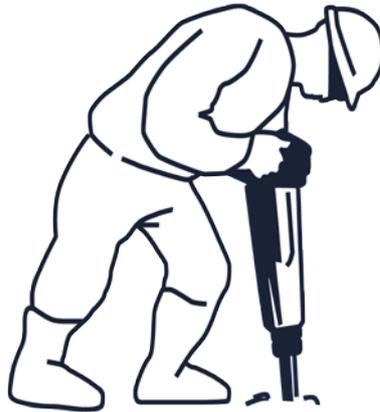


Southern Africa Labour and Development Research Unit



Key Issues in the Assessment of Seta Performance in South Africa's National Skills Development Strategy

by
Sean Archer

About the Author(s) and Acknowledgments

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Key Issues in the Assessment of Seta Performance in South Africa's National Skills Development Strategy.

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*One of the most dangerous aspects of the global knowledge-based economy lies in the tensions created by the growing 'knowledge gap' between the knowledge-rich countries of the North and the (generally) knowledge-poor countries of the South. **Wealth creates the ability to create the knowledge that can be used to create further wealth.** But, without adequate means to distribute the benefits accruing from such knowledge, social disparities, and the jealousies they invoke, will only increase. **Editorial, Nature 6714, 1999: 1(emphasis added).***

Purpose of the Report

We live in an age in which education and training are prominent items in the set of goods and services that in many countries are recognised as every individual's human rights. These acquired competencies are his and her *entitlements*, positively valued in social and economic life. Most of us favour their greater abundance for that reason. But we also suspect strongly that the increased productive capacities that come with skills training have spill-over effects beneficial to ourselves, to others in society and to our future descendents. This means that apart from the cultural consequences that are overwhelmingly positive, one worker acquiring more schooling or additional skills training increases the output of others along with a rise in his or her own productivity that leads to higher earnings. There is copious research backing such relationships. (Heckman & Others 1996; Heckman 1999; Heckman, Lalonde & Smith 1999; Bassanini & Others 2005.)

¹ *Acknowledgements.* Numerous individuals provided information and advice in the preparation of this report: Friede Downie, Gail Eliot, Mark Henning, Cheryl James, Andre Kraak, Janet Lopez, Paul Lundall, Carmel Marock and Florus Prinsloo. In addition, I am grateful to Nico Cloete of CHET for funding this research work, and to Murray Leibbrandt for performing a careful edit of an earlier draft which has been valuable in the revision.

This perspective makes policy studies in the sphere of skills training *utilitarian* in the best sense because its driving concern is human welfare. Integral to such research are questions like the following. What is the extent, in particular enterprise and sector contexts, to which acquired competencies create benefits by raising productivity? Why do resources devoted to education and training in certain ways create higher levels of welfare but in other ways do not? Why do certain national systems of education and training, for example, the German system, appear to contribute more to their growth process than do other countries' parallel systems?

Questions of this kind make the task of sifting the analytical wheat from the rhetorical chaff demanding because of the sheer volume of documentation generated about education and training. This is so particularly concerning the economic aspects of these forms of *human capital* investment. This term is a short-hand expression for a large and diverse range of behavior by individuals when investing in schooling, training, improved health and social adaptation. As a label it has provoked resistance in the past amongst educationists for reasons we feel no pressure to discuss in this report. It has long been a useful term in the economics of labour and carries no visible ideological baggage any more. Its present usage in this report is straightforward. Throughout it will mean *the accumulation of productively significant skills* whatever the means used in the process. This does not preclude recognizing all forms of education and training as *cultural goods* highly important to human well-being. There is no conflict between the two perspectives.

In addition there is a large literature on whether education and skills training are best viewed as *investments* intended to generate an increased income stream, or whether they are more accurately considered as attributes or competencies of a worker that send a *signal* to employers and fellow workers about innate abilities and qualities. This is the signalling or *credentialist* approach to the analysis of education and training. Although interesting in certain research contexts, this distinction between ways of interpretation is peripheral to the purposes of this report about Setas.

There are four recommendations of this report that can be stated at the beginning.

A - Our national priorities in skills training should focus on the *strategic gaps* in the evidence base that underlies policy, rather than on shorter term issues that point to marginal adjustments. As will be argued in the body of the report, at this stage 10 years after the new skills training strategy was launched, we still do not know answers to key questions. One of these glaring gaps concerns Setas. In particular what kind and extent of *information* is available to them as facilitators? For instance, do Setas know that their member companies trust one another enough to be both effective reciprocators and abstainers from skills poaching which otherwise would inhibit skills investment? Such information shapes and constrains the actions of Setas as intermediaries.

B - Employers are the *most important decision-takers* in the training sphere. In the last decade there have been no comprehensive enquiries about their use of schooled and skilled manpower, nor about their actual training activities, much or even most of which occurs on-the-job. To develop a comprehensive view of what determines their decision-making about skills investment at the firm level requires extensive interviews with company managers, establishment visits and investigation of training content and context informed by the international literature. Policy-makers need to know a great deal more precisely what the *skills-in-production* are required for new jobs in expanding enterprises. Only the state can carry out this research satisfactorily. The scale and cost involved will be high, and a portion of the required information is considered confidential by respondent firms and departments of state as employers. They will not supply strategic data to private researchers but should do so to officials under confidentiality agreements. At present this remains a major gap in the research results essential for policy design.

C - The international literature shows that a *skills alone* approach to the devising of policy, and to training's contribution to development in general, is unlikely to be successful. Governments almost everywhere focus upon identifying scarce skills, their quantification, and the tactics judged best to expand training. This is carried out by exhortation or appeals, compulsory levies, penalties, regulation and the stated fostering of a training culture through "stockpiling qualifications" (Payne 2009: 489). Its one advantage is that as a goal it is easily stated, although almost invariably the coinage used is that of occupations or qualifications in demand *not* the skills and acquired aptitudes recognized in production. The former, for instance occupation categories, are proxy measures not adequately detailed for the range of decisions that have to be taken by employers and policy-makers. An alternative perspective is purposely to cast the policy and its accompanying research net wider. Skills training is then interpreted to include job design, work organization and its innovation, human resource management, and product market strategy. "[These] are crucial to the ability of organizations to mobilize their human resources and harness them to improved performance." (Payne 2009, already cited.) The international literature along these lines is growing rapidly; the following quotation is a representative example.

In the CIS [European Union] organizational innovation is broadly defined as changes in firm structure or management methods that are intended to improve a firm's use of knowledge, the quality of goods and services, or the efficiency of work flows...[We] propose a more specific working definition of organizational innovation for US firms that includes the following components – workforce training, employee voice, work design (including the use of cross-functional production processes), and shared rewards....In addition, as team work becomes more important workers need to acquire additional skills to help them function in a more interactive group environment. How one *measures* training investments is critical for examining its impact on economic outcomes such as productivity. Simple incidence measures such as yes and no answers to the question whether a

firm conducts any formal training programs for employees are unlikely to capture adequately organizational innovation. (Lynch 2007: 6-7, italics added)

D - Government and the skills training industry operate with an implicit model of the process of skills production which is questionable. The Setas are entrenched in that model and form a constituency. They all envisage decisions about training being taken that are fully or at least adequately informed about variables like the applicable costs, benefits and knowledge of the productive significance of the acquired skill resulting from the investment. This may or may not be true although unlikely. But judgement has to be reserved until the research called for above under paragraph **[A]** has been conducted. One generalization that awaits *testing* is that the closer someone in the skills arena is to the production process the less adequate that person considers this implicit model of training to be.

One strategic task in this field is *translating* evidence and arguments from one discipline to another. In this case it is between education and economics with their rather different methodological suppositions. Throughout this report we make an effort to explain the meaning and the implications for skills training when applying in discussion economic categories like market failure, public goods, information deficiencies, principal-agent problems and more. Understanding these concepts is essential because all policy actions in the field of skills training reflect a mixture of economic and educational considerations.

The negative associations about the concept of human capital amongst certain educationists already mentioned may be on the wane. But even its muted continuation would be unfortunate for policy formation because *investment* is the key idea in the economic analysis of education and training. Investment is the action of incurring an immediate cost in the expectation of a future reward. Without this idea as a guide we can say little sensible about both the efficiency and equity dimensions of the main theme which interests us in this report.

Investment decisions are ubiquitous in economic life, and they share a number of characteristics. Three of the most important are the following.

First, the investment is partially or completely *irreversible*. In other words, the initial cost of investment is at least partially sunk; you cannot recover it all should you change your mind. Second, there is *uncertainty* over the future rewards from the investment. The best you can do is to assess the probabilities of the alternative outcomes that can mean greater or smaller profit (or loss) for your venture. Third, you have some leeway over the *timing* of your investment. You can postpone action to get more information (but never, of course, complete certainty) about the future. These three characteristics interact to determine the optimal decisions of investors. (Dixit & Pindyck 1994: 3)

These observations apply with equal force to investment decisions to accumulate human capital, whether initiated by private employers, by individual workers or by the state. But

because our main interest is in Setas, in particular how best to assess their role as well as potential in the country's skills training strategy after a dozen years of operation, the discussion of background economic considerations concerning market failure, information deficiencies, difficulties in forecasting and the like is placed in **Appendix 2** after the main body of this report.

Structure of the Report

The lay-out of this report is as follows. While the main recommendations have already been stated, the next section labelled:

- **Introductory statement** spells out the constraints that apply to all national skills systems. These conditions are the source of difficulties facing any state policy aiming to *raise* the quantity and quality of skills acquisition in an economy. The third sub-heading:
- **Institutions and strategic policies**, covers a description of the levy-grant system adopted from international examples, as well as the role envisaged for the Setas as intermediaries within such a system. The result is inevitably a hybrid. Then to understand fully the obstacles faced by policy instruments that aim to raise the volume of investment in skills training requires an awareness of information and trust as peculiar commodities in a market system. These are liable to cause the market's failure. Hence the title of the fourth section:
- **Information issues in the regulation of skills training**. Understanding why information about training intentions is private in nature and not readily shared is the key to understanding the obstacles faced by intervention from outside that wishes to influence the rate of skills investment. This understanding appears lacking in existing assessments of Setas. The report's fifth section:
- **Context specific training issues in South Africa**, describes the possible differences between the South African skills system and those found in industrial countries where most research has taken place. We can use the international literature to illuminate our own problems only if we are reasonably sure that our occupational labour markets and our institutional settings are sufficiently similar. Where we do not know whether this is the case a gap opens up for the investigation that we urge government to undertake. A sixth section is devoted to the question *whether* one policy aiming at widening and deepening skills training can be integrated with another policy to guide industrial strategies, resulting in more effective outcomes?
- **Integration of skills training strategies with initiatives to accelerate industrial growth** sets out the obstacles that state agencies face in this endeavour. The call for policy alignment is widespread but seemingly little dedicated effort has been devoted to the question by researchers and policy-makers. There is a purposely brief:
- **Conclusion** devoted to a summary of the principal actions suggested to policy makers in this document. The two **Appendices** that follow have self explanatory content; the intention is to avoid cluttering the main arguments put forward in the report.

Introductory Statement

A widespread belief that Britain invests too little in vocational education and training has persisted for more than a century. Despite a succession of government initiatives to address the perceived problem, there has been little abatement of concern. (Stevens 1999: 16)

No constituency is satisfied with our existing skills training arrangements in South Africa. Periodically we see critical statements by the business community, trade unions, politicians and branches of government. At its most mild, criticism of what is in place describes it as disappointing. In addition as already emphasised, the problem we face in making an assessment of a key institution like the Setas is that in too many dimensions when probing their performance it soon becomes apparent that there is not sufficient empirical evidence. At present we cannot decide whether the presence of Setas make investment decisions by employers and employees in the skills arena more efficient or not. Alternatively put, do Seta activities assist employers, workers, training providers and the state to reach equilibrium outcomes which are higher in net welfare terms for *all* interest groups? A recurring theme of this report will be that government has to mount the missing research work to answer such broad questions.

Certain features of the NSDS are *new* in the sense that they came into being less than ten years ago. A proportion of these were not institutional or policy adaptations of labour market practices drawn from the previous era of apartheid, but had to be devised and instituted from scratch. Setas are one example. With a dozen years of experience to assess, modifications in their operation and structure may or may not prove to be necessary. Deciding what are the relevant considerations for change or not is the impetus for this report. Because the Setas are central to the present brief, and the existing evidence at best partial, we suggest specific issues on which investigation is required *before* policy change should be contemplated.

This report does not make recommendations about the status of *particular* Setas, nor about their amalgamation, nor about possible new and alternative institutional options. We emphasise that micro-level investigation is essential, particularly amongst representative private employers of all sizes, but including state employers, training providers and organised labour. Why large and small companies must be distinguished is that their attitudes and actions concerning training differ significantly. This is as true in South Africa as in the range of national systems documented in the international literature, over 40 of which use levy-grant mechanisms. (Ziderman 2009; NBI 2007; Singizi 2007; Nedlac 2007)

A research function placed on NSDS institutions, including Setas, appears to have been envisaged in the original design of the present training system in the late 1990s. But that function has not been carried out for reasons that remain unclear. (Freeman 2009; Kraak 2009; Hanson 2009; Green Paper 1997)

Setas are labour market *intermediaries*. They exist alongside bargaining chambers, industry associations and certification authorities, to cite other institutions that perform intermediary roles. As a group they are designed for *programmatically interventions* in labour market functioning, with a parallel group charged with *standard setting*. This is a useful characterisation for analytical purposes. All of these categories, including Setas, are institutional instances or applications of what the international literature terms *active labour market policies* or ALMPs. (Barder 2009; Osterman 2008; Autor 2008; Freeman 2007, 2009; Culpepper 2003).

We argue in this report that this conception of their intermediary roles in the system of skills training shows the way that Setas need to be assessed in achieving efficiency and equity goals. Otherwise it is too easy to concentrate attention only on their administrative functions and not their effect on training volume, on its quality and on their contribution to matching the supply to the demand for productive skills. A number of informants working as Seta employees or in the governance of Setas have asserted that a process of *mission creep* has added to the task burdens of Setas in the dozen years since they came into being. One example is the widespread expectation of Seta assistance in job placement for newly skilled workers and successful learnership graduates.

The economic analysis of skills training is straightforward in theory. Certain issues are discussed in more detail in **Appendix 2** to this report, so there is only a brief outline here to sketch a context for describing the roles performed by labour market intermediaries.

Given the textbook set of assumptions about the working of occupational labour markets in a competitive environment, both employer and worker will invest in training up to the level where the present value of the extra benefits yielded in higher wages and profits *equals* the extra costs of further investment in a unit of acquired skill. That point indicates maximum efficiency. But where there is *inequality* between these marginal values of the variables – caused by market failures of one kind or another - suboptimal amounts of investment are the outcome. The volume of training is lower than it might be. It follows that either the trainee worker or the employer initiating training or both will be frustrated from maximising their aspirations.

What can be said about this theoretical framework is that it provides a *conceptual base line* that identifies what has to be investigated empirically in real world labour markets. Representative examples of the questions that this model of the training investment process throws up are the following.

- (i) Will companies as well as other employing organisations in government and the non-profit sector be *reluctant* to invest resources in training workers if, once skilled, they are free to move to other employers so as to reap the higher earnings in line with their new higher productivity? This is the *free riding or poaching problem* that causes the skilled labour market to fail. This failure occurs if the switching between employers is initiated

by the non-training employer or the newly trained worker, so that the training employer fails to reap the additional benefits.

- (ii) Therefore does the acquisition of *general* or portable skills – valuable to a range of employers - have to be financed by the *individual* worker in training? If so either the worker has to pay course fees and subsistence costs directly, or does so through reduced cash wages and fringe benefits, as in apprenticeship agreements and unpaid training leave.
- (iii) This raises another cause of the market failing because the individual worker cannot readily borrow to finance the period of skills training. He or she usually has no collateral assets to back loan finance for the training investment, so lenders like banks are reluctant. Hence this is more accurately a *capital market failure* not a labour market failure.
- (iv) Will the cost of investment in *firm-specific* skills – valuable mainly to one or a few firms in an industry - be shared mutually between the parties? This means that the resulting productivity gains are divided between higher wages for the newly skilled workers and higher profits for the employer? Relative bargaining power is the determinant.
- (v) In practice the market often fails to mediate this division to the satisfaction of both parties. To correct the contractual process requires new institutional investment like setting up or extending the functions of existing bargaining chambers. By way of illustration, there is international evidence that skills training can lead to an increase in productivity considerably *higher* than the accompanying increase in the wage. If aware of this, workers might become de-motivated and reluctant to undergo additional training, which is a further contribution towards the market's failure. This is a realistic possibility. For example, the productivity effect of training has been shown to be twice as large as the wage effect of training in the UK, and even higher elsewhere. The question of motivation effects upon workers – making them reluctant to undergo training - is an empirical one and not answerable *a priori* (Dearden & Others 2006: 100; see also Asplund 2004 and Greenhalgh 2002: 257.)

In addition, there can be marked productivity differentials in the same line of production or sector, what are called “enormous and persistent measured productivity differences across producers, even within narrowly defined industries...in the US manufacturing sector, the average difference in logged total factor productivity (TFP) between an industry's 90th and 10th percentile [manufacturing] plants is 0.651...To emphasize just what this number implies, it says that the plant at the 90th percentile of the productivity distribution makes almost *twice* as much output with the *same measured inputs* as the 10th percentile plant.” (Syverson 2010: 1, italics in original.)

There are no equivalent South African figures on relative changes in productivity and wage payments and thus on the heterogeneity in productivity that is possible within sectors. This is one key area of applied research in skills training that should be initiated and sponsored by government. This recommendation is in line with the general injunction on micro-level research throughout this report.

Every employer is faced by the 'make or buy' decision problem in acquiring skills. They ask themselves: do we train a selection of our own workers? Or do we hire in the skilled labour market? Within the competitive market model used as a prototype in neo-classical economics, the internal logic is compelling; namely that it does not matter because the cost will be the same. The conceptual base for this inference – of no difference in cost - is entirely about the cost minimization exerted by the forces of competition within the *theoretical* model when one extra unit of "skill" is acquired.

