-1}$) affect the average income growth ($y_{i,t}$), while no significant effects are found for local public expenditures ($exp_{i,t-1}$). For instance, the initial income tax rate ($tax_{i,t-1}$) is estimated to have a positive effect on the average income growth rate ($y_{i,t}$) and a negative effect on the net migration rate ($m_{i,t}$). Intergovernmental grants ($grants_{i,t-1}$) are estimated to have a positive effect on the average income growth rate ($y_{i,t}$). However, it is difficult to give any further interpretations of these results due to the fact that the local councils were not required to balance their budgets each year during this period. This means that the local government expenditures and income tax rates may not only reflect the current level of service and cost for tax payers, but they may also signal future policy changes. Therefore, with no further interpretations, we only note that national and local fiscal policy matters for the regional growth pattern.

It is reasonable to assume that political stability should have a positive impact on regional growth. Such results have been found in cross-country studies (for a review see Alesina and Perotti, 1994). Our results do not support this hypothesis.

4 Concluding remarks

The purpose of this paper is to investigate regional effects of military closures in Sweden during the last decades. Our analysis is based on a regional growth model, where two equations are estimated; one equation describing the average income growth rate and one equation describing the net migration rate. The data set is a panel of 35 Swedish municipalities covering the period 1983-1998.

Our main finding is that a closure of a military base has not had any significant impact on the subsequent average income growth rate nor the net migration rate in the affected municipalities. One potential explanation for these results relate to the labor market and the composition of the labor force. Those previously employed at the military bases have now found new employment within the region, either in the private or the local public sector. Or, those previously employed at the military base has moved out and been replaced by others leaving the composition (skilled versus unskilled) and size of the labor force unaffected which, in turn, leave the average income growth rate unaffected.

In line with previous results based on Swedish data, we also find strong evidence in favour of conditional convergence between municipalities. That is, municipalities with initially lower average income levels tend to have experienced a higher average income growth compared to municipalities with initially higher average income levels. This is important from a distributional point of view as it implies that income levels tend to equalize across municipalities over time.

Extensions to this paper would be to explicitly model the adjustment of income growth and net migration for municipalities that are affected by close downs of military bases and to incorporate potential spillover effects on neighboring regions. We leave this for further research.

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Table 1: Close downs and relocations of military bases

Military base	Location	Activity	Time
I 3	Örebro	Closed	July 1, 1992
I 11	Växjö	Closed	July 1, 1992
I 17	Uddevalla	Closed	July 1, 1992
Lv 7	Luleå	Relocated to Boden	July 1, 1992
Lv 7	Boden	Relocated from Luleå	July 1, 1992
I 2	Karlstad	Relocated to Kristinehamn	June 30, 1994
I 2	Kristinehamn	Relocated from Karlstad	June 30, 1994
I 14	Gävle	Closed	June 30, 1994
P 6	Kristianstad	Closed	June 30, 1994
A 3	Kristianstad	Relocated to Hässleholm	June 30, 1994
A 3	Hässleholm	Relocated from Kristianstad	June 30, 1994
Lv 6	Göteborg	Relocated to Halmstad	June 30, 1994
Lv 6	Halmstad	Relocated from Göteborg	June 30, 1994
Ing 1	Södertälje	Closed	June 30, 1994
T 4	Hässleholm	Closed	1994
F 6	Karlsborg	Closed	January 1, 1994
F 13	Norrköping	Closed	1994

Table 2: Summary statistics, T=1, Sweden, 1983-1998

Variable	Mean	Std.dev	Min	Max
Growth, $y_{i,t}$	1.019	0.043	0.217	1.100
Net migration, $m_{i,t}$	1.002	0.008	0.964	1.077
Average income level, $Y_{i,t-1}$	41.698	4.300	31.895	58.273
Human capital, $hucap_{i,t-1}$	0.125	0.045	0.057	0.340
Unemployment, $unemp_{i,t-1}$	0.029	0.017	0.003	0.079
Tax rate, $tax_{i,t-1}$	17.776	2.152	14.50	22.85
Expenditures, $\exp_{i,t-1}$	0.013	0.002	0.010	0.021
Grants, $grants_{i,t-1}$	0.001	0.001	-0.001	0.005
Herfindahl, $\text{herf}_{i,t-1}$	0.281	0.052	0.185	0.441
Density, $dens_{i,t-1}$	51.492	40.131	1.299	226.707
Young, $young_{i,t-1}$	0.199	0.013	0.176	0.277
Old, $old_{i,t-1}$	0.173	0.034	0.055	0.240

Note: Values are stated in anti-logarithms.

