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THE ECONOMICS OF ALTERNATIVE NATIONAL SERVICE[1]

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THE SERVICE PROVIDED by the army is a public good, and as with any public good, there is a need to finance it through some form of compulsory taxation mechanism. However, conscription adds an extra dimension since the bulk of the 'tax' involves conscripts providing direct labour services. There is also a selective aspect to this implicit tax in kind since the burden of national service falls on white males in a certain age bracket.

The basic argument in this paper is that conscription has certain unintended cost implications in relation to the brain drain and the allocation of labour within the South African economy. There are several ways of reducing these negative effects, of which the professional volunteer army option is perhaps the most obvious example. But an alternative service programme is another possibility worth considering.

The case for alternative service which is advanced below is based entirely on narrow economic considerations. This is obviously not the only relevant argument in favour of alternative service. In fact, the most common justification for alternative service tend to emphasise normative or political issues. Although these questions are largely ignored in this paper, there is no suggestion that the more conventional reasons are unimportant. However, since the economics of alternative service has not been fully explored in the literature, there is some merit to such an exercise. It will also become evident that the implications of this analysis are somewhat different from those which follow from an ethical approach to alternative service.

It is also important to stress at the outset that alternative service should not be viewed as a substitute for an all volunteer force. The most influential American perspective, which arose largely in response to the public debate on the Vietnam draft in the 1960's, maintains that a volunteer force is the most cost effective security system. Lingle, in a recent survey of this literature, adds that any form of conscription, including one that contains an

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1. Some of the ideas for this paper emerged at a seminar on alternative service attended by Philip Black, Colin McCarthy, Lieb Loots, Peter Moll, Andrew Donaldson, David Shandler, Mark Phillips and the author. Each of the participants made a contribution at this early stage of the paper.

alternative service option, is less desirable than an all volunteer system since it restricts freedom of choice. While these arguments are persuasive, the volunteer system has not, until recently, been on the agenda in South Africa. It is of course a possibility that is of relevance to the future, although it would seem that political considerations will play the dominant role in the resolution of this issue. One advantage of an alternative service programme is that it can be accommodated within the present framework.

1. COSTS OF CONSCRIPTION

The costs of conscription may be viewed as consisting of two components. The first of these are made up of the taxes paid to maintain conscripts during their service period. These costs are fully captured by the budget. The second category is related to the implicit tax in kind, and is therefore not accounted for in terms of the defence budget. In this paper it will be assumed that these costs are approximately equal in value to the income sacrificed by conscripts.[2] They consist of the net income forgone (a) during the basic service period, (b) during subsequent camps, and (c) due to career delays. A conservative estimate of the average non-budgetary cost per conscript comes to R21 842.[3] The annual intake of new servicemen is in the region of 28 000, thus implying a total annual indirect cost of R612 million (1987 prices).

The above estimate suggests that the total costs of conscription are substantially in excess of the amounts shown in the budget. Although some might view these costs as an acceptable price to pay for security, there are various factors which cast doubt on the cost effectiveness of the current arrangement. Conscription involves a centrally controlled allocation of labour, and as is well known, such a mechanism leads to a gross misallocation of resources. No-one for example, would want to argue the case for compulsory mining services. But the same principle must also apply to security services. The opportunity cost of conscription is not uniform across individuals. Servicemen with greater endowments of human capital typically forgo larger amounts of income, and conscription will cause an inefficient allocation of resources, unless these skilled conscripts are accommodated in

2. This definition is rather narrow since it excludes the non-financial costs of conscription. A more comprehensive definition can be found in Friedman who notes that the total tax in kind is equal in value to the difference between what it would take to attract someone voluntarily and the military pay he actually receives.

positions which generate commensurately greater benefits. But this is unlikely to be the case in South Africa. In fact, it would be nothing short of miraculous if there was an adequate match between the distribution of skills required by the SADF, and the distribution of skills supplied by white male conscripts.