But difficult implications are entailed when the field of enquiry is *applied* and not theoretical in its nature. In particular, an observer or researcher wishes to know:

- How suboptimal are the actual levels and quality of training provision that occur in the skilled labour market that is under scrutiny?
- How serious in practice is the resulting shortfall in production and the hold-up of skill-using activities in industries, sectors and the economy at large?
- What is the resulting loss of potential earnings to workers, profits to employers, lower prices and higher quality to consumers, as well as tax revenue to government?

Strictly speaking, only if and when these questions are answered can the next step be posed. That is what kind of governmental intervention is indicated as the best to compensate for the market's failures? To test any policy thoroughly, costs and benefits estimation must be attempted.

In the case of a levy-grant system, above a certain size there is compulsory participation by *regulation*. But we do not know what the null hypothesis is, what training would still occur if there was no legally enforced contribution. Some level of skills training would undoubtedly take place in the absence of interventionist actions by the state, known as the substitution and deadweight effects of a policy intervention. To allow for this effect of the market's reaction we need to derive an estimate of this default amount as a component of what *can* be measured empirically. This is a task for the econometric work that remains to be mounted in the area of skills training.

In the absence of a step-by-step validation procedure, it is tempting for policy-makers to assume that net gains will follow from *any* and every intervention. Such presumptions undermine the necessary discussion about the means actually required for raising the volume and quality of national skills training. There is local recognition of this:

The National Skills Act has vested the responsibility [for skills development] more squarely with organised labour and business, and we have to take stock of our SETAs. In the last three years, the SETAs spent just over R12 billion, and this year the National Skills Fund will have R6.5 billion, of which 80% will be managed by the SETAs. Looking back over the last three years, we are compelled to ask how much training, and of what quality the SETAs delivered for R12 billion. (T. Manuel, FEDUSA/NACTU Celebration, 1 May 2007)

There are major issues of research method at stake here which, given the policy-orientation of this report, we need address only briefly. Rather we concentrate on a limited set of questions in need of investigation by government. All of these are prompted by the available Seta documentation; by information obtained in interviews with people in the Seta sphere; and by selections from the international literature on skills training. As stated in the first paragraph, the main intention is to provide an *agenda* for guiding the investigation of our skilled labour markets. In particular, what is essential is a clear assessment of the roles played by the Setas as the main institutions of intervention brought into being by the NSDS a dozen years ago. This is an urgent task for government because it cannot be conducted satisfactorily by outside researchers lacking access to information from employers and workers at the required level of detail.

Institutions and Strategic Policies

The art of institutional design is to ensure that, despite the variety of motives of agents to whom tasks were delegated, the end result remains as close as possible to the original intentions of those who established the organisation.
(Martens 2002)

Our National Skills Development Strategy since 2000 is a hybrid. This is clear to anyone with knowledge of skills training systems in other countries. To mention examples that influenced local policy thinking, in the UK and France there have been episodes since World War II when government effectively compelled employers to increase expenditure on training their employees, using mandated levies and grants. In the UK this began in 1964 but was abandoned piecemeal by Conservative governments under Thatcher in the 1980s. Since then UK governments have used lesser means of intervention like subsidies and campaigns of exhortation, emphasising that employers *ought* to invest in skills in their own as well as the national interest. The Leitch Committee Report in 2006 is the most recent official intervention which has elicited much adverse comment. Wolf (2007) is a spirited example of the criticism levelled at this report.

The case of France is instructive from our perspective because its levy-grant system, introduced in 1971, still exists with its relatively high degree of compulsion on employers to train through payroll levies combined with tax penalties for not training. In comparison, South Africa has a levy-grant system with training investments for levy-paying firms that remain voluntary in that there are no tax penalties. The levy rate on payroll is also lower in South Africa at 1 per cent whereas in France it is 1.5 per cent.

There is also no equivalent to the Setas in the French case which started with one centralised bureaucratic unit to administer the system, with later evolution of bodies like training associations (Associations de Formation) and training insurance funds (Fonds d'Assurance Formation), both jointly administered by employers and unions. (Bishop 1993; Verdier 1994; Stevens 1999; Greenhalgh 1999, 2002; Culpepper 2003)

Our NSDS appears therefore to incorporate elements of more than one system, but it is difficult to establish the extent to which South Africa's hybrid is a result of deliberate institutional borrowing by policy-makers in the late 1990s. The documentation available is not explicit, and neither are local informants who have been consulted in preparing this report.

It is necessary to emphasise two of their functions for an accurate research perspective on Setas. First, they are institutions which fulfil a range of *administrative* and regulatory functions entailed by the current policy based on levy-grants. Second, they are expected, stated explicitly as well as implicitly in the initial phase of policy design, to compensate for *market failure* in the skills acquisition process. This separation of functions influences the structure of this report. Most comment to be found in print has focussed on the first set of functions, the fulfilment of their administrative duties imposed by the levy-grant arrangements. Yet it is a compelling presumption that the role of Setas in compensating for failures in training markets is of equal if not greater importance from a strategic perspective than is efficient management. The content of this report reflects that.

Setas entered debates about the national skills framework in the late 1980s, pushed by a range of purposes deriving from the prevailing conception of the main functions just mentioned. First, they were viewed as an institutional means to enable the new system to escape from the constraints on the training of apprentices under the old Industry Training Boards. This inherited feature was deemed both discriminatory and too narrow in its selection criteria and the conditions applied to accepted trainees. It also imposed accommodation constraints, being training capacity too low for the numbers of existing workers who wanted skill upgrading. In the new political space opening up, the labour movement and other interest groups considered it essential as well as feasible under a modified system for much larger numbers of rank and file workers to become skilled.

According to an active participant in the policy debates of the time, some ideas about the needed institutional architecture were borrowed from "Industry Training Advisory Bodies

(ITABs) in Australia, but we also learnt lessons from the Swedes and Germans and to a minimal extent from the British, but our SETAs had a range of functions that were different from the Australians...” (Adrienne Bird, personal e-mail communication, 13 December 2009).

Secondly, once a levy-grant procedure had been chosen, based reputedly on French, Malaysian and possibly other models, some institutional means had to be created in order to disperse training funds to companies, state departments and other employers who met the laid-down requirements. Also, some independent bodies had to be created to check on the validity and the quality of grant claims based on the training performed by employing organisations. These stipulations were formulated in various consultation forums from 1998 to 2000 involving organised labour, national and industrial employers’ associations and government.

One component considered at the time to be important was the exemption of small companies from the obligation to pay a percentage of pay-roll as a skills levy. Whether this consciousness of a subsidy raised the *net* amount of skills training by such small companies remains a question to be answered. (Singizi 2007; Nedlac 2007; Hanson 2009)

One constraint on training by small firms or SMEs that cannot be readily overcome by outside intervention is the shortage of replacement workers at these small operating scales when one or more trainees are withdrawn from production for skill upgrading. By international experience, “Small and medium-sized firms lack the organizational slack to improve their human resource systems.” (Osterman 2008: 131) Yet this absence of “organizational slack” in South African SMEs does not seem to be a problem perceived by the Setas as falling within their spheres of responsibility. It is also not at all obvious how they might intervene positively to loosen a constraint of this kind. Again this is a research gap to be filled.

The third reason to create Setas, the most important in economic terms as already mentioned, is the necessity for an intermediary organisation to redress market failure. Their role to this end has not been studied directly in South African skilled labour or occupational markets. But its importance is evidenced by the large international literature on the failure of market processes to achieve training equilibria in many national systems. That such sub-optimality exists widely is uncontroversial. (Stevens 1999; Greenhalgh 1999, 2002; Heckman 1994, 1999; Wolf 2002; Bassanini & Others 2005; Richardson 2007)

To increase skills useful in production, intermediary institutions of which Setas are an instance, have to *mediate* the different interests of the employer, the worker, the training provider and the state. In hypothetical terms they do so (i) by compensating for the negative effects of incomplete information; (ii) by lowering transactions costs for workers and employers; (iii) by providing finance where workers face a capital market failure because they cannot borrow to enter training; and (iv) by enabling the benefits of scale to be reaped

by individuals and organisations engaged in training. This is a formidable list of compensating functions to be performed.

Whether intermediating institutions, such as Setas, do counter market failures adequately in practice is a key issue in all economy-wide systems that contain bodies brought into being for this kind of labour market intervention. A combination of carrots and sticks is believed to be essential for any effective national efforts at corrections. The following statement about the United States situation is an illustration.

The most important of best-practice elements [in active labour market policies] is driven by an understanding that employment and training schemes work best if they connect effectively to both sides of the labour market, that is to employers as well as [worker] clients. In order to accomplish this, considerable effort has to be devoted to gaining knowledge about the human resource needs of the target group of firms and, in some cases, also to understanding how the programme can contribute to the firms' competitive success. In short, such programmes seek to appeal to firms as a business proposition, not as a charity, public relations or welfare effort...A strategy which relied entirely on training and economic development programmes working directly with individual employers or employer groups could achieve a good deal, but it would also be slow and incomplete in its coverage. A strategy which supported increased unionization and better wage and working-time standards would impact a larger number of employees, but it would lack the tools to help employers meet their responsibilities. Some combination of the two approaches would seem to be optimal. (Osterman 2008: 125-6, 132-3)

The *information* sources about market failure that face regulators are of particular importance in skill markets. They are explained therefore in the next section and, in more detail, in **Appendix 2**. In this appendix we also discuss other causes of labour market failure identified in the broader literature. As key areas of labour market functioning, these also await research by South African policy-makers to gauge the extent of market deficiencies and devise possible remedies in policy action.

Information Issues in the Regulation of Skills Training

The most serious knowledge problem facing an intermediary institution like a Seta are the *obstacles* to obtaining information about the intentions, investment decisions and willing collaboration of decision-takers in the sector. These are predominantly employers regarding their skills training commitment. This is markedly the case in those training systems where employers do not possess a history of shared or common knowledge about how *other* employers will respond to new incentives to cooperate in skills training. Therefore what is lacking is a history of prior cooperation, so government has the difficult

problem of devising ways to get private decision-takers to cooperate. In doing this it is faced with founding and then gauging the performance of new institutions that are designed to act as intermediaries and clearing houses for information, like the Setas.

In practice a key aspect of the information problem is in knowing the extent to which *non-training* firms will poach skilled workers trained by other firms because they deem it cheaper in cost, time and bureaucratic hold-up. The lack of such information for *all* decision takers, including intermediaries like Setas, our main concern, causes the potential for *market failures* in every national labour market. These failures are the main efficiency rationale for state intervention in the skills arena.

Recall that investment in skill acquisition is *not* at all like investment in a fixed capital asset. Investing in the exploitation of a natural resource or a building or a machine provides the organisation or individual doing the investing with complete control over the movement, use and location of the physical product. Profitability is not guaranteed but the risk is relatively lower. This is not the case with an acquired skill that results from investing resources in its production. Skills are *assets with feet* and respond at will to new incentives and opportunities. Thus outcomes can entail losses for the institutional or individual source of the resources invested. This is the resultant market failure.

In the international literature there is evidence that the poaching problem is relatively low in the *public* sector in industrial countries like the UK. This may explain why governments are slow to recognise poaching and its consequences for training behaviour as a major source of market failure. We do not know whether it is a serious deficiency of policy design in South Africa but it certainly warrants investigation.

Worker mobility is a much more serious problem for private employers than for the non-tradable public sector, where mobility is low. This may partly explain (but not excuse) why there has been insufficient recognition by government of the need for policies to restore training incentives for employers...Labour mobility between firms is likely to remain high as it is an integral feature of the British economy. Recent reforms to funding and provision of training have concentrated on exhortation to firms to raise their contribution to training, without redressing the poaching problem through any form of subsidy or inter-firm levy. Further attention must be given to resolving under-investment in training arising from high turnover in the British labour market. (Greenhalgh & Mavratos 1996: 141)

Information and trust are the key variables in question because they determine cooperation between all decision-takers, specifically employers concerning their decisions to invest or not to invest in skills training. A large literature on collective action problems has emerged in recent decades. While aspects of it are relevant to our research questions we do not survey it here. But certain observations are pertinent. First, where there is market failure

through free riding – poaching skilled labour rather than training it - a collective action dilemma arises. Theoretical considerations lead to the conclusion that no-one will change their behaviour unless an external authority imposes enforceable rules that alter the incentives faced by the decision-takers involved (Ostrom 2009). Second, unless information about the behaviour of others active in the investment decision context is available, individuals and organisations tend to defect from cooperation (Liverani 2009).

To get the relational information [private knowledge about intentions and trust] that they need to secure decentralized cooperation in skills training, public policy-makers must build links with private networks. The state needs to rely on an organization that actors [decision-makers] in the political economy trust sufficiently to reveal potentially sensitive information about their propensity to cooperate. In other words, the state needs to work with organizations it cannot control in order to have an interlocutor that is a credible, trusted intermediary and that has access to private information about the identity of waverers and the problems that make them uncertain about the returns to cooperation. Existing private-sector associations can sometimes perform these functions. If not, the state will have to create some sort of forum for information circulation and collective discussion, that it is not able to control. In the case of vocational education reform, the primary problem of coordination is among employers, so employers' associations are those especially likely to be called on by the state. (Culpepper 2003: 53)

This problem has been analysed for a number of countries, notably for our purposes in France and eastern Germany after reunification where the state introduced new policy efforts to boost skills training. Success was only partial. (Culpepper 2003; Greenhalgh 2002, 1999; Bishop 1993). This issue facing all levy-grant systems of skills training is the state's inability to access relevant information. It echoes the obstacles faced by South African Setas. Their primary objectives are to raise [1] the net volume of skills training, [2] its quality, and [3] the rate of satisfactory matching between skills demanded and skills supplied in occupational labour markets. As we argue throughout this report, but specifically in this section, we cannot make informed judgements about the performance of the Setas without understanding the role of information and trust as the key determining variables.

It means that in the absence of coming to know that which is inherently *private* information – through appropriate policy action and institution building by the state aimed at obtaining access to that information – policy-makers are reduced to *pushing on a string*. Whether this metaphor accurately describes the inherent problem facing the 23 Setas is one major research task, perhaps the most important one, to be performed by government in the pursuit of reform that leads to better performance.

Other information obstacles can be described briefly. In South Africa we have a limited choice of measured data on skills. It is either *occupations* from the Labour Force Survey or it is *education levels* or *years of education* completed from various census takings. There are also aggregated hybrids like *occupational levels* which contain skill slots labelled “top

management, middle management, skilled, semi-skilled” and so on (for example, in proposed legislation, like that for Employment Equity).

But few if any of these measures can identify skills with the precision that can supply answers to the questions important to employers, organised labour and policy-makers. What these constituencies want to know for their varying purposes are the following.

- How well do skills measured by *occupation or completed education* convey information about the kind and level of skill used in the work-place which employers want to know? The latter concept, skill competence in the production process, is what determines the investment decision by an employer, whereas the former concepts are best viewed as proxy measures of such competencies. The proxies might be adequate to the task of hiring or investing in skills training, but this is not a consistent process. This difference – *skill used* contrasted with occupation or educational level - might explain why employers are reluctant to base their plans and investments on the projections contained in sector skills plans (SSPs) produced annually by every Seta. It also might explain why *informal* training is often preferred, according to evidence from other countries like Australia, because it is “task-centred” even though it cannot be characterised and quantified accurately by planners. (Richardson 2007; Townsend & Waterhouse 2008; Misko 2008)
- Do existing measures provide usable information about worker *task discretion*, meaning the extent to which the performer of work exercises judgement and competence? This is a defining characteristic of any skill in the perspectives of both worker and employer. Historically, with the decline of Taylorist and Fordist thinking, worker discretion has become *more* not less important for productivity in so-called “knowledge economies”. But how it is identified, best measured and aggregated remains a challenge for the skills planner.
- Have the skill requirements of jobs, specified by sector as well as economy-wide, been rising in recent decades? A simple question but not simply answered because of the imprecision of measuring skills. *Skills deepening* is a recognised phenomenon in a range of industries but faces identification problems.
- “While the bias in the change in the structure of the [Australian] labour market is towards those with qualifications, the output of the education and training sector has been sufficiently large to result in skill deepening, with the proportion of occupational groups with a qualification increasing over time. So [the data] shows that the proportion of employed persons in managerial occupations with a degree has increased from 22% in 1996 to 32% in 2006. Similarly, the proportion in professional occupations has increased from 56% to 67%. However, we also see increases in the proportion of employed persons with a degree in occupations which are not typically thought of as ‘higher education’ occupations. The issue here is whether this ‘skill deepening’ reflects the changing nature of labour demand or whether it reflects either an oversupply of graduates or issues with the quality of some graduates or credentialism (by which we mean credentials being used as a filtering mechanism by employers in situations in which the job does not require that level of education).” (Karmel 2009: 9)

- Skill-biased technological change (*sbt*), already mentioned in this report, appears to be a universal phenomenon, with the quoted passage below about UK trends one of many that could be cited. But in which sectors in the South African economy is this trend bias most in evidence? There appears to be no completed research devoted to this question.
- “As for the other [demand] side of the market, there is a reasonable consensus that the demand for more educated and skilled labour is rising. The explanation most often given for this is technological change that is biased in favour of skilled labour. Evidence for the rising demand for skills can be found in the Skills Surveys undertaken in the UK in 1997 and 2001. These surveys show that between these dates, an increasing proportion of jobs required some qualifications, while an increase in required training times and an increase in the time taken to master jobs was also observed.” (McIntosh 2005: 170)
- The international norm is for the bulk of training to be initiated and financed by firms, two-thirds to three-quarters of the total when training volume is measured in a given time period. But then the majority of such training opportunities are not available to unemployed or displaced workers outside the plant or firm. So a skills policy in a country like South Africa has to aim at being an “inclusive policy option” containing *both* efficiency and equity goals. It has to aim at full-time workers, often members of trade unions who can exercise pressure for skills training; it also has to aim at part-time workers, job seekers and even workers active in the informal sector. By international comparison, particularly with countries comprising the OECD membership, this complicates design and execution greatly. A simple observation but it signals that cross-country borrowing of policies and institutions by one national economy like South Africa is no guarantee of success.
- The information obstacles faced in all skills markets by intermediating institutions like Setas, qualifications authorities like the NQF and SAQA, and indeed industry associations and trade unions are illustrated in the following quotation. These stem directly from the constraints on information flows that cause the relevant markets to fail and are *structural* in nature.
- “[An] information problem which can be regarded as causing imperfect competition in the market for vocational training itself [is] the information asymmetry between workers and training firms about the nature and quality of training. The fact that much vocational training is provided during employment, partly on-the-job, means that the market for vocational training is, in a sense, *hidden* beneath the labour market. Employers do not advertise prices for vocational training; instead, training (explicitly or implicitly) constitutes one of many elements of an employment contract. Employees do not have clear price signals to inform training decisions. Moreover, if it is difficult for them to ascertain the quality and value of a training course, both adverse selection and moral hazard problems may result, making employees unwilling to accept a reduced wage during a training period.”(Stevens 1999: 25, italics added.)
- New kinds of work competence like *influence skills* – communicating, analysing and persuading, viewed also as a component of *employability skills* which include personality traits desired by employers – have emerged as categories that require separate

recognition and measurement. To date there has been no research attention in South Africa devoted to these kinds of skills, nor to the sectors which make use of them intensively like services and tourism. (Machin 2008; Felstead & Others 2007; Davis & Kewin 2007; Bassanini & Others 2005; Schofield 2003; Wolf 2002)

Table 1 in **Appendix 2** shows the range of alternative measures of skills available in one large industrial country labour market, the UK. Data collection costs can be high, with the UK Skills Survey 2006 requiring 5000 interviews with workers in their home environments. That is highly ambitious, so even scaled down for a smaller statistical population if conducted in South Africa this would be a demanding item for a state research budget. This is a surmise that warrants investigation because the information obtained would be unique and particularly informative for policy purposes. It will be listed at the end of this report as one of the set of research suggestions for the Department of Higher Education and Training to undertake.

