2012

LMIP WORKING PAPER 2

Establishing a Foundation for Labour Market Information Systems in South Africa

Philip Toner

onnecting capabilities individuals & institutions connecting capabilities individuals & ins

connecting capabilities individuals & institutions connecting

LABOUR MARKET
INTELLIGENCE PARTNERSHIP

Disclaimer

Working papers are preliminary works in progress. The HSRC-led consortium has released these working papers to inform debate, encourage different thinking about social problems, and stimulate the development of novel policies. These working papers do not themselves represent policy advice.

The ideas, opinions, conclusions or policy recommendations expressed in these working papers are strictly those of the author(s) and do not necessarily represent, and should not be reported as, those of the HSRC-led consortium or DHET.

The HSRC-led consortium and its funders take no responsibility for any content or syntax errors, omissions in, or for the accuracy of, the information contained in these working papers.

Author: Dr. Phillip Toner

Institution: University of Western Sydney

Email: ph.toner@uws.edu.au

Date: 24 April 2012

Preface

One of the gravest economic challenges facing South Africa is high unemployment, but at the same time, a skills mismatch. The market demand for skilled labour is greater than the number of individuals completing post-school education and training. Prospective employers often complain that the education system does not give individuals the necessary skills to be productive in the workplace, or to start their own enterprises.

Government acknowledges that the unemployment crisis is a systematic problem and cannot be addressed by ad hoc interventions scattered across line departments. With this 'big picture' thinking in mind, DHET aims to create broad and equitable access to a full spectrum of post-school opportunities and lifelong learning encompassing adult education and training, workplace training, the FET college system, artisan and technical training, higher education and innovation.

DHET's ability to create these learning opportunities requires a network of partners to gather and maintain a labour market intelligence system. Such a system can provide analytical insights to support policies and intervention programmes.

In February 2012, therefore, DHET commissioned a HSRC led research consortium to support its capacity to create and maintain a labour market information and intelligence system, guided by the national Delivery Agreement 5. The primary focus is the development of a 'strategic intelligence capability' towards the establishment of 'a credible institutional mechanism for skills planning'. The HSRC coordinated research project is organised in terms of six interlocking research themes, two which focus on labour market information and four which focus on labour market intelligence:

- Theme 1. Establishing a foundation for labour market information systems in South Africa
- Theme 2. Skills forecasting: the supply and demand model *(a Wits EPU project)*
- Theme 3. Studies of selected priority sectors
- Theme 4. Reconfiguring the post-schooling sector
- Theme 5. Pathways through education and training and into the workplace
- Theme 6. Understanding changing artisanal occupational milieus and identities

The consortium made a strategic decision that their research must not duplicate or repeat existing research about the challenges facing South Africa's education and training system and labour markets. Their research must address gaps, promote synergies and explore complementarities.

Hence, as a first step, working papers were commissioned to inform the research agenda for each theme. Although the working papers cover different issues, each has four common dimensions: policy challenges to institutionalise and build a post-school education and training system in South Africa, lessons from seminal national and international research, conceptual frameworks, methodological issues and data challenges raised by this research, and potential research gaps.

One of the HSRC led consortium's goals is to create a living community of practice that researches and debates education, skills and labour market issues. These working papers were presented at a conference in May 2012 to start building such a research network.

The dissemination of these working papers is intended to encourage more individuals to join the research community. We look forward to individuals' comments. They can be emailed to agoldstuck@hsrc.za.za. Welcome to the research community!

Theme 1:	Theme 3:	Theme 4:	Theme 5:	Theme 6:
Establishing a foundation for labour market information system in South Africa	**Studies of selected priority sectors**	**Reconfiguring the post-schooling sector**	**Pathways through education and training into the workplace**	**Understanding changing artisanal occupational milieus and identities**
Simon McGrath Some international reflections on developing VET indicators	**Haroon Bhorat and Morne Oosthuizen** Studies of Selected Priority Sectors in the South African Labour Market: A Proposed Research Programme	**Andre Kraak** Private post-school education in South Africa	**Michael Cosser** Pathways through education and training and into the labour market	**Angelique Wildschut** Conceptualising the study of artisans
Phil Toner Establishing a foundation for labour market information systems in South Africa	**Peter Jacobs and Tim Hart** A critical review of the research on skills development in rural areas	**Andre Kraak** Differentiation in the post-school sector	**Pundy Pillay** Pathways through education and training and into the workplace: a concept paper	**Jeanne Gamble** Models and pathways to institutionalise apprenticeships
Anthony Gewer Developing a framework for institutional planning and monitoring in FET Colleges	**Shirin Motala** A critical review of research on skills development and labour market demand in the early childhood development sector	**Joy Papier et al** Contemporary issues in public FET colleges	**Sharlene Swartz** Navigational capacities for youth employment: A review of research, policies, frameworks and methodologies	
Carmel Marock Developing a framework for understanding SETA performance: Monitoring and evaluating their role in skills planning, steering and enabling a supply within their sector	**Thembinkosi Twalo** A comparative review of skills development in cooperatives	**Veronica McKay** A critical review on Adult Basic Education (ABET) in South Africa	**Fiona Lewis** Traffic jams or trees – how are South African youth progressing through the higher education sector? And what lessons can we learn from current studies?	