Table 3: Summary statistics, T=1, before and after closure of military bases

	Before closure				After closure			
Location	$y_{i,t}$	$m_{i,t}$	$Y_{i,t-1}$	$dens_{i,t-1}$	$y_{i,t}$	$m_{i,t}$	$Y_{i,t-1}$	$dens_{i,t-1}$
			1983-1991				1992-1998	
Växjö	1.024	1.004	39.832	40.188	1.020	1.004	45.877	43.013
	0.020	0.003	3.530	0.853	0.038	0.003	3.262	0.754
Uddevalla	1.019	1.002	39.675	72.101	1.014	1.003	42.630	75.751
	0.018	0.003	2.879	0.884	0.032	0.004	2.288	0.851
Base localities	1.020	1.002	39.655	49.847	1.018	1.001	44.324	53.607
	0.050	0.007	3.783	37.707	0.031	0.010	3.409	43.034
Sweden	1.024	1.002	38.026	114.341	1.021	0.999	43.022	119.869
	0.031	0.008	5.188	369.030	0.036	0.008	5.880	390.604
			1983-1993				1994-1998	
Gävle	1.014	1.001	42.867	54.871	1.029	1.002	47.570	56.282
	0.023	0.002	3.145	0.364	0.025	0.004	2.847	0.274
Södertälje	1.014	0.995	42.599	119.259	1.020	1.001	45.685	128.959
	0.029	0.004	3.528	1.399	0.051	0.003	1.938	16.665
Karlsborg	1.015	0.997	37.323	18.684	1.025	0.990	41.946	17.619
	0.020	0.008	2.494	0.131	0.023	0.007	2.257	0.347
Kristianstad	1.016	1.003	39.012	56.419	1.030	1.003	44.319	58.820
	0.024	0.002	2.173	0.969	0.031	0.002	2.528	0.278
Base localities	1.014	1.002	40.136	50.239	1.031	1.001	45.135	54.249
	0.047	0.008	3.682	38.209	0.026	0.009	3.493	44.057
Sweden	1.016	1.002	38.519	114.984	1.035	0.998	43.937	120.670
	0.033	0.008	5.122	371.317	0.030	0.008	6.206	394.225

Note: Values are stated in anti-logarithms. Standard deviations are given below the mean.

Table 4: Summary statistics, T=1, before and after relocation of military bases

	Before relocation				After relocation			
Location	$y_{i,t}$	$m_{i,t}$	$Y_{i,t-1}$	$dens_{i,t-1}$	$y_{i,t}$	$m_{i,t}$	$Y_{i,t-1}$	$dens_{i,t-1}$
	1983-1991				1992-1998			
Luleå	1.024	0.999	42.104	37.084	1.015	1.002	47.043	38.870
	0.020	0.004	3.636	0.400	0.028	0.004	2.540	0.655
Boden	1.016	1.003	40.083	6.789	1.017	0.994	44.298	7.019
	0.018	0.004	2.429	0.062	0.025	0.007	2.222	0.098
	1983-1993				1994-1998			
Halmstad	1.016	1.005	39.672	77.016	1.032	1.006	44.695	81.781
	0.027	0.002	3.256	1.631	0.024	0.003	2.740	0.699
Karlstad	1.015	1.003	42.591	64.515	1.029	1.004	47.617	67.728
	0.024	0.002	3.292	1.047	0.020	0.005	2.646	0.626
Kristinehamn	1.012	0.999	39.472	34.986	1.030	0.996	43.640	34.460
	0.018	0.003	2.337	0.354	0.020	0.007	2.639	0.377
Hässleholm	1.019	1.0003	37.022	38.247	1.031	0.999	42.266	38.862
	0.029	0.003	3.422	0.304	0.023	0.005	2.564	0.187

Note: Values are stated in anti-logarithms. Standard deviations are given below the mean.

Table 5: Parameter estimates, T=1, average income growth

	3-year effect	5-year effect
Close (β_c^y)	-0,001	0,006
	-0,12	1,21
Income (β^y)	-0,433	-0,420
	-5,20	-5,17
Hucap (δ_{hucap}^y)	0,064	0,061
	4,74	4,66
Unemp (δ_{unemp}^y)	-0,017	-0,017
	-4,89	-4,99
Tax (δ_{tax}^y)	0,148	0,140
	4,93	4,78
Exp (δ_{exp}^y)	0,013	0,012
	0,76	0,73
Grants (δ_{grants}^y)	5,629	5,541
	2,09	2,11
Herf (δ_{herf}^y)	0,002	0,002
	0,12	0,15
Dens (δ_{dens}^y)	0,000	0,000
	0,10	0,00
Young (δ_{young}^y)	-0,185	-0,179
	-3,68	-3,61
Old (δ_{old}^y)	-0,060	-0,059
	-4,06	-4,04
Const (α^y)	0,922	0,901
	3,37	3,37
F-test	6,86 (Prob 0,00)	6,82 (Prob 0,00)

Note: t-values are given below the estimates.

Table 6: Parameter estimates, T=1, net migration

	3-year effect	5-year effect
Close (β_c^m)	-0,001	-0,001
	-0,42	-0,88
Income (β^m)	0,011	0,009
	0,48	0,41
Hucap (δ_{hucap}^m)	0,013	0,013
	4,20	4,29
Unemp (δ_{unemp}^m)	-0,001	-0,001
	-0,68	-0,72
Tax (δ_{tax}^m)	-0,020	-0,019
	-2,00	-1,93
Exp (δ_{exp}^m)	-0,003	-0,003
	-0,70	-0,68
Grants (δ_{grants}^m)	-0,968	-0,960
	-1,59	-1,58
Herf (δ_{herf}^m)	0,002	0,002
	0,78	0,77
Dens (δ_{dens}^m)	0,001	0,001
	1,90	1,93
Young (δ_{young}^m)	0,029	0,028
	1,67	1,63
Old (δ_{old}^m)	0,017	0,017
	3,59	3,57
Const (α^m)	0,110	0,113
	1,90	1,95
F-test	18,15 (Prob 0,00)	18,19 (Prob 0,00)

Note: t-values are given below the estimates.

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