It is more likely that the conscript population in South Africa is overendowed with skills in relation to demand. South African conscripts are drawn from the most highly qualified segment of the labour force, while in other industrial countries the armed forces are usually less well educated than the rest of the labour force (Friedland and Little, 1984).[4]

Some idea of the extent of the mismatch between the supply and demand for labour of the SADF can be gleaned from the educational profile of white males aged 25.[5] For instance, of the 40 000 males in this age category, approximately 6 000 have degrees or diplomas and 23 000 a standard ten or equivalent.[6] Although specific data on the labour requirements of the SADF are not readily available, it would be surprising if an armed force of approximately 100 000 were able to accommodate 6 000 conscriptable men with tertiary qualifications (i.e. one graduate for every eight men under the old two year cycle) in professional roles.[7]

The skills mismatch is not the only reason for an inefficient utilisation of resources. There is in fact some doubt whether there should be any attempt to satisfy the army's need for skilled labour via the conscription of highly qualified manpower. It is obvious that the day-to-day needs for skilled manpower should be provided by permanent employees. Even well qualified personnel are relatively unproductive in a temporary capacity. But the same conclusion may apply to most security contingencies as well; i.e.

4. This argument can be extended to school-leavers who intend to obtain tertiary qualifications, but opt to undergo military service first. These conscripts are necessarily used in non-specialist roles. But, the educational costs of attending the army first and qualifying afterwards are only marginally less than the costs of the university-first route. The waste associated with conscripting potential graduates is thus of the same order as would be the case if those with completed tertiary qualifications were used in general positions during their national service.

5. The 25 year age bracket was chosen rather than a younger group since the costs of the mismatch between the qualifications of conscripts and the manpower needs of the army are related to post-service rather than pre-service qualifications.

6. Estimated from Population Census, Report No 02-85-06 and Education in RSA, NATED 02 - 215.

7. The actual intake of conscripts who are or become graduates soon after service is of course much less since there are various strategies to avoid military service. But all of these exit options have comparable costs of their own.

when there is a limited increase in manpower requirements. The professional performance in a combat context of, say, an engineer with basic training is likely to be only marginally superior to an engineer with no military experience whatsoever. This means that the contribution which national service makes towards the human capital embodied in skilled personnel is relatively modest, especially in relation to the social cost of acquiring this additional capital. Basic service for highly skilled manpower is thus not really worthwhile in so far as it is aimed at preparing such individuals to perform professional functions during times of moderately increased security activity. Only permanent employees with a great deal of accumulated on-the-job experience can satisfy these needs efficiently.

There are of course exceptional circumstances when the permanent complement of skilled resources, even though they may be optimal from the point of view of most eventualities, may become inadequate. This will occur during periods of greatly increased military activity. These contingencies fall into two categories; those which are anticipated well in advance and those which are entirely unexpected. The rational economic response to the former types of contingencies is not a civilian reserve force of accountants, psychologists and the like. Professionals and similarly qualified personnel can be recruited and trained during the approach to a serious conflict. The present arrangement is only justified if a *major* war with *no* forewarning is a *realistic* possibility. The productive edge, marginal though it may be, which those skilled individuals with national service have over their uninitiated colleagues may then be of decisive importance. However, it would appear that a conflict which satisfies all the conditions mentioned above is remote given the current security climate.

The arguments put forward above provide an economic rationale for exempting skilled individuals from basic military service. Such a concession would not prevent them from putting their skills to good use if the security situation should truly demand it. However, a qualifications related exemption system has one glaring shortcoming; it will almost certainly be viewed as grossly unfair and elitist. It is for this reason that it is not common in other parts of the world; and it would be equally unwise for South Africa to experiment with such a system. But an alternative service programme might be able to accommodate these objections since it is a more equitable option. Such a programme could also contribute towards achieving a more efficient allocation of labour since it would give skilled personnel the opportunity to become more productive during their period of "conscription". Although

it is difficult to give an accurate estimate of the potential benefits of a feasible alternative service scheme, some indication of the order of the returns can be computed. If, for example, it is assumed that the programme accommodated 5 000 new alternative servers per annum, and that each made an average annual net social contribution valued at R20 000 over a 2 year period, then the total benefit amounts to R200 million. This figure, although somewhat speculative, is not insignificant.