Theme 1:	Theme 3:	Theme 4:	Theme 5:	Theme 6:
Establishing a foundation for labour market information system in South Africa	**Studies of selected priority sectors**	**Reconfiguring the post-schooling sector**	**Pathways through education and training into the workplace**	**Understanding changing artisanal occupational milieus and identities**
Bongiwe Mncwango Towards a demand side firm level survey of labour information in South Africa	**Margaret Chitiga and Stewart** Development of a national skills forecasting model	**Thenjiwe Meyiwa and Nolutho Diko** The state of graduate teacher transitions to the labour market	**Stephanie Alais** Jobs? What jobs? Skills? What skills?An overview of studies examining relationships between education and training and labour markets	
Michael Cosser and Fabian Arendse Education and labour market indicators	**Imraan Valodia** Conceptualising skills development in the informal sector	**Felix Maringe** An overview of studies exploring systemic issues related to the South African post-school sector		
Joan Roodt National database sets and research on labour market demand		**Peliwe Lolwana** Is post-school education adult education and training? The shape and size of post-school education		
Mariette Visser National database sets available for post school sector (supply side)		**Michelle Buchler** A critical review of research on skills development qualifications structures		
Michael Gastrow Innovation, skills development and South African labour market intelligence		**Volker Wedekind** Towards responsiveness and employability in the post-school sector		

CONTENTS

INTRODUCTION

The purpose of this paper is to provide an overview of the key issues and problems in establishing a labour market information system in an emerging economy. The term 'emerging economy' however, does not adequately capture the complexity of South Africa. Over the last century the Republic developed a large integrated industrial base founded on mining and manufacturing with the latter comprising mineral, food and chemical processing, a large and sophisticated defence capability and an automobile and machinery and equipment sector employing medium and high level skills. The country also has, in certain regions, a highly productive agricultural sector. It also developed a highly competent central statistical agency. However, much of the population is unable to participate adequately in the formal economy, especially in artisanal, associate professional and professional occupations and, high quality statistical information systems were developed for some parts of the labour market, economy and geographic regions, but not others. Accordingly, the issue for South Africa is not establishing the capacity to develop labour market information systems *de novo*, rather it is extending existing capacity to cover the whole South Africa labour market and economy and developing the personnel to undertake this expanded labour market data collection and intelligence role. Nevertheless, in extending and developing this capacity it is a propitious time to reflect on the broad principles and choices underlying labour market information systems.

The paper is structured as follows, section one considers some of the key high level foundation principles for such systems, section two considers the meso level design principles involved in the implementation of such systems and section three reflects on some issues and problems in the South Africa context, the final section four briefly discusses some issues in labour market information systems and education systems, focusing especially on vocational education and training (VET).

By necessity the paper deals with these issues at a high level of generality: it does not recommend or specify labour market data items to be located nor appropriate methods for such collection and its analysis. A detailed account of specific data items that can be collected in emerging economies and a discussion of methodology can be found in excellent studies such as the recent report on labour market information systems conducted in India (National Skill Development Corporation 2011); classic studies by the international Labour Organisation (1989) and the World Bank (1993) can also be consulted. Cully (2006) provides an excellent account of the role of labour market information and labour market research in education and vocational training policy formation in a developed economy.

SECTION 1: HIGH LEVEL FOUNDATION PRINCIPLES

1. Realistic expectations about the effect of improved labour market information

It is important that there be realistic expectations about the provision of a higher quality and quantity of labour market information on the quality of public and private sector decision-making. Despite demands that public policy be 'evidence based', facts, however reliable and valid, are subject to interpretation as to their significance in any chain of causation, and indeed even the direction of causation. There are a number of sources of differing interpretation of the same facts. The most obvious are theoretical disputes, such as that between neoclassical and Keynesian approaches to understanding labour markets and the economy. The effect of ideology must also be taken into consideration whereby policy makers reject information that is not consistent with deeply held convictions. In addition, the discipline of 'experimental economics' has exposed a range of systematic flaws in the decision-making of 'rational' actors (The Royal Swedish Academy of Sciences

2002). It is now accepted that individuals and organisations have 'bounded rationality' which no amount of additional information will necessarily overcome. Indeed, the volume of information can lead to 'policy paralysis' due to limited information processing and internal communication capacity, regardless of the size and capability of the organisation. The recent Global Financial Crisis, with its attendant high unemployment, is a stark exemplar of the limits of rational public and private decision-making.

Good decision-making, of course, relies on a solid empirical base but good decision making itself requires training, experience and judgement.

2. Given unlimited information needs and limited resources a system for establishing priorities in labour market information systems is critical

The range of potential data variables, individuals, institutions and sectors that are within the scope of labour market data collection is virtually unlimited. The scope of labour market data collection and its uses include but is not limited to employment, income distribution, poverty elimination, demography and population control, population health (related to effective labour supply), urban and regional planning, education and training and economic and industry policy. Each of these variables is important and in combination the relevance of such data increases in its utility.

All countries, regardless of their income per capita face compromises and trade-offs in collecting, compiling and analysing labour market information. The ILO (1989: 53) observed there are necessary and unavoidable trade-offs between the conflicting objectives of "timeliness and cost-effectiveness" and "accuracy and statistical representativeness". In developing countries the trade-off between the need for labour market information and the capacity to deliver and analyse it efficiently is especially acute. A key criterion in the overall architecture is to balance need against capability – there is no point being overly ambitious in terms of the scope of data collection as such ambition is potentially building in failure.