Context Specific Issues for South Africa

This section tables the key questions that need to be answered if government is to acquire the knowledge to decide on training policy. This is the micro-level research agenda to be undertaken as a prerequisite of successful policy design.

Donald Schon...once famously pictured professional practice as a high, hard ground overlooking a swamp. The high ground is the place of theory and, one might add, of policy. The swampy lowland is where practitioners – here vocational education and training (VET) practitioners – meet the learners. It is where the skills, knowledge, and attitudes they wish to see installed in learners are (or are not) acquired. The problems encountered in the swampy lowlands are messy and without definitive solutions. But, as Schon insists, these are the important problems. The solutions that practitioners contrive here make a difference to the learning and to the opportunities and lives of real people. (Figgis 2008: 6)

This metaphor expresses what policy formation requires. It has to be grounded upon the interpretation of empirical evidence collected for the purpose rather than on model-building. In addition, our labour market institutions and practices have a unique history so it would be rash to assume that the documented experience of other countries is an adequate base for devising new policies.

Questions about our national, regional and occupational labour markets – what are termed “country characteristics” - must include the following, although these are by no means intended as a complete set. They show that the research needed to inform skills training policy is particularly wide-ranging.

- Is our training policy pushing *for or against* (i) the dominant trends in technology, (ii) the differentiation inherent in the skills market, and (iii) the political forces that favour social equalisation? As already mentioned, a first comment is that technological progress in recent decades – the period identified varies by country – has shown a bias towards demand for skilled labour, a widely observed trend known as *skill biased technical change* or SBTC. Second, market forces dictated by rising consumer preferences for variety in developed as well as emergent economies increases the demand for labour with multiple rather than single skills. Third, given the inheritance from apartheid policies in the labour market which systematically favoured trainees drawn from certain groups, the pressure now for widening access to training is widely supported.
- *Fully-on-the-job training* refers to the acquisition of skills – “both theoretical and practical – where the majority of training is conducted in the workplace as part of the normal experience of the employee....[In Australia] there is an overall tendency to be in favour of fully-on-the-job training, with major advantages perceived to be financial incentives for employers and flexibility in how training is organised. A further strength is the acquisition of skills relevant to the trainee’s workplace, with incidental learning adding to this effect. For trainees, an important beneficial outcome of this kind of training is the increased potential for employment opportunities to be identified in the place of their learning.” (Wood 2004: 5, 23)

Is this trend evidenced also in the major sectors of the South African economy? We need to note that criticism of the “fully-on-the-job” variant of training concerns its effect in limiting access to a wider range of skills as well as constraining trainee interaction with peers, that is, with workers holding similar skills in branches of the same organisation and in other organisations. In the longer run this can retard the up-skilling process in the sector in question. (Misko 2008: 32)

- An allied research query is posed by a statement summarising Australian experience. “*Formal learning* continues to be the main route to recognised qualifications required for entry into jobs, especially regulated occupations. However, *informal learning* acquired through experience in work and life is the most frequently used of all the learning forms. Employers are mostly interested in results of learning rather than the form of learning. What they want are essential technical skills and knowledge required for jobs and for compliance with legislative requirements.” (Misko 2008: 4, italics added) We do not know whether this is equally true about South African skills training. But the research into detail urged throughout the present report should provide the answer already emphasised as an essential ingredient in revised policy design.
- Does South African skills training practice follow the established international norm in which two-thirds to three-quarters of completed training is initiated and financed by employers? Applicable to public and private sector employers jointly, it will be highly surprising to find the local situation to be different.
- “History tells us that no one can predict with any accuracy future occupational skills. The [Leitch] Review is clear that skill demands will increase at every single level [in the UK]...What could be clearer? It does, indeed, beggar belief that any central body can identify the needs and plan the training of a country with over 60 million people. This is

a country (and a planet), moreover, where both technical progress and market-driven changes mean that enterprises are constantly in flux, where people's jobs change around them, where employees move frequently within a workplace even when they stay with the same employer, and where the young, in particular, change both jobs and sectors often. Again and again, the Leitch Report argues for a 'demand-led' system that could reflect and respond to what people in the workforce recognise as valuable. But the mantra is just that – a repeated set of words that do not connect with reality." (Wolf 2007: 111-112)

Can this criticism of UK practice be applied to our South African skills development strategy with equal validity? **Appendix 2** of this report raises specific issues bearing on this question.

- Research on East Asian economies suggests certain relationships between openness to international trade and technology diffusion that lead to higher demands for skilled labour. This applies to middle income level countries in that region, but does the linkage exist also in the South African economy which ranks as "middle income"? For instance, is foreign direct investment (FDI) the predominant channel for the spread of technologies between countries, and is additional skilled labour essential to adapt and diffuse these innovations inside the host economy, say in South Africa?
- The relevance of these questions for local policy formation is obvious, particularly at the disaggregated firm level. The quest for answers should be high on the state's research agenda. "Our results are consistent with greater openness and [advanced] technology adoption at the firm level being associated with an increasing demand for skills, especially for middle-income countries. In particular, we show that the presence [of a country] in international markets through exports has been skill enhancing for most middle-income countries, although this is not the case for firms operating in China and in low-income countries...This is fully consistent with middle income countries having a higher absorptive capacity [including higher availability of skills]." (Almeida 2009: 19)
- During an economic downturn, like the one we are experiencing at present, we do not know what the net effect will be on the volume of skills training investment. The following are hypotheses put forward in the literature. They all require local, South African, testing.
 - The employment rate in a national economy experiencing recession declines because the preceding boom sucked labour into activities and sectors no longer at the same level of demand. "Former employees lose skills, contacts and attachment to working. These losses are permanent." (Giles, Financial Times, 24/11/2009)
 - "Recession may bring with it a 'bumping down' process where available jobs go to over-qualified people, while those who would normally have taken those jobs are squeezed out. This process arises because many employers will attempt to retain the skilled element of their workforce in whom they have made an investment [in specific skills]..." (Warwick IER 2009: 3) If this is true for the South African economy then an inhibiting effect on the volume of skills training is highly likely.
 - "[Because] the brunt of employment adjustment in the recession falls on reducing recruitment, especially of the young...average training incidence can fall in a

downturn as the result of a shift in the composition of employment towards older and more protected workers.” (Brunello 2009: 2)

- “[There] is a real danger that we will see the re-emergence of greater job polarisation...[which] will increase pressure on the government to cut back the rate of expansion in higher and further education on the grounds that the UK has an oversupply of graduates. The recession will indeed change the balance between demand and supply for knowledge-intensive labour – primarily by restricting new jobs for graduate-level entrants. As graduate unemployment rises and more graduates take any job going, the further expansion of further and higher education will look more questionable.” (Smith Institute 2009: 44) This argument applies to both intermediate and higher level skills training in the UK, but whether it is true for a labour market like South Africa’s with much lower average levels and proportions of such skills in the workforce is an open question. Again, it is an item for investigation if appropriate data on unemployment amongst higher and further education graduates can be assembled.
- “It is possible that the crisis may disrupt the steady improvement in qualification profiles observed over recent decades [in the EU]. Initial indications are that the immediate impact of the crisis may be increasing educational participation and qualification acquisition as individuals delay entry into a depressed labour market... [Yet in] the longer term, potential financial constraints may discourage investment in human capital. Policy-makers may need to take proactive steps.” (Cedefop 2009: 15) What may be an accurate proposition for the European Union may not be true for a middle-ranking country by per capita income and education level like South Africa. Again specific research is required.
- Is the skills training levy shifted *backwards* onto workers even though paid by employers in our South African system? Net wages available to workers will then be lower, but it also entails that *all* workers are paying for the training of *some* workers. Such redistribution if it occurs is a regressive outcome.

Integration of Skills Training Strategies with Policy Initiatives like Industrial Growth: What are the Issues?

Many written comments on the Setas call for an *alignment or integration* of skills development policy with industrial policy. None of these sources suggest how this might be done. The lengthy passage by Capelli below shows why such an exercise is now considered much more complex than in the past.

The complication is that in the old days, this [demand for human capital] was really seen as *an engineering problem*. Things were thought to be quite predictable. If you went back to the days of regulation, for example, where companies were pretty sure they knew what they were going to be making 10 years out or so, they could just work backwards and say this is our product demand 10 years out and these are the products we’re going to be making. These are the skills we’re going to need in order to produce these products. Let’s just work backwards.

The other assumption was that all your talent was *internal*. You would hire people right out of college or right out of school, you would put them in apprentice programs or development programs and then you would work them through those processes to develop the skills that you had. So, we had these big bureaucratic systems that were based on the assumption of *certainty*, that you knew what you were going to need and you could just work backwards and build to that.

The problem now is all that assumption of certainty is gone. Product markets change so quickly, people hop from company to company, you can't be sure what the demands are going to be and you can't be sure what the supply is, at least your internal supply. So, we have to think about this issue differently. There are a series of techniques that come from fields like supply chain management that are designed, specifically, to deal with this uncertainty...how to manage the uncertainty of the process...

There are some new things we see even in the U.S. on forecasting, and that is moving away from attempts to forecast talent demand to simulate talent demand. That is, give us a series of assumptions or scenarios and we'll tell you what the likely talent implications are of that. So, we're getting a sense of the robustness of our estimates around uncertainty. And we are seeing some things in terms of technology that allow companies to better keep track of the talent they have, keep records of who has what sorts of skills and find ways to match up people with projects. I'd say that's really the new stuff. It's not about talent development, where there doesn't seem to be much new. It's about moving people around, allocating the jobs and thinking about career paths. There are some new things there, a lot of it enabled by technology. (Capelli 2008: 1, italics added)

The purpose of this present section is to identify the obstacles to such policy integration in practice. These appear to be overlooked in the many calls for *alignment* and *integration* of different sectoral policies. In particular, the information required for policy makers to integrate these public initiatives into a single suite that is efficient is formidable, some might say impossible. The following set of questions illustrates what has to be answered.

- We need a policy intervention which asks: “[In] a given workplace in a sector or industry [subject to policy intervention], the enhancement of *what particular* types and levels of skill for *which segments* of the workforce will deliver improved productivity, in conjunction with what other changes or inputs?” (Keep, Mayhew & Payne 2006: 553, italics added) This statement about UK policy discussions, if correct, alerts us to the level of detail in the information input required by government's aspiration to intervene jointly in industrial as well as skill dimensions. If the required level of detail escapes the state in industrial countries then the state's information deficiency is likely to be of the same magnitude in South Africa.

- “Changes in product market conditions are the principal determinant of the strategies adopted by profit-maximising firms. Government policies of encouragement or inhibition operate alongside the market’s influences but are almost invariably subordinate. Both influences change the firm’s market strategies and therefore their utilisation of skilled labour. But producers (besides firms there are SOEs, government departments and non-profits) are not homogeneous. Some continue on the same strategic path as before, some aspire to compete in higher value-added activities, and some opt to deskill, particularly where the cost pressures are severe. So employers all have a degree of choice on how they use the skills of their workers, and what determines that choice is difficult to reach by policy steering. (Future Skills Scotland 2009; Almeida 2009)
- There is evidence – mentioned for East Asia in the previous section - that greater openness to international trade, to foreign investment, and to inward technology transfer *increases* the demand for skills in industrial as well as middle-income countries like South Africa. Yet there is little direct research locally on this question, given the general difficulty of capturing appropriate data and then showing associations between and within this set of variables. That is, associations or linkages that are not spurious have to be identified independently. But the calls for alignment between skill policies and introduced measures to encourage industrial growth shifting into targeted sectors, for instance, into industries that are unskilled labour absorbing, require precisely such information at a high level of detail.
- A general criticism of skills policy interventions is that they tend to be *coarse and aggregated* in their terms of analysis: “Thus the role of skills as a ‘magic bullet’ that can address issues of productivity and competitiveness is still being overplayed, and policy continues to operate at levels of aggregation that render interventions clumsy and expensive [in industrial countries].” (Keep, Mayhew & Payne 2006: 554; Asplund 2004; Nicoletti & Scarpetta 2005)

If correct, the existing research results internationally show that the linkage between product market behaviour and choice of skilled inputs in production is a *flexible coupling*. There is both “within-industry” and “between-industry” variation. Thus at industry or sectoral level there is a mean value perhaps calculable for the hypothesised link. But that is hardly of use for policy targeting because the *types* of enterprises by product and skill-use strategy will not be identifiable with the precision necessary to provide insight.

- “The high correlation between the measures of product strategy and skills at sector and establishment levels confirms the existence of some form of correspondence between product strategy choices and skill requirements. However, the sheer *diversity* of such correspondences between and within industries shows that there is *no question* of an entire national economy (or even regional economy) being locked into any single kind of ‘equilibrium.’” (Mason 2004: 45, italics added)
- One more joker in the pack is the trend towards skill-biased technological change (SBTC) already raised. It is widely documented internationally on the basis of considerable

evidence, including in South Africa (Fedderke 2006). It features the predominance of *skill complementarity* in technology; or better put, the complementarity within technology advances and the *skill-deepening* character of investment in such new technology.

A number of SBTC implications have been established. Two are raised here. First, recognising the specific features of different industries, “particularly their intrinsic technology intensity”, suggests that between countries the patterns of skills development and deployment may *differ widely* over both time and space, “depending on the position of the economy in which they operate in terms of the international division of labour.” (Perugini & Pompei 2009: 124)

Second, a similar but separate question to that posed earlier, is the promotion of widening and deepening skills investment on policy grounds that include the pursuit of equity equally with efficiency. Affirmative action in hiring and BEE are local vehicles. This entails having to *push against* the tide determined by (i) markets growing strongly in high value-added goods; (ii) by technology biased in favour of rising skill intensity; and (iii) by the consumer culture seeping in from industrial countries where buyers of consumption goods have per capita incomes on average ten times higher than in South Africa.

- Finally, the complexity of forecasting skills needs at any level in a national training arena is demonstrated in **Appendix 2**. In graphic terms, Figure 1 there shows the various steps, the kinds of data, the levels of disaggregation, and the assumptions needed for projecting skills demands. First, while it is adapted from a UK example there is no plausible reason to assume that a South African exercise would be any simpler and less demanding of detailed information. Second, in any policy initiative to link together different policies, unless complex evidence is marshalled and interpreted convincingly, policy makers simply have to *assume* that, for instance, industrial strategies in *particular sectors* have purchase and are successful in changing product mixes and production processes. Inherent uncertainties like these are major stumbling blocks in the call for policy alignments between industry and skills objectives.

Conclusion

The main messages of this discussion can be summed up without distortion.

- First, no policy reform, whether it leads to minor or major changes, is justified without a concerted effort at obtaining answers to specific questions raised by the evidence found for skills training systems in other countries. Such evidence is not available in South Africa.
- Second, this research can be conducted successfully only by government. Given the detailed scale and scope of the research, as well as the likely confidentiality of an enquiry that pertains mainly to employers in both private and public sectors, government is in the best position to do it.

- Third, linked to the preceding observation, it is more plausible that our training system is *like* other countries rather than different and unique. If so we can infer that similar holdups and bottlenecks in the production of skilled labour exist here. By itself this is not a sufficient basis for the assessment and reform of policy. Rather we require detailed information about behaviour by all groups in our skills arena.
- Fourth, policy makers and the skills training industry operate with an implicit model which appears faulty. They project decisions as taken fully or adequately informed about the relevant costs, benefits and knowledge of the productive significance of the skill that results from their investment. This does not appear to be true in practice. If it were the case then the policy problem would reduce to raising the efficiency of the levy-grant administration by Setas. Similarly, the ancilliary functions of Setas and other bodies, like responsibility for the integration of on-the-job training with institutional learning in FET colleges, industry training institutes and the like, along with the certification process for skills, are treated as matters that require finding methods of efficient administration. Yet as argued in this report, this approach ignores the problems inherent in forward-looking investments under uncertainty. These concern information flows between the takers of training investment decisions, trust amongst reciprocators, and understanding of the pre-conditions for cooperation.
- Fifth, there is no justification for the present emphasis on skills *planning* at sectoral and national levels. Planning in the sense of skill needs projections play at best a minor role in raising the volume of investment in training, in the matching of skills targets to vacancies on the shop floor, as well as within the production arena as a whole. This circumscribed role for planning applies equally to anticipating the bottlenecks said to result from skill shortages. By way of illustration, even the most successful Setas do not claim that their *sector skills plans* contribute to higher volumes of investment in training. Similarly, attempts to identify skill shortages at the national level emphasised by politicians and bureaucrats appear to play no visible role in assisting investment decision-taking in skills training.

APPENDIX 1:

A Synthesis of Documented Assessments and Recommendations for Changes in the Functions of SETAs.

This section of the report lists those readily available sources that have passed judgement on the Setas since their formation in 2000. The order of presentation is roughly by the thoroughness and length of the document's content. What is summarised are selected points of criticism of the Setas and the suggested policy changes. There is no attempt to be comprehensive in coverage, but these are likely to be the most important published suggestions for Seta reform.