2. COSTS OF THE BRAIN DRAIN

The costs considered above are based on the assumption that conscription does not produce a permanent loss of human resources. This is obviously not the case. Compulsory military service is a significant determinant of emigration on the part of highly skilled individuals. It must of course also be recognised that there are many other causes of the brain drain. Nevertheless, surveys among English-speaking male graduates have found that more than 50 % of the respondents who consider emigration feel that conscription is a major factor (Shandler, 1989).

The best method of assessing the value of the brain drain is provided by the concept of human capital. The brain drain may then be viewed as an outflow of capital; although in this particular case the exporting country receives little or nothing in the form of repatriated profits at a later stage. Estimates of human capital are usually based on the discounted value of the future earnings that may be attributed to the capital component of labour. In respect of the brain drain the most appropriate measure is simply the present value of the earnings that emigrants would have earned if they had remained at home.

Several estimates along these lines of the value of the annual capital outflow due to emigration of males in the 20 - 30 age bracket for 1987 were calculated. They range from R1,8 bn to R4,2 bn. One problem in calculating the present value of lifetime earnings is that the final figure is very sensitive to the discount rate.[8] This is why a low and high estimate, corresponding to discount factors of, respectively, 5 % and 0 %, were computed. In addition, certain assumptions regarding the age structure of the emigrant population were made.[9] The above estimates should therefore only be viewed as

8. Estimates of the average present value of the earnings of white males aged 25 range from R461 915 to R1 100 505, depending on the discount rate.

9. Estimated male emigration for 1987 is 18 970. (Tourism and Migration, Report No 03-51-01), 20 % assumed to fall in 20 - 30 age bracket.

indications of the value of the human capital outflow from South Africa. Nevertheless, the figures involved are enormous. If it is further assumed that, say, 25 % of male emigration in the 20 - 30 age category can be attributed to compulsory military service, then its contribution to the annual flow of emigrants may be valued at something between R438 mn and R1 044 mn per annum.

What are the implications for those remaining behind? An outflow of human capital must necessarily result in a reduction in the GDP. The emigration of skilled labour also causes relative price adjustments and therefore a redistribution of the remaining domestic income. Those in skilled occupations who remain behind benefit since emigration creates skilled labour scarcities. The other factors of production, such as capital and unskilled labour, experience relative price decreases, and therefore shoulder some of the short-term costs of emigration. It is for this reason that businesses have an economic interest in a security arrangement that ensures a more efficient utilisation of skilled labour. But consumers also suffer welfare losses; fewer managers and scientists mean fewer and more expensive consumer goods and services. In addition, emigration leads to a slowdown in the rate of growth of the supply of skilled labour, and therefore places constraints on economic growth.

The brain drain is sometimes dismissed by reference to immigration. Thus, it is maintained that immigration tends to dominate emigration. While this is true in terms of official figures, it is by no means clear that the same applies when unofficial emigration rates are included. Certainly, the experience of the eighties provides no grounds for complacency.[10] It is also doubtful whether immigration replaces the high level of skills which are typically lost through emigration. In any event, the point is that net immigration would have been higher in the absence of emigration by conscripts. South Africa is a growing economy and should ideally be a net importer of physical, as well as human capital. While the introduction of an alternative service option is only relevant to a segment of the emigrant population, the above estimates of the costs involved imply that it would be worthwhile to introduce programmes aimed at reducing emigration.

10. Official net emigration plus net tourist outflow (unofficial emigration) over the period 1983 -87 averaged 6 846 per annum.