The ILO (1989: 53) argued that 'the usefulness for decision-making in the broad fields of manpower and employment policy must therefore be the major criterion for judging the value of any labour market information programme'. However, it did not provide a clear method to determine the 'usefulness' of data.

It is suggested that a cost-benefit approach be adopted to establish priorities for labour market information systems. It hardly need stating that rigorously quantifying costs and benefits will be difficult, or in some cases impossible, nevertheless a formal system for allocating scarce funds across diverse labour market information needs is critical to ensure a disciplined and transparent approach. Organisations advocating the collection of particular data need to make a clear statement of the benefits to users and their implications for individual's private firms or government activity against the cost of data gathering and against alternative proposals to meet data needs. A range of data methods also needs to be considered to meet a particular data need. Sometimes, qualitative data derived from focus groups will be sufficient to meet a data need as opposed to a large scale survey of firms or households. A coherent case needs to be made by advocates of particular data collections as to why resources should be devoted to particular collections- clear and well argued case as to how the data will be used by different groups and a clear statement of its benefits to users. This applies especially to demands to undertake one-off surveys, as these can be undertaken to satisfy academic interest rather than meet a compelling policy need.

A complementary approach to cost-benefit analysis, or otherwise establishing a compelling case to undertake a labour market data collection, is to require the advocate of the data collection to fund, either in whole or in part, the cost of the data collection. This would apply only to government agencies, which are in a position to be able to fund such exercises. For example, an Employment Department may make a strong case to the central national statistical agency for a particular data collection; how important the data is to eh Department may be judged in part but its willingness to fund the collection.

Establishing a system for creating priorities in labour market data collection, such as a cost benefit analysis, requires intensive consultation between the users and producers of the labour market data. A representative and informed group of actual and potential users and data producers are essential for this task. Aside from the central national statistical agency as the principal data producer the typical users of such data include,

- Government Departments- Labour/Employment; Education and Training; Social Security
- Business representatives
- Unions
- Education and training institutions
- NGOs
- University researchers
- International organisations (for example, ILO, OECD, UNESCO) to whom national data is reported on a regular basis, typically under international treaties or conventions.

In some cases these users will also be producers, such as Departments of Employment recording the number and characteristics of unemployed registered in government employment exchanges and vacancies reported to the exchanges. This only serves to emphasise the need for close consultation to avoid duplication of effort in national and regional data collection.

Whilst user producer consultation is critical co-ordination failures can arise if the number of representatives is too great. A simple expedient is to inform users and leave it for them to decide if they want to have input on a particular issue rather than making such consultations compulsory.

In an 'emerging economy' however, a 'chicken and egg problem' can arise in establishing an effective user producer relationship due to the absence of credible and useful existing labour market data. Users and current and potential users of such data may need to be educated as to the utility of such data for their own proposes. They may even need education in how to access and process the data to meet their own information needs. This issue is taken up in the next section.

Finally, a rigorous rolling evaluation program of labour market data collections, conducted say every 5-7 years, is essential. Its purpose will be to avoid the tendency towards bureaucratic inertia where the rationale to continue to collect certain labour market information is that it has been done in the past. Periodic reviews need to be conducted to assess the continuing usefulness of the data collected in light of changing strategic directions of government, business and the wider population.

3. The distinction between 'descriptive' labour market data and labour market 'intelligence' should not be exaggerated

In the literature the distinction between description and analysis or 'intelligence' is often drawn, but this divide should be critically examined. The distinction is arguably too simplistic and can have the unfortunate tendency to place excessive emphasis on the development of analytical and interpretive skills over the formation of a large cadre of statistical, classification and ICT expertise essential to the gathering and compilation of labour market data. Both functions are critical and, properly designed; data gathering and labour market intelligence are complementary activities. This applies when, as per point 2 above, a clear and compelling case for gathering particular labour market is made that meets a pressing and specific policy need. In such cases data collection serves the purpose of providing labour market intelligence.

4. The distinction between labour market 'signalling' and 'planning' depends on the occupational labour market

In the literature a strict dichotomy between labour market planning and signalling is asserted, with the former associated with a neoclassical or orthodox approach to labour market policy and the later associated with more direct intervention in the labour market (World Bank 1993). However, both

approaches are fit for purpose depending on the circumstance and the relevant occupational groups that are subject of government policy attention.

Labour market signalling is simply an application of the orthodox economic view of the functioning of labour market and the corresponding information needs required for their efficient operation. The following account gives the main tenets of the labour market signalling approach which is based primarily on the provision of timely and accurate information to individuals and organisations in the labour market:

'In competitive market economies, movements in wages and employment signal changes in the demand for and supply of particular skills and trades. The careful monitoring of these signals...is one way to identify trends in the demand and supply of skills (World Bank 1993: 140). '[M]ost training decisions in market economies, for example, are made by private individuals and training providers, including enterprises, without need for public sector interventions. The analysis and dissemination of information on the balance of skills demand and supply is sufficient to guide these decisions. Centralized planning is unnecessary...producing measures of the benefits and costs of skills training and prospective changes...can alert individuals and training providers to changing market incentives' (World Bank 1993: 135).