***** Singizi 2007; Marock & Others 2008.**

This Seta Review was conducted by a sizeable team.

1. An admission in this report stated early is that "there has not been a verification process of the statements made by Setas [in interviews and in documents]." (Marock & Others 2008: 6) Three examples are given. First, there is no test of whether the skills training stated as achieved in the respective SSPs meet a general consensus amongst training companies and institutions within the relevant sector that "scarce skills priorities" are being achieved annually; second, where a Seta ETQA did not meet all quality assurance criteria there may have been "contextual reasons" for this failure unknown to the investigating team; and third, "the team relied on self-reporting [by Setas] and [despite] attempts to triangulate the data this was not always possible." There is no way to assess the significance of this overall constraint on the accuracy as well as coverage in this report.
2. There are ambiguous statements which weaken the recommendations in what is an ambitious report. One example is the following. "The delivery of Learnerships is not included as one of the core criteria [in assessment of Seta performance] although it is a function of the SETAs in terms of the relevant legislation. This decision was made because of the view that the focus should be on whether the education and training that is facilitated by the SETA meets the needs of the sector rather than on whether Learnerships were provided. This would mean that if a sector really requires internships to achieve competence in terms of scarce skills then this should be the focus of the SETA rather than any specific form of delivery. This does not suggest that learnerships are not important but recognises that it is only one of the routes possible." (Marock & Others 2008: 7) This statement is ambiguous. Given the candid admission earlier that Seta supplied information could not be tested, the question arises whether an outside body should simply accept what "the needs of the sector" are asserted to be, and whether it

“really requires internships”. Setas may state what they genuinely believe to be the case but there is no simple way of assessing accuracy and relevance.

3. The report evidences ambivalence about the planning exercises which Setas are required to perform regularly. “[This] study...highlights the complexity of the requirement for skills forecasting. Moreover, the study has suggested that there are real weaknesses in the planning system and that there are a number of concerns pertaining to the planning process including:
 - The limits of employer-level data and, in particular, quantitative data, are [should be] recognised in modelling skills needs.
 - The concern that employers reflect data in their WSPs that allows them to reflect achievement against plans in their ATRs [Annual Training Reports], rather than reflecting real needs, as well as actual training conducted in the workplace.”

Two comments are necessary. First, there is no way an intermediary body like a Seta can decide on “real needs” in production. Secondly, as argued strongly earlier in this present report, there are no satisfactory ways of such a body identifying and aggregating “actual training conducted in the workplace.” But that seems the prevailing presumption here and in other sources of comment on what the Setas are not doing but should be doing.

4. The Singizi Review makes a number of observations and suggestions that warrant either detailed investigation or unambiguous support for policy modification.

First, the list of goals of our national training system is lengthy and complex, yet the original documentation contains no explicit ranking or prioritization of these separate items. “[A]ll the objectives are given equal priority in the National Skills Development Strategy and our analysis suggests that, in specific instances, in the course of implementing the Skills Development Strategy, some of these objectives operate as competing objectives.” (Marock & Others 2008: 13-14; Singizi 2007: 13-14, 201-4)

Second, in the ten year period of their existence a process of “mission creep” has faced the Setas. “[The] scope of functions undertaken by the SETAs has increased in significant ways since their inception; and they appear now to have taken responsibility for the achievement of all the objectives outlined in the Skills Development Act, including those that were previously assigned to other institutions. Some examples of these additional responsibilities include the following: training career guidance counsellors; recruiting learners directly into learnerships; as well as ensuring that learners are placed in the workplace; and promoting SMME creation...It is clear from the [Singizi] study that the SETAs collectively bear a mandate that is very high in scope, but without the commensurate capacity to undertake the various functions arising from this scope.” (Marock & Others 2008: 16, 18; Singizi 2007: 204-6) This observation about steadily

expanding functions in the ten years since their institution is confirmed by a number of the Seta officials interviewed in November 2009, in particular from Fasset, Merseta, ETDP and MQA.

Third, the failures of individual Setas have acquired a high profile in public perception; that is, financial and governance performance has been negative, and publicised as such, in about a third of the Setas to date. “[Our] review does suggest that there may be a situation prevailing whereby the serious shortcomings that are confined to a limited number of SETAs are shaping public opinion of all SETAs.” (Marock & Others 2008: 20)

Fourth, to improve the governance of Setas the Singizi Review proposes that the number and seniority of government appointees to every Seta board be increased. This is “to overcome the issue of the SETA boards failing to realise a coherent identity, and rather operating as a bargaining council. It is suggested that to support the effective functioning of the boards it will be of immense value if the government presence could be greatly strengthened (in seniority of representation and that they, in some cases, have higher numbers currently allowed for in the constitutions).” (Marock & Others 2008: 20)

This proposal is likely to prove contentious, an impression gained from interviewing senior officials in certain Setas for the purpose of preparing this report. Uniformly they described the average state appointee to Seta boards as passive and making no contribution. In addition, it is highly likely that there is a severe shortage of public servants with the technical, financial and marketing skills that would assist the survival of enterprises and other training organisations subjected to market pressures. But these are precisely the skills and experience necessary to guide Setas in the formulation and application of training policy.

Fifth, the Seta Review acknowledges the imprecision of the planning process which brings into being annually the Sector Skills Plans that are never evaluated as fulfilling certain, usually unformulated, purposes. But it is unhelpful to describe what is needed as reform towards “meaningful planning [and] a need to fine-tune the existing NSDS” without making clear what this entails. A positive suggestion is to scale down existing SSP commitments because “it is clearly most prudent to adopt a minimalist approach to sector skills planning...aimed at exploiting economies of scale and [to] account for the overlaps across SETA sectors.” (Marock & Others 2008: 25-6)

But such suggestions are vitiated by a fundamental lack of clarity about the role actually played by the periodic production of 23 SSPs. Is there concrete evidence that these aggregations and projections of skill shortages perform a facilitating function? That is, do they raise the volume and quality of investment decisions – mainly by employers but also

certain employees – in their commitment to skills training? This is not posed in the discussion.

Sixth. Finally, there is an assertive discussion in this Singizi review about the quality assurance functions performed by Setas. In particular, the question is raised whether Setas as intermediary organisations are in a position to perform these tasks adequately, although no evidence is provided for strong judgements like the following. “Many [informants] in the course of this study have expressed doubt about whether SETA ETQAs should remain a SETA responsibility, on grounds that the resources required for accreditation and related processes may be ‘crowding out’ what is perceived as ‘core business’ of SETAs. There is incontrovertible evidence that SETAs are not succeeding in performing their ETQA functions credibly. This is a serious threat to the skills development system, which is predicated on the assumption that the functions assigned to the ETQAs are effectively carried out...This matter warrants urgent and purposeful action.” (Marock & Others 2008: 28)

One essential stipulation is that employers are the most important constituency to be consulted about the reliability and independence of the skills assured as meeting minimum standards of competence. There is considerable evidence, for instance from Australia, that quality assurance can be the Achilles heel of many national training systems. (Mawer & Jackson 2005; Richardson 2007; Karmel 2009; Beddie 2009)

***** Nedlac 2007**

This assessment of “SETA performance and functioning” combines independent research by a Nedlac team together with a summary and digest of the Singizi Review discussed above. The present account will mention only issues and suggestions that appear original and do not repeat the contents of the Singizi report. But it is not easy to disentangle the two sources in the Nedlac text.

The strengths and limitations of this report are the following.

- Consultations took place in 2007 with “the Nedlac constituencies, SETA CEOs, SETA Board members and senior management to verify and get additional detail on the key problem /challenge areas...and an interactive interview research process with SETAs and Nedlac constituencies [took place].” (Nedlac 2007: 4) None of these are clients or recipients of Seta services likely to adopt an objective and critical stance.
- No evidence is cited in support of claims like the following. “Work undertaken by the Department of Labour post March 2005, and which has had a demonstrated positive impact on SETA performance should be considered by Nedlac constituencies in respect

of all recommendations. For example, the establishment and utilisation of the Organising Framework of Occupations has enabled a more accurate identification across SETAs and government departments of scarce skills and occupations requiring prioritisation for acquisition of skills.” (2007: 6) The period is too short to show success. In addition, all that the OFO can plausibly achieve is more *consistent* definitions of occupations used as proxy measures of skills in documentation. What are the criteria applied to provide underlying support for the assertion that scarce skills and occupations are more accurately identified with the deployment of OFO?

- First, a charge similar to that in the Singizi Review is that “scandals and failures” publicised in the media are confined to a minority of Setas but tend to be generalised to all Setas illegitimately. Second, there are “fundamental misunderstandings of [the Setas’] role and purpose. For example, the quality assurance body for Further Education and Training, Umalusi, criticising the ‘narrow’ focus of SETAs on skills training and expectations that SETAs are a vehicle for solving a host of social, developmental, and work-related ills, [is] evidenced in media reports that the Sector Employment and Training Agencies are not performing.” (2007: 7) If true then the extent of such misapprehensions should be studied in research and the results cited to initiate reform.
- Under the heading of “Constituency engagement”, the Nedlac Report argues the following. First, in changing the “SETA landscape” change should be incremental not radical to ensure continuity in the existing arrangements. Second, Setas should be “aligned with the emerging industrial sectors as set out in the new industrial strategic framework. This might result in 14 SETAs, each focussing on a specific sector.” Third, Setas might be “clustered into five broad sectors...to collaborate within these sectors to share services and achieve economies of scale.” (2007: 17-18)
- The first of these suggestions is commonsensical in the absence of the extended research urged on government throughout the present Chet report. But the second two proposals here need much more evidence as well as argument. Why 14 or 5 Setas? Also, the popular slogan of *alignment* of skills training policies with industrial policies has not been investigated and the considerable obstacles identified, as is argued strongly in another section of this report.
- Apart from *employers’* demand for simplification in the functioning of Setas – “fewer success indicators, a clearer focus, simpler and more efficient methods of delivery” – Nedlac records that this interest group expressed concern that internal clashes were undermining Setas. “There is a perceived conflict between ‘independent’ boards and the management role of the DoL over SETAs. There is a concern [by employers presumably] at the calibre of board members and the quality of board meetings...Something needs to be done to improve the quality of Boards, and their accountability.” (2007: 20) This judgement was echoed by certain Seta board and management members consulted in Johannesburg in November 2009.

- “It has not been possible to obtain a detailed position from *organised labour* [although] the main concerns relate to functionality.” This is not explained. Further, there is ambiguity for policy-makers in statements like the following. “There is concern about narrowing of the focus of Setas, as the unions see Setas as having a wider role than that of only dealing with skills development in support of industry or formal economy needs. However the unions want to see improved performance and if other role players and partners can be identified to share the developmental goals set out in the NSDS, particularly through NSF supported interventions, then there would be a support for a refocusing of SETAs.” (2007: 21)
- Concerning the “Performance monitoring and management” of Setas there are provoking suggestions that warrant detailed investigation by the Department of Higher Education & Training. Only one example is quoted here to illustrate the interpretation puzzles involved. “Given public and stakeholder perceptions and reports of poor SETA management, poor service delivery and poor financial management, a number of SETA CEOs and constituencies noted that the DoL is not implementing effective performance management and that there are no real consequences for poor performance. In this regard, SETA CEOs and constituency respondents acknowledge that stakeholders are not adequately addressing performance problems either. Rather they are generally perceived to be either not playing an active role in the SETAs or are engaged in trying to micro- rather than strategically manage them.” (2007: 48) The language of “constituencies” and “stakeholders” does not provide the precision needed for the reform of regulatory practice and even more far-reaching change in the make-up of institutions like Setas.

*** Business Unity South Africa (BUSA) 2009

In May 2009 BUSA received a presentation on “Skills Development in South Africa.” The performance of the Setas was one component of the document prepared by Resolve Workplace Solutions, along with proposals for consideration about desirable changes in existing institutions, including the Setas. In this Chet report only selected topics will be raised where they appear to warrant the attention of policy-makers.

So items from the BUSA presentation are selected with the first sections of the present report in mind. More specifically, this concerns the inadequate information and incentives that cause market failure in the skills training arena, which then has to be compensated by policy action through intermediaries like Setas. It must also be recorded that BUSA in November 2009 had still *not* committed itself to accepting or rejecting these proposals. This is an additional reason for treating the document briefly.

- The snapshot of skills development presented is predominantly negative. While “skills development revenue has increased at an average rate of 43% over the past 3

years...[the] average spend per learner per annum [was] approximately R40, 176...[and] an average completion rate of 34% for all learnerships implies system 'wastage' of up to R2.61 billion...[So] the number of employed learners impacted...is approximately 1% of a formal sector workforce of 9 million...[and] given an overall SETA surplus of R1.31 billion in 2007, the opportunity cost of not spending the surplus amounts to training of an additional 32 538 learners...Mandatory Grants are impossible to evaluate given limited reporting by companies, SETAs and the Department of Labour. There is some evidence that declining numbers of employers are recouping these grants, which means the mandatory grant is no longer increasing enterprise participation in training." (BUSA 2009: 7-8)

These figures are not placed in a context and so are difficult to assess. For example, is a mean amount of R40 000 spent per year on each learner too high or too low? We have no way of judging. Another weak assertion concerns mandatory grants. No supporting evidence is provided for a decline in employer claimants occurring, and the inference that "the mandatory grant is no longer increasing enterprise participation in training" reads like a non-sequitur.

- "Key SETAs are marginal to major economic and development initiatives. Many SETAs appear to classify skills as 'scarce' in order to push large numbers through learning programmes under their jurisdiction...the system lacks a customer orientation...SETAs are accused by employers of being overly bureaucratic and even some large employers have simply opted out of the system. A number of business constituents seriously question SETAs' ability to effectively administer the skills development system...Poor corporate governance has undermined strategic focus, operational effectiveness, impeded implementation and compromised the credibility of many SETAs, the NSA and NSF." (2009: 9,11,12) The reader has to assume that these judgements are based on consultations with BUSA member companies, but how the sample was selected, questions formulated and results aggregated for qualitative statements cannot be gleaned from the presentation document.
- "SETA mandates should be simplified to allow prioritisation of public investment in the skills development agenda allowing them to 'do more [with] less' ...Principle #4 [Guiding Principle]...Emphasizes a return to the basic SETA mandate of being customer-oriented skills intermediaries that engage and gain the confidence of employers and labour, and facilitate quality development of sector skills priorities. Emphasizes a simple, cost effective and efficient SETA and NSF structure that focus on developing quality priority skills which results in the NSDS becoming the main conduit for skills formation in the country. (2009: 16-17) Admittedly expressed as a 'principle' this sample, drawn from a set of stated 'principles', reads like a wish list. The later "Recommendation 4: Improving SETA Performance" (2009: 28) is in the same vein and is not reproduced here. It is

unlikely to be informative for policy-makers in the new department responsible for skills training. A final comment is that this presentation contains a number of suggestions for new bodies to be brought into being, for instance, a Human Resource Development Council. But unless and until BUSA lends its support to *all* these proposals there is little reason to consider them seriously.

***Hanson 2009

This “briefing paper” written by Mike Hanson was commissioned by the NSA. This is not stated in so many words, but an initial draft “was discussed by the Executive Committee of the NSA on 27 March [2009]...Amendments have been made...”, so the NSA one infers to be the commissioning body. (DoL/NSA 2009: 2) This contribution to Seta discussion contains interesting ideas and should be read by all policy-makers. Here selected statements are supplied with comments for consideration.

1. The paper sets out to examine the question what should “determine the number of SETAs and to define the sectors for which they will be responsible – the so-called *SETA landscape*.” To do so it is divided into two sections: “The Climate of Opinion...[and] Key questions for the NSA.” (2009: 2)
2. After quoting Minister Manuel in 2007, “It is perhaps worth mentioning that Finance Ministers around the world tend to dislike training levies and hypothecated taxation arrangements.” But no reasons are given.
3. “In the context of this briefing paper, the question [key issue] is – can the functioning of SETAs be improved by increasing or decreasing their number and amending their scope of coverage?” (2009: 4)
4. “In 1999, the NTB/NSA agreed five principles, which together with the provisions of the Skills Development Act, were used to guide the debate about the number of SETAs and their boundaries. These were: **Fit for purpose**: the boundaries of SETAs should be determined by their functions...**Enterprise-based**: the functioning of SETAs and the levy system should be based on enterprises. Employers pay the levy; the basis of SETAs’ work was to interact with employers, e.g. on the identification of skills needs; an enterprise is a comprehensible functioning unit. **No special interest SETAs**: proposals had been made for SETAs to be established with the remit of looking after the skill needs of designated groups...**Viable**: in considering proposals to establish a SETA, three issues of viability had to be considered...[i] sufficient levy income...[ii] the business plans, strategies and organization of a proposed SETA should demonstrate how functions would be carried out...[iii] the proposed SETA must command stakeholder support...**Comprehensive**: the SETAs must cover all sectors of the economy, both public and private and no exemptions were to be contemplated...Are these principles still valid?” (2009: 5) “A sixth principle that might be added is: **Skills demand**: there are core skills that are common... SETAs will need to collaborate even more on the design of skills development programmes to avoid

duplication across sectors...some re-grouping of SIC Codes across SETAs will cut out duplication, reflect progressive skills training and strengthen the capacity to anticipate demand.” (2009: 6)

5. “A recurring theme of NSDS Conference discussions, the Nedlac Review, ASGISA-SA discussions...the ANC’s 52nd Assembly in December 2007, is the issue of the alignment of SETAs with emerging industrial strategies...The work of the Quality Council for Trades and Occupations...and the design of skills development programmes are based on occupations...Experience [of 10 years of implementation of the strategy] suggests...that the ‘system’ is frustrated by a capacity deficit at all levels.” (2009: 6)
6. “The NIPF (National Industrial Policy Framework) is designed to contribute to the ASGI-SA initiative and it has identified five broad sectors, which should attract Government assistance: **Natural resource based, Medium technology...Advanced manufacturing...Labour intensive sectors...Tradable services...**[and] the NIPF Implementation Plan (August 2007) listed four priority industries for immediate intervention: Capital/Transport equipment and metals, Automotive assembly and components, Chemicals, plastic fabrication and pharmaceuticals, [and] Forestry, pulp and paper and furniture.” (2009: 8)
7. “Would realigning 23 SETAs into five conglomerations, as outlined in the NIPF, improve their capacity to deliver quality skills programmes? Are the five sectors sufficiently precise? Would such broadly defined sectors satisfy the requirements of the Skills Development Act that sectors should use similar processes, materials and technologies and offer the potential for coherent occupational structures and career pathways? Is the issue about aligning sectors or [about] ensuring that institutions, initiatives and programmes collaborate together?...How are the NSDS, sector skills plans, grant allocating strategies and broader government objectives reconciled? Does a radical merger of SETAs assist or obfuscate? (2009: 9-10)
8. “The major issue raised in the Singizi Report, and echoed in the Nedlac Review, is to define more clearly the precise role of the SETAs and the priorities they should follow. Simply stated, should SETAs be skills development change agents and centres of information and [give] technical advice to their sectors? Is their priority the first or the second economy?...It seems clear there is unease about the effectiveness of the SETAs as a whole. The ANC’s documents...[and] the Nedlac Review makes no specific proposals...Thus whilst there is unease...there is no unanimity about changes in the landscape of SETAs, or the extent to which possible changes in the number of SETAs might influence improvements in their effectiveness and efficiency.” (2009: 11, 14)
9. “The key question that underlines all of the above discussion is this. Although some SETAs perform well, others do not. Whilst criticism of SETAs may often be misplaced, after nine years of operation, the potential benefits of the skills development legislation have yet to be realised...the SETA ‘system’ has failed to deliver as a whole, primarily because of weaknesses of governance and management...[There is] provision for a SETA to request assistance from the Department [of Labour] to assist it to fulfil its functions.