3. OPEN ALTERNATIVE SERVICE PROGRAMMES

It is useful, as a first step in the analysis of the mechanism of alternative service programmes, to consider the prospects of an open scheme. Under such a programme, all conscripts, regardless of personal beliefs or economic characteristics, would be free to choose between military and civilian service. The major advantage of such a dispensation is that those who opt for military service are not in any way unfairly treated.

The success of an open alternative service programme will depend crucially on the conditions of service. These have to be structured so as to balance two opposing forces. On the one hand, there must be some deterrent, otherwise an excessive number of conscripts may opt for non-military service. On the other hand, if these penalties are too severe then alternative service will no longer be a realistic option, and will not result in a reduction in emigration or an improved allocation of labour.

This problem is relatively easy to model. In the absence of an alternative service option, the population eligible for national service may be divided into two groups, M and C, where M denotes those who would rather emigrate than do military service, and C those who are prepared to do military service. The sources of the demand for alternative service may also be split into similar categories. Let A_m denote those among the potential emigrants who would opt for alternative service, and A_c those among the prospective conscript population who would prefer non-military service. It then follows that total emigration,

$$E = M - A_m$$

the number of 'volunteers' for military service,

$$V = C - A_c$$

and the total demand for alternative service,

$$A = A_m + A_c$$

The size of both A_m and A_c will depend on the conditions of alternative service. Suppose X is some index which reflects the severity of these conditions. Then X will be inversely related to A_m and A_c. Under an open scheme X is the only policy variable which regulates the demand for alternative service.

It may further be assumed that the aim of policy is to ensure a large volunteer force, V, but a small emigration flow, E. These two policy objectives are of course in conflict with one another. Nevertheless, one may combine

them into a single welfare function. For the sake of simplicity it will suffice to use the following linear function;

$$W = V - eE,$$

where e is the relative weight attached to emigration. The weight, e, will be greater than one since the cost of losing a person to emigration is substantially in excess of the social cost of sacrificing a conscript.

The aim of policy now reduces to choosing conditions of alternative service, X, so as to maximise W. The solution to this optimisation problem will of course depend on the relative reaction rates of A_m and A_c to changes in the policy variable.[11] For instance, if an improvement in alternative service conditions leads to a major switch towards alternative service, then the negative impact on V of such a policy adjustment will tend to be substantial, and may even be such as to eliminate alternative service as a viable option. On the other hand, if A_m is relatively responsive to changes in the conditions of alternative service, and if the weight, e, is significant, then the optimum conditions of alternative service will tend to be more favourable.

The welfare function used above ignores the beneficial effects of alternative service on the allocation of labour. These can be accommodated by redefining the welfare function as follows;

$$W = V - eE + aA$$

where A is the total number of alternative servers and a is the weight (less than one) assigned to the direct labour services provided by alternative service. The effect of this change to the welfare function is to shift the trade-off between alternative and military service somewhat more in favour of the former.

Only an imaginative attempt to implement such a scheme in practice would resolve the issue of its feasibility. Since there is a chance that the introduction of an open programme might cause a major shortage in the supply of army 'volunteers', it is to be expected that the government might be reluctant to take such a bold step. At the same time, there is also the possibility that an open alternative service scheme which is sufficiently constraining to prevent a manpower crisis on the military side, might end up being too restrictive to have any meaningful impact on either the brain drain or the allocation of labour. It is therefore necessary to assess the merits of selective alternative service programmes as well.

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11. The first order condition is $dA_c/dx = edA_m/dx$.

4. SELECTIVE ALTERNATIVE SERVICE PROGRAMMES

The major advantage of a selective alternative service programme is that access can be controlled directly, thus enabling the authorities to protect the supply of conscripts available for military service.