Aside from the theoretical disposition of orthodox economics against government intervention there are a number of legitimate reasons advanced for scepticism regarding the efficacy of labour market planning when it is applied to a very large number of occupations and industries. These include the poor quality of labour force statistics in developing countries, especially occupational statistics. Lack of specifics means the statistics are poorly suited to the needs of a planner who is attempting to capture the balance of skills demand and supply data at a detailed occupational level. Technological change is also argued to undermine the very definition of an occupation.
Labour market planning is identified with quantitative forecasting using methods such as input-output analysis with an employment vector comprising a detailed occupational structure for each disaggregated industry cross classified with educational attainment and demographic structure. These are also commonly linked to large econometric economic models which forecast long run changes in output and industrial structure. The problems with quantitative forecasting across a whole range of industries and occupations linked to parameters of projected output change and labour productivity or technological change are very well known. However, it is critical to note that labour market ''planning'' can use a variety of methods. Other methods include detailed analysis of stocks and flows of inputs into particular occupations from a variety of sources and outputs from occupations to arrive at current state. This can be projected into the future by altering assumptions regarding rates of inflows and outflows and changes in net demand for particular occupations. For example, beginning with the current stock of an occupation, flows into these occupations from education and training, informal upgrading and net migration are added minus exits by way of inter-occupational mobility, deaths and retirements.
However, both approaches are arguably apposite depending on the occupations to which they are applied. For occupations which have the following attributes a planning approach may be relevant:

- strict educational entry requirements, that is, possession of a formal qualification is mandatory for employment. (This applies for example to professional engineering, dentists and doctors and teachers. It also applies to many para professional occupations such as lab technicians, draftsmen, computer programmers. It also applies to a lesser extent to artisanal occupations such as electricians, plumbers and builders who typically have to be licensed to conduct their trade. The extent to which such licensing is enforced in a particular jurisdiction is the relevant factor in determining how well planning can be applied to these occupations)
- there is high levels of membership of professional or industry associations or unions which typically can provide excellent intelligence on the characteristics of their membership and the factors influencing demand and supply

- there are good records of net migration
- there are good records of such occupations in population censuses or other comprehensive labour market censuses or surveys.

These attributes make the application of a variety of planning techniques appropriate. For many other occupations which require few if any educational entry requirements and, for which informal upgrading is a typical mode of entry, signalling approaches are more relevant.

A plurality of methods, techniques and approaches to the generation and analysis of labour market information is preferable to too much faith being placed in a single method, technique or approach.

5. The overall strategy for labour market data gathering and intelligence also depends critically on the national approach to economic development

The approach to labour market data gathering and intelligence depends to a large extent on the type of industrial and economic policy that is to be pursued. The neoclassical or laissez faire economic policy common in Anglo-centric nations such as the US and UK involves a relatively passive role for the state in regulating and shaping industrial development and intervening in labour markets on issues such as industrial relations, tertiary and vocational training systems. This approach is sometimes referred to as the 'Washington Consensus' and is based on the free flow of international capital and trade; deregulated labour, product and financial markets and privatisation (Centre for International Development 2012).

Against this is the so-called 'developmental state' strategy named after the pattern of government action and industrial development pursued by North Asian post-war states, first by Japan and copied to varying degrees by South Korea, Taiwan, Singapore and currently China ((Johnson 1983). The basic premise of the developmental state is a rejection of comparative advantage as the basis for determining the industrial structure and trade policy and the pursuit of competitive advantage (Deraniyagala and Fine 2001). In contrast to comparative advantage, which relies on a static set of factor intensities to determine trade policy, competitive advantage is achieved through active state intervention, working in an integrated manner with the private sector, to create a manufacturing based industrial structure. The goal is to assist firms and industries rapidly climb the technology ladder in terms of both more sophisticated production processes and products and services and ensuring that firms and industries achieve world class levels of productivity and innovation (Wade 1990). Measures such as temporary import protection and subsequent export promotion were used to stimulate industrial development by encouraging investment and exploiting scale economies in production; and technology diffusion and transfer schemes assisted firms upgrade technology etc (Toner and Butler 2009). There was of course, considerable variation in the methods used in industrial strategy across the North Asian states. Singapore for example focussed primarily on the attraction of multinational corporations to stimulate development, Taiwan focussed on manufacturing SMEs and Korea on the promotion of domestic mega-corporations known as chaebols. Samsung and Hyundai are amongst the better known such conglomerates.

Ashton et al (2002: 15) provides an excellent account of the implications of this development strategy for labour market policy in the three North Asian states, excluding Japan. 'All three governments, facing similar external conditions but with different strategies to initiate and sustain the process of industrialization, faced a threefold problem. First that of upgrading the skills of their labour forces, second that of catering for the specific requirements of their chosen form of industrial organization and finally that of containing the growing demand for academic rather than vocational education''.