In practice, no formal request of this kind has been made and it is arguable if the Department has the resources to respond to such a request in an effective way. Given the generally poor public perception of SETAs, which tends to tarnish the reputation of even the most successful SETAs, is there scope for encouraging them to take collective action...? A model might be a SETA Association, co-managed by the SETAs, with 'external' non-executive directors, with the following functions:

- Design and implementation of training programmes (e.g. induction for staff and Board members)
- Organization of topical workshops
- Co-ordination of clusters and working groups
- Change agent role, to provide support and access to technical assistance to SETAs
- Provision of a coherent and co-ordinated 'voice' for SETAs in dealing with government, media etc...

Such co-ordinating bodies are common in many sectors and are a feature of international skills development systems." (2009: 18, 20)

The paragraphs numbered [1] to [9] do not aim to summarise the DoL/NSA paper. What they do is reinforce certain suggestions in the present report. First, detailed research initiated by the department now responsible for skills training, Higher Education and Training, is essential before any policy decisions about Setas, one way or the other, can be justified. Second, this paper reinforces the earlier arguments about the set of problems posed for Setas by information gathering and information flows within the system. Third, it refers clearly but insufficiently critically to issues commonly posed by the sources devoted to Setas that have been consulted for the present report, and certain of them summarised in this section. Examples are assertions about "capacity constraints" that face Setas – and the Department of Labour – without providing clarity or supporting evidence. The same applies to claims that "economies of scale" exist in the production of skills in high demand. Again evidence is simply lacking. A third example of a claim that generates doubt is the reiterated call for "alignment" between skills training policies and industrial policies. This is raised elsewhere in this report, but the plain fact is that no-one in the skills training arena appears sure how to carry out this component of the national strategy.

*****National Business Initiative (NBI) [Marock & Fisher] 2007**

The research work backing this report was conducted by Carmel Marock of Singizi and Glen Fisher of the NBI. In what appears to be an effective survey of skills development practices and attitudes, 106 companies were consulted, across seven sectors arranged by SIC codes for the purpose (Standard Industrial Classification derived for South African application from the ISIC). A focus on employers is rare and makes this study more valuable than usual for the reasons advanced throughout the present report. Employers are by far the most important decision group in the skills training arena, which makes them the prime movers in any reform of the present system.

“ It is noted...that while these companies do represent a significant segment of particularly ‘big businesses’ in South Africa (only 9 companies in the survey cannot be considered large companies), the findings cannot be generalised across business. Specifically in terms of small businesses, it is imagined that these trends may vary.” (2007: 7)

“The number of companies that either feel that the SETAs are not supporting the skills priorities of their company *at all or only somewhat* [together 47%] is given expression in the comments that were made about the SETAs...at least 5 companies spoke to the research team directly, and stated that they felt that their SETA was not at all supportive, but that they were reluctant to put this in writing, as this could potentially further complicate their relationship with the SETA.” (2007: 61-2)

“The need for the SETAs to be more proactive about quality provision was highlighted...SETAs [need] to have both a more transparent, as well as more focused approach to funding...it was suggested that SETAs often fail to fund priorities and the following areas require more attention:

- There should be increased funding for sectoral priorities, and this should reference against bodies such as JIPSA. Particular priorities that were expressed include technical skills i.e. apprentices and engineers, as well as the challenges indicated below.
- Within the context of the skills pipeline, a number of companies indicated that there is a need for increased funding for the development of student educational skills in mathematics, science and accounting.
- This issue...is linked to the concern that students who leave the education system do not have the requisite underpinning knowledge. This represents a serious challenge , both for the learners to successfully complete and in terms of the system with regards to where individuals should access this knowledge, as well as how this should be funded.

A central theme that emerged was the view that the system is “*simply too complex – legislation will have to be simplified to avoid SETAs tying themselves and employers with red tape.*” ...Linked to this concern was the issue raised by many of the companies that the system of claiming for programmes that relate to priorities in other sectors was seen to be

impossible...some companies said they could never get monies through the DG as their priorities were more consistent with the priorities outlined in other sectors. This was particularly a problem for large companies that span different sectors.” (2007: 62)

“Linked to the concerns raised about the SETA system were a number of comments pertaining to the existing reporting requirements, which respondents argued were more about compliance than about reporting to support effective planning...respondents also highlighted what they felt to be the excessive number of reporting channels and...that these reports made [no] contribution to arriving at a greater understanding of the sector or its requirements...reporting was seen as a one-way activity, in which companies constantly reported but there was minimal feedback in response. Many respondents cited communication issues as the key weakness in the manner in which SETAs interact with them.” (2007: 64)

Selected conclusions in the NBI report are the following.

- “This survey represents a first attempt to measure private sector training activities...
- The amount that is being spent on training is staggering...
- The amount spent highlights that companies spend close to 3% of the salary bill, over and above the 1% skills levy on training and education. This is very close to the 5% target originally set...
- The research process found that many companies were unclear about the amount that they received back from the mandatory grant. Respondents indicated that this amount is not calculated as part of the training budget...the mandatory grant does not appear to act as any type of direct incentive and the spend is far higher than the required amount. This would suggest that the transactional costs incurred yield limited returns...
- In addition to this, many respondents blurred data about CSI [corporate social investment] and skills development for employees...an approach to training that is not born out of an understanding of the purpose of skills development for productivity but rather, that training is simply a cost.
- The increase in learnership uptake – as demonstrated by the figure provided in this report which states that over the past 8 years, only 18 786 learners have been awarded a qualification on the NQF, excluding apprenticeship figures – suggests that even taking into account throughput issues, there seems to be an increase in the uptake of these occupational qualifications. [Figures supplied by SAQA’s National Learner Record Database]
- Further, the findings suggest that the vast majority of programmes are *not* directly related to SETA initiatives...[italics added]
- Finally, companies highlighted the number of reporting processes, yet many argued that there is no feedback loop, and there is little evidence that the data that is being submitted in the majority of cases is being used to facilitate effective planning.” (2007: 66, 68)

These excerpts from NBI (2007) do not require comment in detail. They show a mixed as well as confused picture of Seta performance, and the same in the opinions about existing Setas, held by a sample of major companies in the private sector. One comment is warranted. The attitudes shown towards the levy-grant system by companies, at least a significant minority, raise concern because they appear to grasp only weakly, if at all, the *purpose* of state efforts to raise the volume of training on a national scale. As discussed in the Appendix to the present report, it is the *perception* of the investment decision and the *understanding* of the purpose of the grant that is the cause for disquiet. Does it point to lowered expectations about the efficacy of the training undertaken, because of the receipt of a grant viewed as a subsidy? Lower expected returns can mean lower quality.

*****BLSA/Resolve Group 2009**

This short document is said – perhaps rumoured – to be a summary of recommendations on “business skills” that come from five un-named industry and employer federations. Its public status is unclear, but its content is certainly relevant to policy discussions about Setas. Only excerpts concerning Setas are provided here, and where a comment is appropriate it is supplied inside a square bracket for brevity in presentation.

- “Training must be structured to assure job competence. The skills development agenda must be prioritised for impact...simplifying the SETA mandate and NSDS goals and targets, and their measurement, for greater focus on fewer objectives...and [to provide] feedback to improve future interventions.” [Only the German system is capable of “assuring job competence”, all other national systems struggle. How are “priorities” to be established? To whom will “feedback” go, and “future interventions” by whom?]
- “While the skills development system cannot fix the quality of basic education, it must deal with the poor quality outcomes...ABET for older workers and bridging programmes for younger labour market entrants to improve the quality of communication skills and mathematical literacy...” [What institutional base is envisaged for such “bridging programmes”, and what role should the Setas play? This challenge has been in the skills training arena for decades not just the past 10 years of NSDS life, so one is surprised to see organised business still treating the issue rhetorically at the present time.] (2009: 1)
- “Reviewing and clarifying key policies that continue to create uncertainty in the field or inhibit effective [FETCollege-Business] partnerships, e.g....clarifying funding from SETA’s and the NSF to support FETC learners entering practical and workplace experience training...” [What “clarifying funding” means is not spelled out.] (2009: 2)
- “To increase the impact...many SETAs need to narrow their mandate, while new competent agencies [For example Projects, EPWP, employer associations, DTI small business agencies, private small business agencies, section 21 Co’s etc, Seda, Khula] should be allowed to be selected and registered to promote, support and fund skills

development in the small business and non-formal sectors of the economy. The following is proposed to achieve this: **SETAs should primarily focus on skills demand for the formal economy and on up skilling the employed, students and new labour market entrants who meet the selection criteria for learnerships, apprenticeships and skills programmes. **Some SETAs are effectively addressing the skill needs of small and emerging businesses...the DHET and NSA should establish a Standing Committee of the NSA comprising experts from key sectors – construction, services, agriculture, manufacturing, mining – academics, industry practitioners and DTI, who will develop guidelines and criteria for registering competent small business support ESDAs, as well as review and make proposals for their actual registration...The ESDA’s should then receive both SETA and NSF funding...the accountability of ESDA’s to SETAs and the NSF needs to be reviewed and tightened.” [Unfortunately this reads like an ambitious wish list. There is the false presumption that Setas can identify skills needed in production in both private and public sectors, can initiate the training of the groups targeted, and can set-up subordinate bodies like ESDAs to carry out a variety of elaborate functions to raise skills investment in the SMME sub-sector. This is an ambitious “mission creep” upwards for the Setas, but most important is its presumption that Setas have access to the elaborate information required. A major theme of the initial discussion in the present report is that this is not possible.]

- “Employers (and labour) must re-establish ownership of SETA’s. Employers need to increase their involvement in SETA decision making on skills and funding priorities...by reviewing the planning, monitoring and evaluation roles, responsibilities and procedures between SETA stakeholders and officials... ** SETA Boards remain ultimately responsible for the good governance , strategic direction and performance of SETAs. **The number of stakeholders participating in *corporate governance* should be reduced, but their input strengthened...external members should be kept to a minimum, but these members should be appointed only on the basis of their fiduciary competence and not on the basis of equal stakeholder representation... **The *strategic* input and oversight of stakeholders should be strengthened by requiring SETA’s to engage with their stakeholders and customers, employers themselves, at least quarterly, through Chambers...raising the quality of stakeholder participation in strategic skills planning and alignment of budgets...” [These suggestions may well be on the right track for reform, assuming them to be the distillation of representative views by a wide sample of employers in the federations that make up the Resolve Group, but these sound ambitious. For example, by what metric is “quality” of planning to be monitored, how will Setas be “required” to engage with stakeholders to their mutual advantage, and how will decisions be made about “fiduciary competence”?] (2009: 4-5)
- “Economic and labour market research, and skills planning, monitoring and evaluation should be undertaken and/or facilitated by a competent national agency, a Skills Development Planning, Monitoring and Evaluation Unit (SDPMU)...the SDPMU should prepare guidelines and coordinate the entire process...[it] should establish strong

working relationships with 'specialist sector research agencies' that it can draw, following consultation with SETA stakeholders, to undertake such research, e.g. employer association research agencies. The research and planning process should focus on economic, labour market and education research to inform national skills needs and prioritisation...SETA's and the NSF Standing Committees would use these reports...to prepare a baseline skills strategy to present to their stakeholders." [This proposal has *conflicting* implications for the present report. First, it is in line with the major suggestion for policy-makers throughout, which is to undertake the micro-level research required *before* any informed changes in policy can be made. Second, its tasks are highly ambitious, it is a centralisation of information and decision power, and it presumes that planning can be performed accurately and in such a way as to influence the aggregate of skills investment decisions at any time. This report is highly sceptical that these tasks can be carried out. Government will have to look abroad at other levy-grant systems in order to decide on the feasibility of setting up a SDPMU. Nothing can be decided *a priori*.] (2009: 5-6)

*****DPRU 2006**

This is a study of graduate unemployment through the assembly of all published information judged to be relevant, and "a series of interviews with some [20] of South Africa's largest companies, across a range of different sectors...including mining, manufacturing, construction, transport and communication, and business and financial services." (2006: i-ii) Assessments of the Setas came out of the interviews and tended to be predominantly negative.

"The complex bureaucratic processes surrounding the establishment of learnership programmes and the enrolment and assessment of learners were frequently raised as a major barrier to expanding learnerships. In some instances the process of setting up and registering learnerships is seen as too cumbersome to make it a worthwhile exercise. At the SETA level, mismanagement, inefficiencies and high staff turnover rates were some of the problems mentioned. This was a common sentiment across all firms. The few firms that felt the process was fairly straightforward typically have representation on the SETA boards, which implies they have better knowledge of the procedures. In addition, the sample of firms interviewed represent those that typically have the resources and capacity, yet many of the firms find the SETA environment a difficult environment in which to function, with one firm going as far as to call the process a 'nightmare'.

"Firms generally indicated that the [financial value of the learnership] incentives were well below aggregate actual direct costs borne by firms, which include stipends, training materials and tuition costs. When adding the indirect costs, such as staff (administrative) and infrastructural requirements the net cost per learner becomes substantial. Few firms

could provide accurate estimates of the net cost of learnerships. Crude estimates of the net operating cost per learner per year were in the region of R35 000. When also accounting for staff and infrastructure requirements, the actual budget outlay increased to about R150 000 per learner per year. (Footnote 28: Note that these figures may not be reliable averages across all industries and firms.)”

“The majority of firms interviewed indicated that they could only expand their learnership programmes if the grants were increased to such an extent that all administrative costs were covered since the current intake of learners were invariably based on the firms’ needs. This raised the issue of marginal subsidies as a policy option [only additional workers taken on are subsidised over and above those destined for training anyway by the autonomous decision of the employer]...” (2006: 37-8)

Two comments suffice. First, the cost figures for learners seem exaggeratedly high, but the only way of checking these “crude estimates” is to conduct a careful survey aimed explicitly at checking this data (which refer to the first quarter of 2006). Second, the idea of marginal subsidies makes economic sense but it presupposes a great deal of information becoming available to Setas, the NSF and other monitoring and coordinating bodies within the skills training system. Incomplete and asymmetrical information as the prime source of market failure in skills training has been emphasised throughout this report.

*****Kaplan 2007**

This is a media report on a study of “20 hi-tech companies [that] showed that scarcity of high-level skills was the key constraint...An alternative to the Setas would be to allow firms to determine their training needs without the intercession of any state bureaucracy...[although] left to themselves, firms will train less than is socially optimal. This is a clear market failure and a rationale for a training subsidy.”

There are three main problems with the Setas.

- Setas are bureaucracies. Effective bureaucracies require sound management; and management skills are in short supply.
- Setas are funded by a payroll levy. This increases employment costs, discouraging hiring. Moreover, guaranteed an income stream, Setas are unaccountable to their constituents, except indirectly via ministerial direction.
- Setas impose a bureaucratic layer between firms and training providers. Firms must submit their programmes for approval. Negotiating the requirements of the Setas is time-consuming for firms, and particularly onerous for small firms.

An alternative system would allow firms to determine their training needs without the intercession of any state bureaucracy...Training expenditures would be specified in the

firm's tax return. The firm would receive a tax deduction at a rate determined by the government subsidy...Government would be a postbox...Government would not scrutinise training programmes. Its substantive role would be confined to licensing training institutions.

Is the proposed system open to abuse? Training payments are easily checked. The counterpart of firms' claims would appear in the training provider's tax returns...firms could customise training to meet their needs...Competition combined with an unmediated relationship between firms and training providers would improve the market for training and the quality of the providers."

This proposal is a radical departure from most directions of reform in the international and local literature, as well as in local discussion. It warrants extended comment, but only the following remarks are provided here. First, it denies that market failure is a major problem because of asymmetry and incompleteness in the information available to all decision-takers. Second, a 1% training levy has a miniscule effect on the unit cost of labour facing employers, especially if they are able to shift its incidence onto the work-force by the inhibition of wage increases. Hiring will therefore barely be discouraged. Third, training payments claimed as a tax deduction are not easily scrutinised where training is wholly *on-the-job*, as much of it is recorded to be in the major industrial countries. Fourth, why would this reversion towards a greater role for the market allocation process lead to an *increased* volume of training at the national level? This is the state's primary objective. (Wolf, Jenkins & Vignoles 2006; Wolf 2007; Richardson 2007; Keep 2007; Lowry, Molloy & McGlennon 2008; Misko 2008)

Miscellaneous Comments on Setas.

These sources make statements about the Setas but provide no contextual reasoning or evidence in support. What they do is convey information about attitudes and presumptions concerning the Setas.

Du Toit & Van Tonder (2009: 20-21)

“Many different initiatives and skills development programmes have been launched over the past decade to address the skills shortage. The life span of these programmes is normally very short as they are constantly replaced and superseded. The current programme of Sector Education and Training Authorities (Setas), which is funded by way of an additional payroll tax on companies, has yet to prove its worth. The preliminary results are mixed.