It is common for alternative service schemes which are rationed through direct controls to rely on the reasons for objection as the basis for access. However, it is important to recognise that there is no economic justification *per se* for selection criteria related to personal attitudes. Objective economic characteristics may provide a more effective foundation for selection if the objectives are narrowly economic, as is reflected in the welfare function used above. A further benefit of objective criteria arises in relation to the moral hazard problem. Those who are excluded cannot alter their characteristics in order to gain entry. A system which relies on subjective attitudes, on the other hand, is more open to abuse since conscripts could conceivably modify their attitudes to obtain access to alternative service on fraudulent grounds.

Fairly detailed research will be required to determine economically appropriate selection criteria. This cannot be done here. Nevertheless, it would be surprising if an optimal set of conditions were unrelated to the skills and qualifications of potential candidates for alternative service. It has already been noted that the most damaging aspects of the brain drain are associated with mobile and well qualified individuals. The inefficient allocation of labour resulting from conscription can also be tied to skilled personnel since their social contribution would tend to be greater in alternative than in military service.

A selective alternative service scheme will perform better, in narrow economic terms, than an open dispensation since a selective system allows for an extra control variable. This point can be seen more clearly with reference to the model presented earlier. The weight, a, assigned to the benefits accruing from alternative service will in general differ from person to person. It was suggested above that some individuals will make their greatest contribution in an alternative service capacity. These individuals will have an a-weight in excess of one. Under a perfect selective scheme it should be possible to restrict alternative service to these individuals. This will clearly raise total welfare. Furthermore, if the criteria for acceptance into alternative service allows many potential emigrants to gain access, then conditions of alternative service can be eased in order to capture potential emigrants.

The major problem with a rationed alternative service programme relates to its political acceptability. An open system treats everyone equally in the sense that each one is free to choose whichever option he prefers. This does not mean that an open programme is "value-free". In fact, in an open system the conditions of service are systematically manipulated so as to maximise some social welfare function. It will therefore not satisfy the tastes of every single individual. Nevertheless, its value judgements are covert, and it is unlikely that it would encounter antagonism from those who opt for military service. The political logic of a selective programme is different since the question of equity comes to the fore immediately. Those who are excluded will invariably feel that there is unfair discrimination against them.

This does not mean that a selective alternative service programme is inherently unjust. Alternative service provides public goods; in the same way that military service provides public goods. Furthermore, the argument above suggests that it could be structured to ensure that the public benefits of national service are maximised. As far as costs are concerned, both forms of service involve an implicit tax in kind. While the size of the non-financial sacrifices resulting from military service may outweigh those associated with alternative service, it does not follow that the overall implicit tax (financial and psychological) on military conscripts would always exceed the tax paid by alternative servers. On the contrary, conscription is a highly progressive tax in which those with larger potential civilian earnings pay a much higher rate of taxation. Whether this financial cost differential, as well as the benefit differential, provides adequate moral justification for an alternative service programme which gives preferential access to skilled conscripts will depend on one's ethical perspective. For example, someone who believes that taxes should ideally equalise incomes would not be able to accept a selective alternative service system. But it could be accommodated within a framework which pursued a less dramatic, although still strongly progressive, tax structure. In any event, these questions may be somewhat academic. One of the criteria for public policy formulation is that it should *appear* to be fair, and there can be no doubt that an explicitly selective alternative service programme would fail a test along these lines. National service is tied up with patriotic sentiments and notions which tend to encourage conformity and equal treatment (in a formal sense), rather than a careful assessment of the social benefits and the corresponding private costs incurred by different individuals.

A partial solution to the problem would be to develop mechanisms that depoliticise the selection process. This could be achieved by screening jobs rather than individuals. For example, a selection board could be given the discretion to decide which jobs should be open to alternative servers. It could then be left up to the prospective alternative server to obtain employment in one of these occupants. An acceptable market for alternative service jobs might then emerge.

5. CONSCIENTIOUS OBJECTION AND ALTERNATIVE SERVICE

There are various reasons why some individuals are reluctant to do military service. It has already been noted that there are considerable economic costs attached to conscription. But there are also many for whom psychological, moral or political reasons are more important.