Given that the pattern of industrial development the countries embarked upon was essentially that of ''technology catch-up'', it was a relatively straightforward task to identify what occupations and

skills would be required for a particular block of industries producing particular goods with a known technology. ''What they had to do was establish the institutional mechanisms which would perform two related functions. First, to ensure that the information about the skill requirements of new industries informed decisions about the provision of schools, colleges, training centres and their curricula. Second, and just as important, to ensure that when decisions were made about the provision of these services the needs of the economy took precedence over those of other interested parties, for example, those of the education profession, the government ministries and the parents. Thus, in all three societies we witness the emergence of mechanisms at the heart of government which perform the function of linking the output of the education and training system to the skill demands of the current and future economy. These mechanisms are all centred around what may be termed super-ministries, ministries which have the dominant input in the decision-making processes across government departments and especially in the area of education and training. They transmit the appropriate information and ensure that the needs of economic development take precedence over those of other groups and objectives' (Ashton 2002:16).

Needless to say, a developmental state, along the lines detailed, requires intrusive co-ordination, a high level of competence in planning and delivery and a strong consensus about policy means and ends within political parties and political elites. In some nations, the developmental state is consequently, also an authoritarian state. Korea, until democratic reform in the 1980s, and Singapore to the present, are representative of this trend. China is the clearest example of an authoritarian state fully committed to deploying the full suite of developmental state instruments.

Lall (2000) argues for the relevance of the developmental state approach to developing economies, such as those in Africa, and identifies the implications for labour market information and training. A key feature of his analysis's is the linking of education and training to the process of accelerating learning in the workplace as a key means of technological upgrading. Whereas previous writers on the developmental state had focussed on shaping the industrial structure and exploiting scale economies in production to achieve productivity growth, Lall was an early proponent of the complementary and equally important process of workplace learning.

There are two reasons why workforce skills are becoming increasingly important in the competitiveness of developing nations. First, the ''nature of competition itself is changing: traditional modes of competition, based on low costs and prices, are being replaced by the 'new competition' driven by quality, flexibility, design, reliability and networking'' (Lall 2000: 2). Secondly, increased liberalisation of world trade under measures, such as the World Trade Organisation, have made it difficult to implement the type of interventionist developmental state policies such as capital and import controls, local content requirements, export and credit subsidies and demands on multinational corporations that marked the earlier generation of post-war developmental states. Developing skills remains one of the few permissible fields for government activity to promote industry under the current rules of globalisation (Lall 2000: 21-22).

Lall adopts the concept of a ''low-skill equilibrium'', originally applied to large parts of the UK VET labour market, to describe a self-reinforcing situation where a poor education system produces a large proportion of students with low literacy and numeracy skills and where poor quality post-school VET training does not remediate these deficiencies when students enter the workforce, rather it reinforces these deficiencies. Consequently, a large proportion of the workforce, in the order of 15-20 per cent in the UK, is functionally illiterate and/or innumerate. These low skilled workers find employment in firms producing low quality products and services competing only on price. This group of low skilled workers is so large it constitutes in itself a discrete consumer market which is catered too by low quality firms employing low skilled workers. There is thus equilibrium in the sense that the supply of low skilled workers finds corresponding demand in industry. These firms are constrained from technological upgrading and relying on measures such as Quality Assistance and Just in Time to improve performance since these organisational innovations requires more skilled workers than the training system is capable of delivering. Developing nations risk similar technological stagnation in a low skill, low growth trap unless they develop their workforce skills.

A labour market information system oriented to a developmental state type industrial strategy will be very different from one that relies primarily on comparative advantage. Firstly, the state will be active in planning for future as well as current technologies and, secondly, it will focussed on indentifying best practice learning methods and skill development in more advanced fims and diffusing them to other firms. That is to say the state has an active rather than passive role in technological upgrading of firms.

SECTION 2: MESO LEVEL DESIGN PRINCIPLES FOR LABOUR MARKET INFORMATION SYSTEMS

The former section was concerned with the abstract principles underlying the architecture of a labour market information system. The present section deals briefly with some issues involved in the practical implantation of such systems.

i. It is essential there be a clear and unambiguous allocation and demarcation of roles and responsibilities across agencies involved in data collection, converting the data to useful intelligence and use of the data. This is critical first, for efficiency to avoid duplication and preserve scarce resources. Second, it is essential for accountability to ensure a clear line of responsibility for the provision of timely, efficient and high quality data.
ii. There must be standardization of classifications and statistical methodologies across agencies that collect, analyse and disseminate labour market data. There are well established international standards covering the principle labour market variables of interest to government and business developed by United Nations agencies. These include for example, International Standard Classification of Occupations (ISCO); International Classification of Status in Employment (ICSE); Classifications of occupational injuries; International Standard Industrial Classification of all Economic Activities (ISIC) and International Standard Classification of Education (ISCED) (ILO 2012a). These are, of course, typically adapted to each nation's particular circumstances, nevertheless consistent application within each nation is critical. This standardisation should, if at all possible, apply to computer systems and software across agencies. This will greatly facilitate data transfer across agencies.
iii. Given the scarcity of statistical, managerial and ICT skills in developing nations it is advisable that limited resources be centralised. This is especially the case for labour market data based on population, household and business censuses and surveys. Undertaking these activities is a highly skilled and technical activity. It is also extremely resource intensive as it requires for example, the compilation of national business registers from which can be drawn a sampling frame to conduct statistically representative surveys of business. Typically this will be the function of a national statistical agency. Centralising this activity in one agency is important as it should result in scale economies in training new statisticians, ICT specialists and managers and create career paths for these workers that would otherwise be absent if these functions were scattered across a range of agencies.
iv. Whilst central statistical agencies perform the critical function of delivering valid and reliable quantitative labour market, economic, demographic and social data, other agencies, especially Employment or Labour departments that have the principal carriage of matching workforce skills to demand and for future workforce planning must also have an internal research capacity. This capacity should encompass at a minimum three broad domains of competence. First, is the analysis of data from the central statistical agency to monitor short and long run labour market trends. This is necessary to inform policy responses to problems, such as unemployment, demographic movements and labour shortages and oversupply. Second, development of their own labour market information and intelligence systems. These are almost entirely of a qualitative nature in that they employ methods such as focus groups and small scale surveys of firms, unions, vocational education institutions etc. to gather intelligence on particular topics. These topics include for example, the origins and effects of occupational