Capacity problems have prevented Setas and the National Skills Fund from fully disbursing the taxes collected (DoL 2008). During 2007/8 Setas managed to spend only R4.3 billion of the R5.1 billion received. Spending from the National Skills Fund was R1.066 billion compared to R1.257 billion received. The training programmes did achieve some success...However, 15% of those enrolled in training programmes in 2006 terminated their studies prematurely. According to research by the Human Sciences Research Council (HSRC 2008a), the respondents cited the poor quality of training as the main reason for not completing their studies. Another issue identified by the HSRC was that workers experience little change in their job status after their training. Promotions and salary increases were not forthcoming as expected by the respondents. Furthermore, as the Setas are not freely accessible to the structurally unemployed, their contribution to the alleviation of unemployment is limited.”

Barnard [OECD] (2009: 31)

“Concerning public training schemes, there is no doubt a role for them to play in raising the human capital of the [South African] workforce...Existing training initiatives like the Joint Initiative for Priority Skills Acquisition (JIPSA) and the National Skills Development Programme (the NSDP, which funds the SETAs) are relatively small-scale and/or beset with implementation problems [fn 26]. In the case of the NSDP, there appears to be scope to increase its flexibility and reduce administrative costs. Public training schemes could perhaps play a more important role as an active labour market programme, by offering training to the unemployed, but with the acceptance of such training being a condition for receipt of state benefits (including any new forms of assistance with search or mobility, as below).

[Footnote 26] “Criticisms of the SETAs have been legion [since] their inception. Some of the problems [are] with the administration of the SETAs, including low take-up by firms, low learnership completion rates, and mismanagement...”

Bird (2009: 5)

“Extrapolating a system-wide model from this illustration [of engineering], one might propose that ‘professional bodies’ be established for *all* occupations. And it transpires that a vehicle for doing this has just been created under the new Quality Council for Trades and Occupations or QCTO...The architects of the QCTO have put forward the idea of Committees of Expert Practitioners or CEPs for short (made up of people who are ‘experts’ in their occupation which could be seen to be something like professional bodies). They are suggesting that a CEP should be formed for each of the occupations listed on the Organising Framework for Occupations or OFO...This list of all occupations is useful because it groups together similar jobs and makes it easy for people in [the] labour market (across all sectors) as well as people in colleges and universities to use the same terms for the same occupations – it creates a common language of occupations.”

Dinokeng Scenarios (2009: 23, 61)

“Skills shortage is a major constraint on growth. In 2007, there was an estimated shortage of 300,000 skilled workers. The unintended consequences of affirmative action have decreased the pool of skills, as skilled minorities have emigrated. In addition, the education sector is still not producing the type of skills the economy needs. The skills crisis is exacerbated by an inept Home Affairs department, which inhibits the global recruitment of skills. This ineptitude undermines South Africa’s competitiveness, and leads to an exaggerated ‘brain drain’ and missed opportunities for ‘brain gain’.

A SOCIAL PACT EMERGES: 2015-2017...Skills development is actively continued beyond school. *By 2016, the SETAs have gone.* Business invests instead in an apprenticeship programme that runs alongside, and in conjunction with, colleges. Required and scarce skills are developed in consultation with the private sector.” (Italics added.)

APPENDIX 2.

Skills Training and its Discontents in South Africa.

A culture of evidence has to replace a culture of unexamined assumptions.
(CHEPS 2009: 4)

No constituency is satisfied with our existing skills training arrangements. Periodically we see critical statements by the business community, trade unions, politicians and certain branches of government – but not the Department of Labour - asserting that the set of new institutions and policies going under the heading of the National Skills Development Programme is inefficient or inequitable or indeed dysfunctional. Certain features of the system are *new* in the sense that they came into being less than ten years ago, but modifications may be necessary. This report suggests where investigation is required before policy change, specifically concerning the Setas, is indicated.

An alternative title to this section of the report could be ‘Are there design flaws in the system to train human capital in South Africa?’ No answer is possible at this moment, but it makes sense to identify the features of our system that warrant wider and more intensive investigation on the way to an answer. That is what is urged in this report. As already indicated, the needed research task is too large for private researchers to initiate and pay for, and the information required is often not available to such research workers. For example, besides a carefully selected sample of Setas, a representative sample of their member companies in each case would have to be consulted. But in most cases such information is regarded as confidential by the Setas concerned. So the research task is for a government department or agency to initiate and finance.

Because of the emphasis in the main body of this report on information as the over-riding constraint on the actions of intermediary organisations in the skills training sphere, this Appendix concentrates on information difficulties that are inherent. As a reminder, information or knowledge is a public good not provided efficiently by market processes. So intervention from outside is essential to compensate and offset the consequences of the associated market failure. In the South African arena of discussion about skills policy too little attention, and therefore too little realisation, has been accorded information obstacles facing bodies like the Setas. A sub-set of these are discussed here to expand the main observations already presented.

The economics of skills training is straightforward in theory. Given the textbook set of assumptions about the working of occupational labour markets, formally stated, both employer and worker will invest in training up to level where the present value of the marginal benefits *equals* the marginal costs of further investment in skill acquisition. But where there is inequality between the marginal (or incremental) values of these variables – through market imperfections or failures – then *suboptimal* amounts of investment will take

place. Either the worker or the employer or both will be frustrated from maximising their own well-being. This is what is taught to economics students.

What can usefully be said about this theoretical framework is that it provides a *conceptual base line* that points to the phenomena to be investigated empirically in actual labour markets. (i) Will firms or other employing organisations in government or the non-profit sector be reluctant to invest resources in training workers if, once skilled, they are free to move to other employers to realize the higher earnings in line with their higher productivity? (ii) The acquisition of *general* or portable skills has to be financed by the individual in training, either paying costs directly or through reduced cash wages and fringe benefits. (iii) The cost of investment in *firm-specific* skills will be shared to the extent that the resulting productivity gains are divided between higher wages for skilled workers and higher organisational profits.

The logic of this 'make or buy' decision problem in acquiring skills, facing the worker and the employer, cannot be faulted within the prototype competitive market model. But the really difficult questions are the extent to which any concrete situation departs from this model and then the prediction of the consequences that follow. For example, how suboptimal are the actual levels of training provision that can be measured, how serious in practice is the inhibition of skill-using activities experienced in sectors and the economy at large, and what is the loss of potential earnings and profits that results from identified shortages?

The next step is to ask what kind of governmental intervention is indicated, noting that costs and benefits estimation must be attempted so as to inform this decision about *regulation* in the broad sense in which that term is interpreted in policy discussion. It *cannot* be simply assumed that net gains will follow from intervention.

There are major issues of method or procedure at stake here which we discuss no further. Instead we focus on a limited set of questions prompted by the international literature. These are grounded on research not yet attempted in South Africa, so the intention is to sketch an agenda for further investigation of our occupational labour markets and our set of institutions brought into being by the NSDS in the past decade.

Information issues in the regulation of skills training.

In South Africa we barely have a choice of measurement data on skills. It is either *occupations* from the Labour Force Survey or it is *education levels* or *years of education* completed from various census takings. There are also hybrids like *occupational levels* containing skill slots labelled 'top management, middle management, skilled, semi-skilled' and so on (for example, in the proposed legislation for Employment Equity). But none of these identify skills with the precision that can supply answers to a range of questions important to employers, organised labour and policy-makers.

The following instances illustrate what these constituencies want to know for their various purposes.

- How well do skills measured by occupation or education achieved approximate to the type and level of competency wanted in the work-place?
- Do such measures provide usable information about worker task discretion, that is, about the extent to which the performer of work exercises judgement and competence?
- Has the skill requirements of the average job by sector and economy-wide been rising in recent decades?
- Skill-biased technological change (*sbtc*) appears to be a universal phenomenon, but in which sectors in the South African economy is the trend most marked?
- The international norm is for the bulk of training to be initiated and financed by firms, two-thirds or three-quarters as measured in a given time period. But then training opportunities are not available to unemployed workers, so skills policy with *both* efficiency and equity goals has to be carried out to the letter. This is not the international norm.
- Have new kinds of competence like *influence skills* – communicating, analysing and persuading – emerged into view as categories that require separate recognition and measurement in policy provisions? (Machin 2008; Felstead & Others 2007; Davis & Kewin 2007; Bassanini & Others 2005; Wolf 2002)

Table 1 illustrates the range of alternative measures of skills available in a large industrial country labour market. Collection costs can be high. The UK Skills Survey 2006 involved almost 5000 interviews with workers in their home environments. Even scaled down for a smaller statistical population if conducted in South Africa, this would be a costly item for a state research budget.

Skill shortages, skill gaps and the accuracy of existing estimates.

Demand for skilled labour is a derived demand. The process of economic change drives demand alterations in the labour market and consequently skill needs. The altering industrial structure is itself the result of changes in the patterns of consumer demand, technology and organisational evolution, “as well as the evolving pattern of national competitive advantage [that] continues to change the balance of occupations, qualifications and skills required in the labour market.” (Campbell & Others 2001: 210) These causal mechanisms, difficult to model, are a compelling reason for not placing a high degree of confidence in projections of skill shortages in any economic sector. This is also the reason why calls to “align” skill and industrial policies are so difficult to make effective in practice.

Strictly speaking, a fully-specified macroeconomic model is required to make projections of future skilled labour demand. Projections in industrial countries do exist but not in South Africa. In the absence of such a model, establishing the *expected* performance in skills

training in any sector will be only an approximation. More seriously it will be an approximation of unknown reliability. For instance, how do skills planners factor into their numerical projections the determinants of demand generated by (a) future rates of productivity growth in the economy's component industries, (b) the changing demand for their output, and (c) their international trade performance? These are discussed below.

A modest claim is the most supportable, like the following for UK skills policies even when use is made of a macroeconomic model for national projections.

The results presented here should be regarded as indicative of general trends and orders of magnitude rather than precise forecasts of what will necessarily happen. That is, they are *not intended to be prescriptive* but rather to indicate the most likely future given a continuation of past patterns of behaviour and performance... If policies and patterns of behaviour are changed then alternative futures might be realised. The results are intended to provide *a useful benchmark for debate and policy deliberations* about underlying employment trends. (Sector Skills Development Agency, UK 2006: 3, italics added.)

This section of the report spells out the reasons why claims of skills shortages in South Africa's occupational labour markets must be approached with caution. There are no research results directed at testing local estimates of shortage. Yet the broader literature provides reasons to inject uncertainty into all discussions about skills deficiencies. Scepticism will strengthen more than weaken policy concerns.

Tables 2 to 4 illustrate the types of skills and the *perceptions* about them that are in question, drawn from a UK study devoted to exposing the ambiguities of existing estimates of skill deficiencies in regional, sectoral as well as national labour markets (Watson, Johnson and Webb 2006). Its results and the conclusions derived are cautionary for South African research on shortages. Three observations sketch the problem.

1 - The concept of a *shortage* can be ambiguous without the individuals questioned about it being aware. UK evidence shows that some respondents – in one study 60 % of employers, companies, recruitment agencies – take the question about shortage numbers to refer to the *external recruitment* difficulties they have experienced in the relevant occupational labour market. The remainder of employers (about 45% because some thought it referred as well to their existing workers and thus the two choices of answers overlapped), as reported in the Confederation of British Industry survey data, assumed the question concerned the skill deficiencies evident in their *existing workforces*. But these are wholly *different* concepts of deficiency. (Forth & Mason 2004; Richardson 2007; Richardson & Tan 2007)

2 - An additional but separate problem is that “when employers talk about skill, they are often referring to a range of desired behavioural attributes (reliability, adaptability, ability to work without supervision) as well as the technical abilities that are more conventionally considered to be ‘skills’”. (Watson & Others 2006: 40)

Because of the inconsistencies which have crept into the operational definitions used in certain national surveys of skills in excess demand, recent suggestions have been to *avoid* use of the word “shortage” completely.

“Given the definitional ambiguity regarding skills shortages we construct four definitions from the data base:

- *Current skills gap*: those respondents reporting that there exist ‘gaps between the skills currently available within your workforce and the skills which your organization needs to achieve its business objectives’.
- *Hard to fill vacancy (HTFV)*: those respondents that have ‘experienced any difficulty in recruiting the staff you need’ during the 12 months prior to the survey.
- *Anticipated skill problem*: those answering ‘yes’ to the question ‘could you say whether you anticipate that skills shortages in the next 3 to 5 years will affect your company’.
- *Emerging skill problem*: employers that do not feel that they have a current skill gap, but anticipate that skill problems of some kind will emerge in the future.” (Watson & Others 2006: 44)

If we apply these distinctions to the South African statements of skill shortages by occupation in specific sectors, like the estimates quoted by companies, professional associations and the 23 Setas, we do not know with sufficient clarity the following characteristics. (i) Which concepts of skills deficiency underlie them; (ii) in what numbers; and (iii) whether the explicit or implicit definitions being used are uniform between the sources consulted, as well as over time.

It takes no extended argument to show that the estimated shortages now circulating in the South African policy arena can have ambiguous implications for skill formation planning by companies. If so the ambiguity would extend to industry-level bodies as well as to Setas and the state agencies charged with fostering skills training. Whether we can diminish this uncertainty in the future remains to be seen. But we have to recognise it first.

What we do with the existing numbers claimed to be shortages is not yet clear. We need to assess their accuracy by paying attention explicitly to the way they were gathered. But this task has to remain pending until the cluster of definitional uncertainties is tested.

3 - Another serious problem for skill shortage estimates is the potential existence of *influence activities* within companies, corporations, state departments and other employing organisations. The capacity to influence information and decisions comes into play when respondents provide estimates of the input shortages they state their organisations to be facing.

Influence activities arise in organizations when organizational decisions affect the distribution of wealth or other benefits among members or constituent groups of the organization and, in pursuit of their selfish interests, the affected individuals or groups attempt to influence the decision to their benefit. The cost of these influence activities

are *influence costs*. The fundamental difficulty with the [any] policy of selective intervention is that it requires that there be a decision maker with the *power* to intervene who *collects information* with which to make decisions. (Milgrom & Roberts 1992: 192-3, original italics).

When this suggestion is raised about skill shortage estimates in other countries there are claims backed by evidence that, when surveyed, personnel departments in large companies have a motive to exaggerate skill deficiencies. This is true under specified conditions. Conversely, if information of the same kind is obtained from non-personnel company officials – like senior line or production managers - the shortages figures supplied tend to be lower.

Examples of other distorting influences, based on UK empirical data by a number of researchers starting with Bosworth (1993), are the following.

“Empirical tests involving multivariate analysis of establishment data from the 1990 Skill Needs in Britain Survey demonstrate that the probability of an establishment reporting a skills shortage *depends* on a range of factors. This includes: the size of the establishment; whether it is based on a single site; its sector; the occupational structure of employment; and the nature of the local labour market.” (Watson & Others 2006: 41, italics added)

The literature on the question of reliability in skill shortage estimates is growing in countries where there are campaigns to raise the national rate of training, as in South Africa. It is not the present intention to provide a survey, but the following questions are relevant to consider in the local discussion of shortages, to which this report is a contribution.

First, are there systematic *differences* in perceptions of shortage between employers and employees, as well as between the different layers of responsibility within a single organisation?

Second, do similar perception differences exist between trainees, apprentices and students who place emphasis on “specific job-related knowledge”, whereas management and supervisors lay stress also on the importance of “soft skills” like inter-personal abilities and punctuality?

Third, do differences in the asserted importance of skills by type show up between those experienced in the work place and those lacking experience? The latter are labour market entrants, either completing formal education at one or other level, or emerging from unemployment spells before finding their first job. It appears that work experience itself can influence worker and manager perceptions of skill requirements in production.

Finally, an illustration of the importance of these distinctions, as well as the steps essential to establish skill shortages with a reasonable degree of accuracy, is provided by the following example from a recent Scottish study.

Recall that vacancies can be hard-to-fill for three main reasons. *Only* the third reason here is a skill shortage.

- A lack of applicants (perhaps a reflection of the nature of the job on offer).
- Employer judgements on applicants' attitude, motivation and personality.
- Applicants lack the required qualifications, experience and the competencies that accord with preconceived notions of production requirements.

Assessing the scale of hard-to-fill and skill shortage vacancies consisted of *four stages* [in the Scottish example].

1. Establishments identified the number of vacancies they currently had.
2. Establishments then said how many of those were 'hard-to-fill'.
3. Next, the reason why the vacancies were hard-to-fill was sought – was it because of the quality of applicants or was it because there were few applicants for the post?
4. Where vacancies were hard-to-fill due to the quality of applicants, establishments were asked precisely what qualities were lacking.
 - Skills shortages vacancies only occur where employers judge applicants to lack the required skills, qualifications or experience.
 - Where the attitude, personality or motivation of applicants was called into question by employers, these are *not skills shortage vacancies*. (Future Skills Scotland 2006: 6, 15, italics added).

Whether any existing South African estimates of skill shortages follow this elaborated multi-stage procedure is not known, but none of the local sources consulted in the last five years evidenced this practice. This is not a sufficient basis for an outright judgement about the questionable accuracy of local estimates. But these international studies justify the re-consideration and re-design of future measurements of shortages. The three quoted passages below indicate the direction new South African research should be taking.

These findings suggest that while employers appear not to have any problem for themselves in interpreting questions on "skill shortages" (if only because they showed no reluctance to answer the question) *we cannot rely on them* being perceived in a uniform and consistent way by all employers...Our findings point to two main conclusions for future research. First, studies that investigate the causes and effects of "skill shortages" need to pay serious attention to their *measurement*. If one is not certain of what is being measured, one can hardly be absolutely confident in the findings. Another practical conclusion is that in future research on establishments and their skill formation practices, further steps could be taken to gain *clarification* either directly or indirectly from respondents as to the experiences they choose to classify as a skills shortage. (Green, Machin & Wilkinson 1998: 183, italics added; Green & Owen 2003; Skinner, Saunders & Beresford 2004.)

Overall we failed to reject the proposal that personnel departments within large firms send mixed signals regarding skill deficiencies. One implication of our results is that past research on the extent of skill deficiencies within the UK economy may

have been *overemphasized* due to the failure to control for the bias present in questionnaire responses. Therefore, we would recommend that any future studies using questionnaires to analyse the extent of skill deficiencies should *control* for the position of the respondent within the company. In this way future results will provide a more accurate picture of the skills problems facing the UK. In addition, the results have an important implication for large companies. Such companies may want to investigate the reporting of skill deficiencies within their own organization in order to discover whether influence costs are prevalent. This would enable companies to provide a *more accurate signal* as to the extent of skill problems and reduce overall costs. (Watson & Others 2006: 55-6, italics added.)