In terms of narrow economic costs it is not particularly relevant what reasons individuals advance for avoiding military service. The economic costs of the brain drain or an inefficient allocation of manpower arise irrespective of the causes of objection. Since the emphasis in this paper has fallen on the narrow *economic* case for an alternative service scheme it has been assumed throughout that access should be geared towards maximising the economic benefits of such a programme. However, this is obviously not the only basis on which the argument for alternative service has to rest. In fact, most people, including the author, would be inclined to place greater emphasis on the ethical case for alternative service.

It has already been pointed out that subjective admission criteria, in the context of a selective system, creates a moral hazard problem. An open arrangement would be the ideal solution. Unfortunately, since workable conditions of service in an open system might be relatively onerous, it is possible that an open alternative service option might not bring sufficient relief to those who have non-economic objections to military service. It is therefore arguable that their concerns can only be accommodated in a selective dispensation which has reasonable conditions attached to the alternative service option. Experience abroad suggests that the scope for abuse in a system based on attitudinal criteria can be confined to acceptable levels by means of various stringent subjective tests (Evans, 1989). An alternative service option structured in terms of the moral approach to objection is therefore not necessarily unworkable.

On the other hand, in South Africa at present there is a large degree of overlap among those who explicitly object to military service and those

who have specialised skills which could be used productively in an alternative service capacity. It is therefore likely that selection based on objective economic criteria which are designed primarily to minimise the costs of conscription would simultaneously accommodate most of those who object to military service out of moral conviction. Of course, such a dispensation does not exclude the possibility of making exceptions for genuine conscientious objectors who fail to qualify in terms of strict economic criteria.

CONCLUSION

The economic case for alternative service is related to the costs of conscription. These costs may be divided into those which arise from an inefficient allocation of labour and those which are associated with the brain drain. The former costs are the result of (a) a mismatch in the skills required by the army and those supplied by the conscript population, and (b) an uneconomic attempt to satisfy skilled labour needs via the utilisation of qualified manpower on a temporary basis. These inefficiencies can be reduced through an alternative service programme.

The feasibility of alternative service programmes depend crucially on the selection criteria. An open programme entails access for anyone who chooses to opt for alternative service. But this means that the conditions of service are required to act as a deterrent to ensure a balanced allocation of labour between military and alternative service. Whether these conditions can be structured adequately is an empirical question. But there is a danger that the conditions of service might end up by being too restrictive to have any beneficial impact on the brain drain or the allocation of skilled labour.[12]

The main advantages of a selective programme is to be found in the element of direct control that can be exercised, thus making it relatively easy to maintain an adequate supply of conscripts. At the same time, the selection criteria could be designed in order to maximise the economic returns to alternative service. This suggests that the programme should be targeted at potential emigrants and at conscripts who are able to make a greater contribution in a civilian capacity than as ordinary conscripts.

A degree of opposition to a selective programme is inevitable since the

12. It should also be noted that the difficulties with an open system could be eliminated by providing financial rewards, such as end of service bonuses to those who choose to serve in the army. This possibility is not considered above, but it is an option that deserves serious attention since it would amount to a shift towards a volunteer army, and in the long-term this may well be the most economical solution.

system must discriminate against conscripts who fail to qualify for alternative service. This opposition is not necessarily a function of the intrinsic inequalities of a selective system since it is by no means certain that the implicit costs incurred by the average military conscript will exceed the costs born by the average alternative server. Nevertheless, a selective system does not provide equal opportunities for everyone, and therefore appears to be unfair. There is no simple solution to this problem. One approach might be to screen alternative service jobs, rather than individuals. A market would then emerge in which alternative service condidates compete for the available positions, thus depoliticising the selection process to some extent.

How these issues are resolved will obviously depend on the political process. One suspects, however, that in so far as alternative service is acceptable, there will be a strong bias in favour of a system that treats everyone equally, even though such a system would not maximise economic benefits within the constraints imposed by conscription.

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