and skill shortages on particular industries and how firms adapt and respond to these shortage. Other topics include the effects of technical change on the demand for particular occupations. This internal research capacity is not intended to substitute for or compete with that of the central statistical agency whose primary role is the gathering of valid and reliable quantitative data. (An example of such a report is provided as Appendix 1 to this study. It is a report on the labour market for a coal mining and industrial region of NSW undertaken by the Department of Education, Employment and Workplace Relations). The third domain of competence is programme evaluation, as such departments typically also conduct a variety of programmes directed at ameliorating long term unemployment, skills shortages etc. Programme evaluation is a highly skilled and technical activity that is essential to ensuring the efficiency and performance of public and private labour market programmes.

v. One of the benefits of standardisation of classification and computer systems across agencies is that it permits the linking of data bases that directly or indirectly have uses in labour market analysis. For example, the Tax department's list of taxpaying firms is very useful as an input into the maintenance of a national business register. Tax records are also a useful indicator for estimating the size and composition of the informal economy, for example by comparing the size and characteristics of working age population derived from national population census with the size and characteristics of PAYE and self-employed business owners.

vi. Aside from the example above, very useful labour market data can come from a broad range of administrative data that is not usually collected through surveys and censuses conducted by a central statistical agency. This administrative data is collected by government agencies such as Employment or Labour Departments; Education Departments; Immigration and Health Departments. Some obvious instances are school enrolments, apprenticeship commencements and completions; unemployment benefits, employment vacancies (their occupation, location and any special needs or preferences expressed by employers); births and deaths, and migration. This highlights again the necessity for co-operation across agencies in information sharing, the importance of compatible ICT systems and the use of common classification systems. A good example of the latter is the difficulty presented by government agencies that develop and use different geographic regions on which data is collected.

   Given moves by many governments around the world to privatise government activities or outsource their provision to private firms it is critical that the continued supply of this data be included in any contracts between governments and outsourced or privatised services providers.

vii. A dissemination policy should be developed. In particular dissemination strategies should be developed targeting the needs, educational and literacy/numeracy levels of different individuals and groups in society who may have a use for labour market data. Data needs to be processed and presented at a level matched to the intended audience. As noted in the previous section, for many groups who are unfamiliar with the uses of reliable labour information an education campaign may be necessary to disseminate to them the uses to which such information can be put and the value they can derive from it. The specific media used for dissemination also needs to be considered. For some groups smart telephone 'apps' may be an appropriate means, for others paper based or online delivery is relevant.

   Generally, labour market information collected by central statistical agencies and other agencies should be disseminated at no cost to the user. However, special requests from individuals or public and private organisations that may involve computation time and labour time for programming should be priced on a cost recovery basis. This is important to preserve scarce resources and measure the extent to which the user really needs the data.

viii. Confidentiality of persons and organisations surveyed or who otherwise provide data is critical. Confidentiality must be enshrined in legislation governing the work of the central statistical agency.

SECTION 3: PARTICULARITIES OF SOUTH AFRICA

This section briefly outlines three issues in labour market information identified in the literature that apply or are highly likely to apply to South Africa.

Informal sector

The labour market of developing economies can be broadly classified into three groups, subsistence or semi-subsistence agriculture, which is often marked by high levels of disguised unemployment; the informal urban labour market and the organised economy. The latter is marked by concepts such as stable business premises, continuity of business operation, payment of business and other taxes, engagement of employees on formal contracts of employment and dealings with other business that are based on contracts enforceable through the courts. Despite comprising perhaps the majority of persons that are economically active, certainly in urban areas, capturing the scale and composition of the informal sector represents a major problem for labour market information systems. Most workers in the informal economy are self-employed or operate in the 'black economy' such as labourers in construction sites who work on hourly or daily rates. Such people are difficult to locate through traditional business survey methods as it is not in the interest of businesses to declare they engage such labour, since it is an efficient means of avoiding a variety of taxes and imposts such as workers compensation payments, payroll taxes and income tax. In addition, the informal sector still lacks a universally accepted definition that can be applied unambiguously for the purpose of generating labour market information. For example, workers can shift between unpaid household activity to seasonal self-employment or domestic outwork. The latter often applies in the textiles and clothing industry.

An important element of this sector is 'informal apprenticeship' where craft skills are passed on from master craftsmen to apprentices through, unlike formal apprenticeships there is no formal off the job training in vocational colleges and the system of payment to apprentices can often be of an in-kind nature such as accommodation , food or pocket money. Assisting the large informal apprenticeship market to upgrade its technical skills is an important means of raising productivity and diffusing best practice production and maintenance methods (ILO 2012b).