In the market for engineer-scientists or for any other commodity we expect that a steady upward shift in the demand curve over a period of time will produce a shortage, that is, a situation in which there are unfilled vacancies in positions where salaries are the same as those being currently paid in others [jobs] of the same type and quality. Such a shortage we will term a *dynamic shortage*. The magnitude of the dynamic shortage depends upon the rate of increase in demand, the reaction speed in the market, and the elasticity of supply and demand. (Arrow & Capron 1959: 301)

It is ironic that this last statement by Arrow & Capron is fifty years old. It states clearly the requirement, already raised in the introduction to this **Appendix**, that it makes little sense to speak about the shortage of any commodity without explicit reference to its price. We cannot identify quantities of skills or occupations as being in excess demand – for instance, a shortage of some specific skill like a qualified chartered accountant – nor can we analyse the possible reasons for such a shortage without linking that estimate of shortage to its price. The concept has to be of a shortage *at a stated level of the wage or salary package being paid currently for a skill of the same type, quality and experience*.

Yet this is exactly what skill shortage estimates overlook in the South African discussion about skills training. We do not know *whether* the employer stating a shortage is willing to pay the going salary, or is willing to pay more to obtain a suitably qualified appointee, if supply channels are responsive to higher offers. Equally important, we do not know *why* the supply mechanism – the training of such skilled workers – is not responding to the outstanding demand that is identified. This should be a central concern of policy-makers, professional associations and Setas. Yet nobody is able to address it with the incomplete information at hand. Research dedicated to the purpose has to be mounted, as argued extensively in the main body of this report.

Forecasting skills demand

From the date of its launch ten years ago the National Skills Development Strategy has aimed at the construction of skills plans at *workplace, sector and national* levels. Subsequently, actual skills planning at the national level appears to have shifted down the

policy agenda for reasons that remain unclear. No national plan as such exists in 2010 (although lists of “critically short” occupations have appeared from time to time from government departments), but enterprise and sector planning have become routine in the levy-grant system.

Skills forecasting is subject to unknown margins of error and is no longer practiced in most countries. In general, the international literature is skeptical after the disappointed hopes for developing country man-power planning exercises conducted in the 1970s and earlier (ILO 1995; Heijke 1994; Hopkins 2002; Ellis 2003; Woolard, Kneebone & Lee 2003). By contrast the designers of South Africa’s NSDS appeared convinced in the mid-1990s that the jury was still out on the matter. They made projections of skill needs a cornerstone of the new strategy.

The potential pitfalls can be summarized under headings like ‘*The 3-Ts*’. These are the presumption of fixity (i) in *tastes* or preferences of consumer and investor decision-takers; (ii) in production *technology*; and (iii) in the content patterns of *trade* and investment between countries. For any skills plan to convey useful information these dimensions must be presumed to remain *sufficiently static* over the length of the desired forecast periods. Only then would the future composition of output and thus the skills profiles of acceptable accuracy be obtainable. But from the start these assumptions are questionable on a variety of grounds.

Forecasting difficulties exist in all national labour markets.

As long ago as 1989 the main [UK] national employers body – the Confederation of British Industry (CBI) – argued that “few employers are able to predict their medium term skill requirements with any confidence. The uncertainties over technology, exchange rates, and future corporate strategies are simply too great to allow traditional corporate manpower planning approaches to work effectively”. Many of these factors have with the passage of time become more, not less, uncertain (Gleeson & Keep 2004: 56).

The subject of forecasting is large, so these broad observations suffice to show the underlying uncertainties. These are likely to deepen with ongoing progress in communication and transportation technology. For instance, freeing up international capital flows and the increasing globalization of trade in recent decades have significantly *widened* the range of goods and services bought and sold in the majority of domestic commodity markets. It is a likely consequence that changes in tastes have accelerated with accompanying alterations in the mix and availability of consumption and investment goods; although the causes of such changes are not easy to identify. (Acemoglu 2002; Crafts 2004; Rodrik 2004)

Similarly, sites of manufacturing and services production are subject to an increasing range of location choice. So the number and composition of productive skills in demand in a

national economy has to alter in step with such compositional changes driven by trade, as well as by direct investment in productive capacity that more easily crosses national boundaries. Whether these trends make the current forecast of skill requirements subject to even wider error margins than in the past is a hypothesis that must be examined empirically.

The second obstacle to effective forecasting is the relationship between technological change and the human capital inputs associated with such change. This linkage is complex and not amenable to easy generalization. The key unknowns are the substitution possibilities *within* any given technique of production in use. Substitution is governed by the flexibility or, at the alternative end of the spectrum, by the fixity of input coefficients per unit of output. In other words, how much skilled labour, unskilled labour, capital, energy and other identified inputs is required for each unit of production.

This must be interpreted in relative terms, because input-output ratios exist along a spectrum as choices in production. For instance, from low to medium to high capital intensity can characterize the technique of production in use in a firm or industry. At one extreme, complete fixity of input ratios is an assumption of the Leontief-type production function used in the input-output analysis of a given structure of production. Yet there is no agreement on the extent to which such *assumed* fixity is mainly of analytical convenience and thus subject to unknown accuracy in actual production.

Fixed input coefficients as in this case – a fixed quantity of capital or of skilled labour per unit of output – is a useful assumption for certain estimation purposes. But that is all we can say when the question arises of forecasting the demand for specified skills in a sector like financial services or entire economy like South Africa. One large American study some years ago was emphatic about the major unknowns that attach to the characteristics of technology and the implications for the determination of skills demand. Applied to the US armed forces and still widely cited, it exemplifies the skeptical position on skills forecasting that has emerged in recent decades.

The conclusions of this research [on the effects of technological change on employment, skill needs and the distribution of earnings] are subject to such enormous uncertainties that policy-makers concerned with training and education are well advised to avoid large resource commitments to any specific vision of the detailed occupational structure and skill requirements of the future US economy...[One illustration is] a study by Binkin of the US military's experience in forecasting and adapting to the changing skill requirements of new weapons systems...[which] shows that the military authorities have been *remarkably unsuccessful*. Even within an environment in which the design and introduction of new technological systems and the training of personnel to operate these systems are largely controlled by a *single organization* [the armed forces], the skill impacts of new technologies have created severe difficulties for policymakers. (Cyert & Mowery 1988: xviii-xxix.)

International trade is a separate source of uncertainty about future skills demand that provides a simple case against fine-tuned skills projections. South Africa's recent trade history has been marked by fits-and-starts negotiations with its trading partners and by bi-lateral concessions by industry or sector between a range of such partners. In addition there has been the world-wide move towards liberalization of economic transactions across frontiers in the past decade, known as globalization. So the uncertainty injected into skills projections has arguably become greater in recent decades.

Further, foreign trade is a dimension of policy-making that by its nature is political as well as economic. Thus it is difficult to conceive a reliable forecasting procedure taking into account *both* changing comparative advantages on economic grounds in foreign trade patterns *and* shifts in goals and alliances with other countries driven by political considerations. In addition, research and discussion in the South African economy about industrial and trade strategy is an ongoing process. In principle, such strategic decisions can be inputs into skills forecasting, but there is no evidence of this taking place in government departments, in SETAs and indeed in the NSDS as a whole. The complexity of doing so is one reason, as explained in the body of this report and in these sources. (Edwards 2003; Mason 2004; Almeida 2009; Future Skills Scotland 2009; Perugini & Pompei 2009)

An additional complication, independent of technology and trade influences, is the preliminary evidence that skilled as well as graduate unemployment has risen in South Africa in recent years. (Pauw, Oosthuizen & van der Westhuizen 2006, Pauw & Others 2006; DPRU 2007) If true, how is this trend to be reconciled with claims of intermediate and high level skills shortages amongst the economically active population? The present report advances no specific answer because no research has addressed this question directly. But if significant unemployment at these upper levels has emerged then it supports a major contention here about the strategic need for more micro-level research by official agencies.

At the micro-level where a worker's skills are matched with the requirements of a job, specific and detailed information is required on both sides of a hiring contract. A worker can possess a conventionally described skill, has the documentation to support that competence, and yet is judged unsuitable by a potential employer. Quality deficiencies, including personality characteristics, are the simplest explanation. This is not an unusual circumstance by any means in occupational labour markets, particularly at higher skill levels. It explains why information about *occupations* is often of such limited use in identifying the applicable labour market supply and demand conditions for work competencies. (Blaug 1995; Spenner 1995; Felstead & Others 2007)

Another consideration in the projection of future skill demand is that much technological change in recent decades, particularly the information technology or 'computer revolution', has *not* been skill neutral. Rather it has pushed up the productivity of high-skilled *more* than it has that of low-skilled workers, relatively speaking. This is well known and accepted as a trend that is more or less universal, as discussed at length in the earlier sections of this report. (Feldstein 2003; Machin 2008) "To provide some examples, computer engineers and programmers have been designing hardware and software that have displaced lower-skilled

workers, whether through robots replacing assembly-line factory workers, electronic scanners replacing check-out clerks at retail establishments, or voicemail replacing answering clerks” (Chiswick 2005 :2).

Whether this skill bias is temporary, meaning a transitory advantage to those with higher skills because they adapt more readily, or whether it is inherent in the technology process and will persist remains unclear. But the answer is vital. It will determine whether the widened payment differential between skill levels is permanent or will decline as the technology becomes familiar and is adopted by the wider population. This is unresolved. Thus the effect on skills demand by the changing relative prices of skilled and unskilled labour remains difficult to project.

But for the present concern, the forecasting of skill needs is made more difficult by the necessity to track the skills bias between sectors while doing so. That this trend exists is no longer in dispute. “[It] seems reasonable to conclude that the [international] evidence shows the wage distribution has been characterised by long-run growth in the relative demand for skills driven by technological change (rather than trade) and that changes in skill supply and institutional changes have affected the timing of how *sbtc* [skill-biased technological change] impacts on the wage structure in different contexts.” (Machin 2008: 22)

In essence what has to be devised for usable projections of skill demands is a system of *translation* between knowledge of skills needs at an establishment or plant level and a functioning training system. When aggregated such a translation process could also operate at the industry level. Approaches 5 and 6, *Self-Assessment and Job Requirements*, in Table 1 approximate to such a procedure.

But, as with all policies ambitious in their reach, the question arises whether any government has the capacity to run training systems that have to remain *continuously* responsive to changing production conditions? Public sector administrators of all systems of information about skills are outside observers who have to know with acceptable accuracy the actual short-term skills needs of the business community, as well as of government departments, parastatals and non-profit organisations. In fact, to identify labour market needs is to track a moving target with a proportion of skill shortages entirely transitory. Many open up and disappear within the space of months.

So it remains an open question, best treated without preconception, whether any interest group – employers collectively, the state, or even organised workers – can make human capital projections forward in time that function as a spur to *investment decisions* in skills training. This is the key question. It summarises the main concern of this Appendix. It may be acceptable to concentrate on the competencies of economically active individuals classified in broad groups (by educational qualifications, certificated skills, work experience, age, gender, language proficiency) because these competencies determine the likelihood of labour market success. This would relegate to secondary importance for skill identification the more specific information about occupation, sector and job description that forecasting exercises presume to be necessary. This is a misapprehension. (Culpepper 2001; Blondal &

Others 2002; Greenhalgh 2002; Bassanini & Ok 2004; Bassanini & Others 2005; Forth & Mason 2004.)

Numerous researchers in the field reject explicitly the main presumptions that underlie skills forecasting. Concerning the relationship between education and the skill needs of the economy, counter-assertions like the following are applied to the majority of economically significant competencies judged necessary by producers. Whether such negative judgements are exaggerated remains unclear.

There is no real sense in which a given level of education in the economically active population in a country can be said to be technically “required” to permit the achieved level of economic growth of that country. Such an argument grossly exaggerates the contribution of manipulative and cognitive skills in the performance of economic functions, ignores the fact that such skills are largely acquired by on-the-job training, and utterly neglects the vital role of suitable personality traits in securing the “invisible handshake” on which production critically depends. In short, educational policies may be fitted to literally any level or rate of economic growth and cannot be justified in terms of those patterns of growth. Education does make a contribution to economic growth, not as an indispensable input into the growth process, but simply as a framework which necessarily accommodates the growth process. (Blaug 1995: 51)

One illuminating example of local skills demand forecasting is Woolard, Kneebone & Lee (2003). This study made the following assumptions about the “macro-environment” of the South African economy.

- “The rand is not expected to strengthen in the medium term, implying the continuation of a highly competitive currency and stronger exports (aided by tariff reductions).
- Improved government and domestic savings rates are expected.
- Low inflation (around 6 per cent), coupled with lower and stable interest rates, is expected.
- Continued job losses are expected to occur in the formal sector.” (463)

The two assumptions in this set born out as reasonably accurate by subsequent events over the subsequent four years, assuming the forecasting work was conducted in 2001-2, are the two that relate to inflation and job losses in the economy as a whole. Based on these assumptions Tables 5 and 6 below show the anticipated demand for “high-skills” as well as the magnitude of new and replacement demand over the period, 2001-2006, for ten broad categories of occupation.

A half-a-dozen years later we do not have independent evidence about the growth in demand for these skilled workers with which to *test* these forecasts satisfactorily. Neither does the forecast model lend itself to simple evaluation of its predicted outcomes based on the derived output-employment elasticities that are used; that is, the quantified linkage

between the changes in these two variables. But the inaccuracy of the remaining two assumptions (about the exchange rates and aggregate savings) interpreted as trends should independently make for caution about the skill projections in the tables said to track incremental demand.

Also useful to skills investment decision-takers, we will need to presume without question that *occupation* coincides with *skill* as perceived by employers, skilled workers and potential trainees. Overall, although more sophisticated than the local norm this forecasting exercise cannot be judged decisively one way or another.

There are at least two types of changes, quite different, which contribute to alteration in the demand for skilled labour: “(a) changes in the composition of jobs in the economy, and (b) changes in the skill requirements of individual occupations” (Rumberger 1995: 219). Successful forecasting has to take explicit account of trends in *both* of these components of demand. There is no evidence in the wider literature on skills projections that these have been tackled satisfactorily in a realistic model by research-workers and policy makers in other countries.

A recent Australian study of skills forecasting is relevant to our South African attempts – spurred by presumptions in the NSDS - to project the growth in demand that aims at a level of precision that makes it usable in closer matching between the demand and supply of identified skills.

How should the VET sector decide what to teach in the light of the virtual impossibility of reliable projections of the demand for skills, at the necessary level of detail?

We counsel against trying to project the number of new VET graduates who will be required, by level and type of skill and by location, and then using this to determine the shape of skills training. We do so for two reasons. One is the obvious point: that it cannot be done with any accuracy at the level of detail that is needed for deciding just what to teach and where. The other is a more comprehensive point. The labour market is a dynamic entity. *People* are constantly changing their jobs, learning new skills from their work, moving to new locations, moving in and out of the labour force and changing the number of hours per week that they work. At the same time, *firms* are being born, growing, dying, declining, altering the size and skill set of their workforce, recruiting strategic new skills, training some of their existing staff with the incremental skills they find they need. In all of this, formal vocational education has an important, but modest role to play. It is a *misunderstanding* of how the labour market adjusts to believe that there is a direct, one-to-one relation between an expansion in output, the associated increase in skills needed to produce that extra output, and a requirement for the VET system to provide those extra skills. (Richardson & Tan 2007: 33, italics added.)

In summary, this report’s contentions on forecasting, are the following.

- First, projecting investments in the training of newly skilled workers in sectoral and national occupational markets in an economy is subject to unknown but significant margins of error that rise with extension of the future horizon.
- Second, it is difficult to acquire evidence in the context of the National Skills Development Strategy about what use member firms make of the sector-wide skills plans constructed by the relevant Seta to inform and facilitate investment planning for skills training. The probable answer is that some firms do make use and some do not. This question remains open and is self-evidently important.
- Third, constructing an SSP requires considerable effort and resource input from a SETA, so much so that in the past this periodic commitment to the training authorities was carried out for a proportion of SETAs by sub-contracted and specialist agents. A benefit-cost appraisal of SSPs would be a useful input into policy formation.
- Fourth, a number of international studies have pointed out the distorting tendency to use figures of the most strongly growing job kinds as indicators of job growth in an industry or economy as a whole (Rumberger 1995). This can exaggerate the changes in training requirements, especially where the fastest growing jobs require higher than average achievements in formal education in addition to incremental training.
- Finally, there is the temptation to concentrate inordinate forecasting attention on the potential growth in demand for filling new kinds of jobs to the neglect of replacement demand. Putting replacement workers into job slots vacated by retiring and quitting skilled workers can be a considerably larger component of total demand for a skill than are new job slots.

A strong recommendation of this report is that a thorough cost-benefit investigation be conducted into the periodic production of SSPs. This should devote close attention to the role they may or may not play in facilitating higher levels of net skill production in the sectors to which they apply. Do they fulfill the purpose of skill projections stated in the NSDS design documentation, which is to *raise* the average level of workforce skills in the entire economy?

Figure 1 illustrates both the logic and the set of specific assumptions deemed necessary for skills projections in the UK. These requirements are not simple at all and need recognition in the South African discussions of forecasting. One final cautionary observation should be noted.

Education and training as policy vehicles are limited in many ways – for example, in the lag between schooling and greater productivity, the *loose linkage* between skills of workers and skill demands of jobs, and the uneven and uncertain responses of managers and firms to uncertainty. Arguments for increased education hinge primarily on bringing all of the population to minimal levels of literacy and additional schooling for the less well-educated because education and training appear to minimize the adverse consequences of technological change for workers, and workers with such training and education adapt to change better and quicker...*Curriculum planning in the face of uncertainty should rely on curriculum diversification and periodic review aimed at adjusting available programs to*

demand. Thus, within modest limits, the research on technological change and skill requirements informs education and training policy, and within modest limits, education and training can be expected to inform and solve human problems associated with technological change. (Spenner 1995: 128-9, italics added.)

Items for a future research agenda.

The following suggested research questions are listed briefly and in serial form. This serves as a conclusion, and a later expansion of this **Appendix** might supply additional detail.