Despite these difficulties, given the importance of the informal sector as an employer of surplus labour and the scope for transition of this labour into the formal sector, it is critical that the scale and composition of the informal sector be estimated using consistent methods and definitions.

Build evaluations into programmes

Recent research highlights the need to build evaluation into labour market programmes from the beginning. Kingcombe (2012: 6) for example highlights that the conduct of 'rigorous evaluations ' of labour market and training programmes in Africa nations that examine both programme cost and outcomes is 'quite rare'

Kingcombe recommends that '*evaluation should be built into the design of programmes* at the beginning rather than being viewed as an ex-post exercise. Evaluations should also be undertaken in a rigorous way that allows one to draw useful inferences about the effectiveness of the interventions in terms of their *impacts on the employment and earnings prospects* of the programme participants and that cover *a sufficiently long period* so that one can assess whether the programme yields any long-term private or social benefits' (p.5).

To this end works such as *The Youth Employment Inventory* sponsored by the World Bank be consulted in the design of labour market ad training programmes. The Inventory 'is the first comprehensive database to provide comparative information on youth employment interventions worldwide. Comprising more than 400 youth employment programs from around 90 countries, YEI documents program design, implementation, and achieved results. The programs included range from interventions for improving the labor market information base (counseling, job search skills) to programs that aim at increasing the demand for youth labor (wage subsidies and public works) and

those focusing on improving chances for young entrepreneurs (providing financial, technical, and training assistance)' (World Bank 2012).

Improving the Central Statistical Agency

It is well established that in developing countries the 'quality of available [labour market] data is often seriously impaired by weak survey design, low response rates to questionnaires, faulty sampling, poorly phrased and wrong or irrelevant questions, insufficiently instructed survey personnel. Other shortcomings are frequently changed definitions and concepts applied to the same survey or the use of different definitions in different surveys undertaken by different data producers, but relating to the same subject of investigation' (ILO 1989: 16).
In a remarkably frank assessment Statistics South Africa conceded that these and other problems apply to its own previous work in the post-1994 period. Data was 'irrelevant both to development planning and to the performance of development programmes, projects and interventions... products were mostly producer-driven and quite often irrelevant to user needs due to lack of direct interaction between users and producers'. Rather than being an historical problem the agency notes that:
'The state of statistics in the country was and still is characterised by three major gaps, namely;
• A statistical information gap in the sense that there is not sufficient information for use by policy makers and other stakeholders;
• A gap in the quality of the statistics both currently being produced and planned to be produced by the various organs of state; and
• A gap in the capacity to produce statistics fit for use' (Statistics South Africa, undated).
The report does detail a strategy to address these deficiencies, but it is unclear how effective these measures have been to date.

SECTION 4: VET AND EDUCATION SYSTEM PERFORMANCE

Numerous studies of VET in emerging economies have argued for the central role of formal vocational training in technological capacity building and raising productivity and incomes. However, these studies also highlight common deficiencies in planning and delivery. Many of these issues can be addressed through improved labour market information systems.

Kingcombe's (2012: 38) study of VET in Africa found problems in the quality of delivery and evaluation of student outcomes. Specifically, there are:

- Very high costs
- Training is not suited to actual socio-economic conditions
- There is disregard of the informal sector's needs and
- There is disregard of the labour market and consequently high unemployment rates among graduates.

A recent comprehensive review of VET in India (National Skill Development Corporation, no date: 4-6) found a series of shortcomings, such as:

- a lack of standardization of eligibility criteria for trainers both for entry and advanced levels resulting in varying criterion adopted by training institutes to select trainers
- a severe shortage of training infrastructure to ensure continuous and regular skill development of trainers. Advanced training institutes that exist can train only 1200 trainers a year under their flagship courses. Similarly dedicated trainers' training facilities in the private domain is also low. As the current system produces very few certified trainers, training institutions are flooded with non-certified trainers

- assessment and evaluation criteria for trainers vary from one institute to another. In government institutes, assessment and evaluation is usually based on the number of years of service and generally not on performance
- there are high attrition rates amongst trainers due a low pay and poor career prospects. Movement from one institute to another is also limited due to lack of standardization of eligibility criteria
- 70% of the Indian population (and workforce) lives in rural India where wage employment opportunities are limited and self-employment is typical. Most trainers are from urban areas and cultural sensitivity together with the course curriculum needs to adapt when training is conducted in rural areas.

A number of measures can be adopted to address these and other issues in VET and educational delivery.

First, a comprehensive register of public and private training providers is required to enable a census or survey of formal training activity. This is critical to identify sources of training supply, the quantum of potential training places available, the geographic distribution of these places and areas of over- and under supply. This will enable the collection of critical data on teacher numbers, experience, qualifications and is central to determining the adequacy of VET teacher training. Similarly, formal and informal training activity undertaken within public and private firms should be monitored through occasional, say every 3 years, to gauge the scale of this activity.
Second, it cannot be emphasised to greatly how useful the introduction of a Unique Student Identifier (USI), is to enable the longitudinal tracking of educational content, student performance and labour market outcomes. A USI is issued upon commencement of schooling and is mandatory for subsequent participation in post-school formal training activity. A USI is critical to evaluate school performance and employment and training programmes. A USI greatly facilitates longitudinal or 'tracer studies' that follow graduates into the labour market for a year or two gathering information about their earnings, hours of work, and spells of joblessness. This information is linked with training undertaken to produce a measure of the economic benefits attached to the training. These studies are useful for prospective students, employers, VET managers and teachers. The World Bank (1993) also notes the use of 'reverse tracer studies. This planning technique identifies an occupation for which a training program has been designed and surveys a sample of those employed in the occupation. Respondents are asked about previous schooling, employment, and training. The information is used to construct an occupational map illustrating the sources of training and diverse paths of entry into an occupation. Planners can then measure the labour market outcomes and costs associated with each of the alternative paths into a particular occupation. Reverse tracer studies thus provide signals about the cost-effectiveness of alternative training strategies'.
Third, VET institutions must have an internal labour market research capacity, such as the resources to conduct quantitative and qualitative surveys, focus groups and case studies. This is essential to ensure the VET system is up to date with technological change; change in demand for skills and work organisation issues. This intelligence is used to adapt and inform curriculum, teaching methods, capital equipment purchases by colleges and upgrading of teaching staff skills and knowledge. There are large scale economies in the collection and analysis of complex labour data such as required to maintain VET teaching methods, and curriculum, and equipment is up to date with industry standards. The cost of information dissemination, especially via ICT is marginal or negligible compared to cost of collection and analysis. Typically data is collected from leading edge, average performing and laggard firms (to ensure that a representative picture of the penetration of new products and production processes is established rather than focussing excessively on technological 'leaders'); capital equipment and consumable suppliers; industry magazines; websites; industry associations; unions; government research agencies and universities. It is extremely inefficient for this to be undertaken on a decentralised, college by college or region by region basis. (An example of a through research based report from the Australian Manufacturing Skills Council is provided as appendix 2).

This is not to say that VET teachers, especially those at a Head teacher level are not expected to maintain close links with local industry. Rather such activity is central to their role. This activity is different, however, from that undertaken by a central specialist research capacity.

Fourthly, to ensure consistency in teaching and assessment standards across and within VET colleges it is important here be a system to system to 'moderate' teachers' assessments of students. This can be done by compare arranging for head teachers in a particular vocational discipline to meet regularly, say every 6 months, and compare how they mark a set of students' with a view to ensuring similar grading of students regardless of the teacher or location. A complementary measure is to have key written and practical exams set at a national level to ensure consistency in course content and assessment. This is important in ensuring acceptance of VET qualifications by employers and that taxpayers and students get value for money.

REFERENCES

Centre for International Development (2012) ''Washington Consensus'' http://www.cid.harvard.edu/cidtrade/issues/washington.html, Harvard University.

Cully, Mark (2006) *The role of labour market information systems and research in workforce development in Australia*, *Paper presented to Asian Development Bank Institute workshop on Workforce Development*, National Centre for Vocational Education Research, Adelaide.

Deraniyagala, Sonali and Fine, Ben (2001) New trade theory versus old trade policy: a continuing enigma, *Cambridge Journal of Economics*, Vol 25 No. 6, pp. 809-825.

International Labour Organization (1989) *Upgrading labour market information in developing countries*, Geneva.
International Labour Organization (2012a) *Classifications*
http://www.ilo.org/global/statistics-and-databases/classifications/lang--en/index.htm

International Labour Organization (2012b) *Upgrading informal apprenticeship. A resource guide for Africa.*

Johnson, Chalmers (1982) *MITI and the Japanese Miracle*. Stanford, CA: Stanford University Press.

Kingombe, Christian (2012) Lessons for Developing Countries from Experience with Technical and Vocational Education and Training, *International Growth Centre*, London School of Economics, Working Paper 11/1017.

Lall, Sanjaya (2000) Skills, Competitiveness and Policy in Developing Countries, Queen Elizabeth House, *Working Paper Series* QEHWPS46, University of Oxford.

National Skill Development Corporation (2011) *Concept paper on labour market information system: an Indian perspective,* http://www.nsdcindia.org/pdf/concept-paper-labour-market-info.pdf

National Skill Development Corporation (no date) *Need Assessment Report on Building trainers' skills in Vocational Employability.*

Statistics South Africa (no date) *Statistical Reform in South Africa.*
C:\PT files\South Africa\Previous Research\National Statistics System.htm

The Royal Swedish Academy of Sciences (2002) *Foundations of Behavioural and Experimental Economics: Daniel Kahneman and Vernon Smith.*
http://www.kva.se/Documents/Priser/Nobel/2002/sciback_ek_en_02.pdf

Toner P. and Butler G. (2009) Cumulative Causation and Northeast Asian Post-War Industry Policy, in Sebastian Berger (ed.) *The Foundations of Non-Equilibrium Economics: The Principle of Circular and Cumulative Causation*, Routledge, UK, pp.43-64.

Wade, Robert (1990) Governing the Market, Cambridge University Press.

World Bank (1993) *Skills for Productivity. Vocational Education and Training in Development Countries*, Oxford University Press.

World Bank (2012) *The Youth Employment Inventory.*
http://www.youth-employment-inventory.org/about/

APPENDIX

DEEWR Employment Report
MSA Environmental Scan