- Do employers view the 1% skills levy as just another tax the incidence of which they attempt to shift onto payrolls as a deduction?
- Do employers treat grant-financed skills training – grants by Setas from the levy pool - as subsidies to training expenditures? If so, are these investments required to meet lesser minimum profitability standards and allowance for risk that apply to other kinds of investment by the organization that is initiating and financing the training?
- Do most employers *bet on the strong*? Do they prefer training better educated workers, the already skilled, workers higher up the job hierarchy in the firm like supervisors, men more than women? Do they shy away from training that has a remedial component for the poorly educated, from workers under short-term contract, and from seasonal & immigrant workers? In the international literature, employers that favour the strong are overwhelmingly the case. A supportable generalisation mentioned earlier is that on average more than two-thirds of national training is instigated and funded by employers in industrial countries. (Felstead 2007: 4; Bassanini & Others 2005)
- Does training correlate with firm size when measured as (1) *participation rates* (the number & percentage in an organisation's labour force undergoing training in a defined period), and (2) the *intensity* of training (number of hours of training per year)? It does correlate strongly in many countries. Is this the case also in most or all sectors under the South African NSDS? We cannot say, although this seems to be the case. (Singizi Consulting 2007)
- We still do not know whether membership of a SETA successfully *inhibits* skills poaching between employers? To do so is to overcome free riding that otherwise leads to sub-optimal training volumes because those firms willing to train cannot capture sufficient benefits for their investments when newly skilled workers are attracted away. Producers associations can inhibit poaching, most prominently documented in Germany and other continental countries. But other institutions including state action have the potential to fulfil the same function in other national occupational markets.

- No specific feature of NSDS institutional architecture is designed to facilitate & fund the *individual worker's* decision to invest in training. This is surprising given the stated prominence of re-distributive objectives in the NSDS. By contrast, in South African formal education a national student loan scheme exists for tertiary education, but there is no parallel funding mechanism for intermediate skills training. *Market failure* in capital market borrowing for training is widely recognised in the literature, although researchers like Heckman (1999) deny the seriousness of credit constraints on individual training investments in an industrial country like the US. It seems unlikely that this capital market failure does not hold in South Africa though.
- Are employers motivated and allowed by default *not* to fulfil accreditation procedures at the end of training spells for their newly skilled workers? This limits their mobility between employers? If true, such skills remain only partially transportable and the risk to investment by the training firm is lowered. There are complex institutional & policy issues involved in this question. These include the ongoing evolution & application of SAQA standards, the functioning of NQF accreditations in the market, as well as specific lower-tier & less formalised initiatives for skills certification like RPL (recognition of prior learning). Presumably the policing performance of Setas is also directly relevant to this question?
- The more successful SETAs – in training achievements as measured by the Department of Labour indicators – like Fasset (finance & accounting), Bankseta (banking) and Inseta (insurance) deal in *high-level* skills. Much of their training effort is targeted at tertiary education graduates. Is this coincidental? Or is this relative success linked to the high formal education level of their average trainee? This question needs investigation because *intermediate* skills training - the next broad skills tier down - is where the private sector and government continue to say that the major deficiencies & bottlenecks in the training process lie currently.
- Investment in skills training is not enough by itself to generate higher productivity. Managerial innovations – production re-organisation, job redesign, employee motivation, product and marketing strategies, organizational adaptations – can be further essential *complements*. But these fall outside the design of our skills training system. If and when given strategic attention, it is likely to be under industrial policy heads that are generally kept separate from skill matters. (Felstead & Others 2007; Mayhew & Neely 2006; Vignoles & Others 2004)
- Skills training is *only one* driver of increased productivity, the others being investment, innovation, enterprise & competition. To concentrate policy attention on training alone can miss much of the picture. For example, in international comparison the US is high in *level* of productivity per hour worked, as well as in the *growth rate* of productivity since the mid-1990s. But its skills training system is not widely admired. So the explanation for ongoing US productivity performance appears to lie in the other drivers of economic growth. The following generalisations apply to OECD countries.

- “[L]abour productivity in the business sector grew on average by 2.1 percent in the US during 1995-2002, in spite of the perception that education and training in that country was not on a par with Germany or Japan, which grew instead at a significantly lower rate.
- We show that most workplace training is done by employers, independently of whether the accumulated skills can be transferred to other employers. On average, the entire cost of $\frac{3}{4}$ of the training courses is directly paid by employers, and there is little evidence that employees indirectly pay through lower wages. Large and innovative firms train more than small and non-innovative firms...and training increases with educational attainment [of the average worker] and the skill intensity of occupations, and decreases with age...women take more training than men, but essentially because they pay for their own training more often, while firms do not appear to accommodate their greater demand for training. Importantly, women tend to receive less employer-sponsored training than men when they are young and have more frequent career interruptions due to childrearing. On average, temporary workers get trained less often.” (Bassanini & Others 2005: 6)
- Schooling attainment in aggregate clearly matters for the volume of training. This *complementarity* is shown by the average training incidence being higher in countries where the percentage of the economically active population (EAP) with at least upper secondary education is absolutely and relatively higher. Average schooling attainments vary considerably by country; for example, in the European Union early school leavers – defined as the share of the population aged 18 to 24 with only lower secondary education and not engaged in education or training – were over 20% in 2004 in Italy, Spain and Portugal, more than twice the percentage in the Scandinavian countries. There is a strong suspicion that this is part explanation for the lower levels of training in these three named countries.
- What does this mean for human capital strategies? By increasing the average quantity and quality of education, governments can *also increase* training incidence. Why? Because in the eyes of employers, skills acquisition by the better schooled work-force is perceived to be more profitable. In industrial countries one current focus is on devoting “far more resources to educating those in the bottom 40 percent of the ability range...the only effective way of raising earning power at the lower end of the distribution.” (Nickell 2008: 394)
- Finally by way of illustration, to take an actual instance at the present time, why is Finland investing in training *more* than Italy, in spite of the fact that the expected wage premium (from training) is similar in both countries? The explanation may be – although not yet fully established – the fact that both the supply of and demand for trained employees is higher in Finland than in Italy. First, the supply is higher at any price in Finland because the higher quantity and quality of education there reduces training costs. Second, the demand is higher in Finland than in Italy because of the substantially higher R&D expenditure & lower product market regulation in Finland. To be noted is

that these features are independent of Finnish training practices and yet they increase the productivity of trained employees in the national labour force as a whole.

- One observation about employer motives, perhaps applicable locally, is drawn from UK discussion. If more widely true, employers' chronic complaints about skills shortages can be self-serving at root.
- Insofar as forecasts of future demand for graduates are influenced by employer statements about what they would like to recruit, it should be born in mind that they reflect *cost-free* demand whereby employers can require an ever more highly qualified set of new workers at no direct cost to themselves. Employers make very limited direct contributions to the costs of HE [higher education] (some student sponsorship and student placements)...In these circumstances, an over-supply of skills makes sense – it provides employers with greater choice of candidates and relieves employers from the need to train (at their own expense). (Keep & Mayhew 2004: 301-2)
- Finally, it is difficult to judge whether the following passage describes what our National Skills Development Strategy aims to be, or whether it represents a possible model with different emphases which should be taken seriously by our policy reformers? But either way, the sting is in the tail of the statement.

If governments are mainly concerned with upgrading the skills of the workforce, an alternative levy-grant scheme that can be implemented is a system that is revenue neutral overall. All money collected by the government through a levy would be transferred back to firms – possibly after the government takes a small administration fee. Firms who train more would get back a larger proportion of funds. Under such a scheme, a firm would receive a grant not only on the basis of how much it trains, but also how much it trains relative to other firms in the economy – hence firms have an incentive to train more to keep pace with their competitors and get a larger grant. This initiative could also encourage small firms to train more. However, the drawback of putting in place such a scheme in a developing country context is similar to that of any other levy scheme – implementing such a scheme may be administratively difficult to do. (Dar, Canagarajah & Murphy 2003: 11)

Table 1: Ways of Measuring Skills in the Adult Population.

Approach	Advantages	Disadvantages
1: Qualifications The proportions at each level (sometimes limited to degree-level and below)	Objective in nature; long-term trends available	Loose connection of academic qualifications with job skills
2: Education Length Average years of schooling, or proportions with at least x years of schooling	Objective; long-term trends available; internationally comparable	Variable quality of education, and loose link with job skills
3: Occupation The proportions in higher-skilled occupations	Easily available from labour force surveys or censuses; sometimes internationally comparable	Skills change within occupations; the hierarchy of skill among occupations is contestable and changing
4: Tests Scores from literacy and numeracy tests, such as the Skills for Life Survey, TIMSS, IALS	Objective; international comparisons sometimes possible	Narrow range of skills; expensive to administer
5: Self-Assessment Survey-based individual reports about themselves	Wide range of skills	Subjective, and skill assessment can be associated with self-esteem
6: Job requirements Sourced from commercial job analyses, expert assessments of occupations, or surveys of individuals or employers	Wide range of skills; intimately connected to jobs	Job skill requirement could differ from person skill; subjective; does not measure skills of non-employed people
7: Proxy measures Common practice is to measure skill levels by wages or wage hierarchies or by indicators of work experience	Widely available data and potentially internationally comparable	Underlying presumptions not easily tested: that high wage jobs are typically high-skilled jobs, and that earnings "returns" to work experience captures the acquisition of workplace skills

Source: Adapted from Felstead & Others (2007:5-6)

Table 2: Illustrations of *perception* of skill deficiencies by sector in the UK (N = 1005).

	Static definitions (%)		Dynamic definition (%)				
	Current skills gap	Hard-to-fill vacancies	Anticipated skills problems	Continued skills problems	Emerging skills problems	Short-term skills problems	No skills problems
All	21.0	32.9	26.2	12.6	13.7	8.4	52.4
Manufacturing	23.4	40.0	34.7	16.3	18.4	7.2	47.3
Construction	27.6	30.4	31.7	14.9	16.8	12.7	47.1
Other production	16.6	18.1	11.8	7.6	4.2	9.0	78.5
Wholesale	12.2	23.9	18.7	7.1	11.6	5.1	62.7
Transport and communication	23.1	41.1	32.1	18.5	13.6	4.7	50.6
Financial	23.4	37.6	20.0	11.6	8.4	11.8	53.2
Business	22.4	22.8	24.0	13.8	10.2	8.6	59.5
Other services	16.3	40.8	31.3	1.6	29.7	14.7	39.2
Education and health (private)	14.9	50.5	20.4	10.4	10.1	4.6	40.1

Source for this table and the following two tables 3 & 4 on perceptions of skill deficiencies in the UK is Watson, Johnson & Webb (2006: 1757-1760).

Table 3: Type of skill deficiencies, UK (N = 1005).

	Percentage of employers perceiving	
	Current skills gap	Future skills shortage
Basic literacy or numeracy skills	1.3	0.4
General communication skills	4.2	3.3
Use of English	0.9	0.4
Problem-solving skills	1.8	0.6
Basic IT skills	14.3	6.8
Software or programming skills	9.9	4.5
Knowledge of computer packages	11.5	3.8
Foreign languages	1.8	0.7
People-management skills	3.8	1.9
Strategic-management skills	0.6	0.3
Decision making skills	1.7	1.4
Sales or marketing skills	7.0	2.8
Customer care	3.8	2.1
Design or development skills	1.9	1.2
Finance or accountancy skills	6.9	0.4
Technical or specialist skills	9.8	5.0
Occupational skills breakdown via different occupations	58.6	29.9

Table 4: Breakdown of occupational skills: current skills gap, UK.

Occupation	Current skills gap (%)
Managers and administrators	1.19
Professional	4.86
Associate professional and technical	14.66
Clerical and secretarial	7.16
Craft and related	44.84
Personal and protective service	6.91
Sales	0.68
Plant and machinery operatives	19.44
Other	0.26
Total	100.00

Table 5: Additional occupational demand *projected* for specific high-skill occupations in South Africa, 2001-2006.

High-Skill Occupations	Number in 2001	Percentage average annual change in number of positions, 2001-2006	Total new positions arising, 2001-2006
Academics	37 327	0.5	914
Doctors	34 370	1.2	2 191
Nurses	155 516	1.2	9 934
Computer-related professionals	75 841	2.5	9 990
Scientists	4 647	1.6	388
Science technologists	4 729	0.5	126
Educators	354 469	1.4	26 417
Engineers	29 824	1.4	2 095
Engineering technologists	32 132	2.1	3 132
Managers	280 298	0.8	11 298

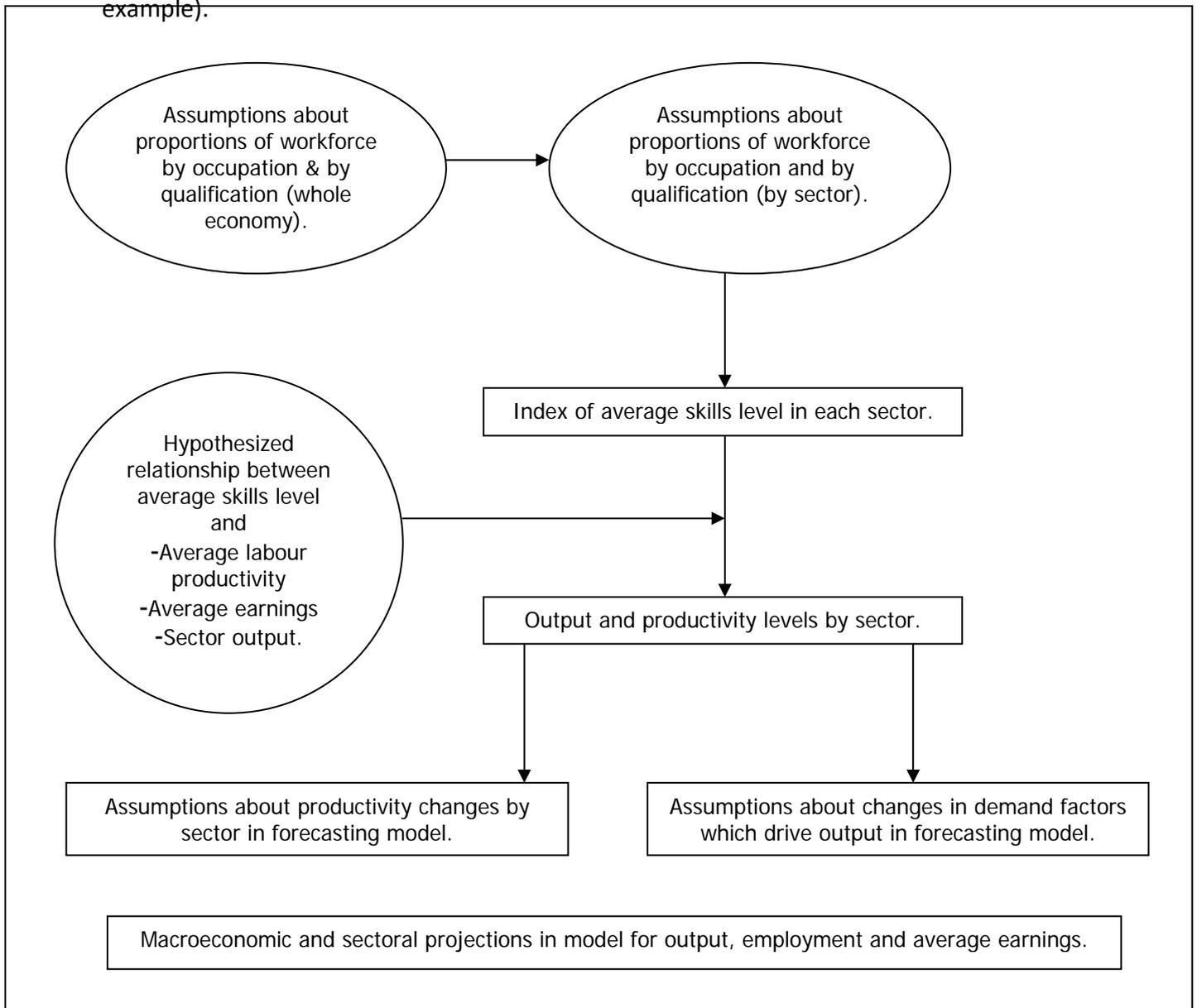
Source: Woolard, Kneebone & Lee (2003: 469)

Table 6: Number of people *projected* as needed to meet new and replacement demand in South Africa, 2001-2006.

High Skill Occupations	Number in 2001	Number of workers required to meet new & replacement demand over five years.
Academics	37 327	6 651
Doctors	34 370	5 207
Nurses	155 516	35 461
Computer-related professionals	75 841	15 600
Scientists	4 647	795
Science technologists	4 729	599
Educators	354 469	73 077
Engineers	29 824	5 116
Engineering technologists	32 132	5 937
Managers	280 298	45 130

Source: Woolard, Kneebone & Lee (2003: 469)

Figure 1: Information requirements and linkages to prepare skills projections (modified UK example).



Source: modified version of figure in Beaven & Others (2005: 7).

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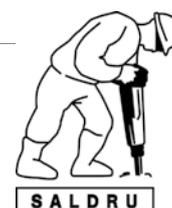
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southern africa labour and development research unit

The Southern Africa Labour and Development Research Unit (SALDRU) conducts research directed at improving the well-being of South Africa's poor. It was established in 1975. Over the next two decades the unit's research played a central role in documenting the human costs of apartheid. Key projects from this period included the Farm Labour Conference (1976), the Economics of Health Care Conference (1978), and the Second Carnegie Enquiry into Poverty and Development in South Africa (1983-86). At the urging of the African National Congress, from 1992-1994 SALDRU and the World Bank coordinated the Project for Statistics on Living Standards and Development (PSLSD). This project provide baseline data for the implementation of post-apartheid socio-economic policies through South Africa's first non-racial national sample survey.

In the post-apartheid period, SALDRU has continued to gather data and conduct research directed at informing and assessing anti-poverty policy. In line with its historical contribution, SALDRU's researchers continue to conduct research detailing changing patterns of well-being in South Africa and assessing the impact of government policy on the poor. Current research work falls into the following research themes: post-apartheid poverty; employment and migration dynamics; family support structures in an era of rapid social change; public works and public infrastructure programmes, financial strategies of the poor; common property resources and the poor. Key survey projects include the Langeberg Integrated Family Survey (1999), the Khayelitsha/Mitchell's Plain Survey (2000), the ongoing Cape Area Panel Study (2001-) and the Financial Diaries Project.



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