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Global governance of training standards in an outsourced labour force: the training double-bind in seafarer license and certification assessments

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Abstract

The shipping industry is amongst the most globalised of all industries and is characterised by complex modular supply chains, including a largely outsourced labour force of just-in-time, casualized workers from developing countries and the transitional East European States. Despite long-standing efforts by international bodies to standardise and regulate the education and training of seafarers, variations in practices and standards persist. Employers exercise contradictory influences on education and training providers, on the one hand demanding the provision of more recruits urgently (encouraging corner-cutting) and on the other hand complaining about the poor quality of recruits received (urging crack-downs on poor quality providers and more rigorous examinations) – the training double bind. This paper reflects on these issues through the study of the problematic use of computerised assessments in seafarer examinations, drawing upon findings from a study involving research in six different case study countries providing maritime labour and interviews with stakeholders.

Key words: assessment; education and training; global governance; outsourcing; seafarers.

Introduction

The shipping industry is one of the motors of globalisation, with more than 90% of the world's trade by volume being transported by sea, and with cheap maritime freight rates allowing imported goods to compete successfully with home-produced equivalents. But the shipping industry, with its mobile plant, is perhaps also the traditional industry that has been transformed more than any other by globalising economic processes (Sampson 2013). The industry is increasingly structured in terms of 'global value chains' (Gereffi et al. 2005) composed of multiple linked enterprises scattered across the globe. Increasingly, ships are owned by transnational corporations and operated by international ship management companies who contract in turn with specialist international companies to supply a range of ship services, including (outsourced) crewing. Effectively, there is now a single global labour market for seafarers, the great majority of whom come from the developing countries and the transitional states of Eastern Europe: nine nations (the Philippines, Russia, the Ukraine, China, India, Poland, Indonesia, Turkey and Myanmar) together supply two thirds of the million seafarers in the international fleet (Sampson 2004). While it has long been a practice among ship operators to draw at least some of their ratings from developing countries, witness the traditional practice of UK ship operators of employing so-called 'lascars' (Indian) crewmen, today both officers and ratings are likely to be drawn from the new labour supply countries. Seafarers are frequently employed, not by ship owners or operators, but by specialist international crewing agencies that contract to supply 'just-in-time', casualized labour with the requisite paper qualifications. Ship operators who once paid for labour force training through cadetships and apprenticeships have now, in effect, transferred the costs of training their outsourced labour to seafarers themselves and seafarers' families in the developing world. This paper seeks to investigate the impact of outsourcing the labour supply on one aspect of the quality of seafarer training, namely the problematic reliance on computerised multiple choice questions in the licensing examinations for would-be deck and engineering officers.

Regulations on international training standards for officers are laid down by the UN agency, the International Maritime Organisation (IMO), through its Standards of Training Certification and Watchkeeping (STCW). Apace with the growth of employment of officers from the new labour supply countries, concerns have grown about the seeming failure of some maritime education and training institutions (METs) training those officers. These concerns led IMO to set up the 'white list' system in 2003: Member States were required to audit the quality of training in their local METs and to submit documentary evidence to IMO of the audit process; only seafarers trained in METS in those Member States on the 'white list', deemed compliant by IMO, would have their certificates of competency recognised for work in the international fleet. It was expected that the introduction of the IMO 'white list' and the accompanying national audit systems would result in the closure of poor METs and improvements in training standards. Some METs did indeed close but there is little evidence that the overall quality of the training undertaken by new recruits to the industry had improved following the introduction of the white list (Sampson 2004) and attention has increasingly focused on the effectiveness of the various national training audit systems, an important part of which is the oversight of seafarer examinations. In a range of seafarer supply countries, the very large numbers of examinees, limited examiner resources and past examiner corruption scandals have led national maritime administrations to make increasing use, or to consider making increasing use, of multiple choice computer-based assessments, despite the problems associated with such assessment formats, including their inappropriateness for testing higher order cognitive skills.

We have reviewed elsewhere the large literature on computer-based assessments and have also considered employer reactions to multiple choice testing and the general standards underpinning officer licenses (Sampson et al. 2011; Gekara et al. 2011). In seeking to examine how outsourcing of seafarer labour to specialist crewing agencies operating in new labour supply countries has problematised the assessment of seafarer training, and to examine how effectively international regulations on training standards are enforced, this paper lies at the intersection of two research literatures: firstly, the literature on outsourcing; and secondly, the literature on effective governance.

There is, of course, a large literature on the results of the outsourcing out of public services. Studies of the contracting out of public services in developing countries and transitional states are particularly instructive. Many contracted-out services performed poorly because of poor government contract management (Mills 1998; Larbi 1998; Lember 2004). Where contracting-out schemes have provision for well-resourced and intensive contract monitoring, they have been more successful (Marek et al. 1999; Palmer et al. 2006): effective oversight has been crucial. On the outsourcing of labour, employment agencies are increasingly displacing unions in the regulation of the employment relations (MacKenzie & Lucio 2005). McDowell et al. (2008) have overviewed sociological studies on employment agencies: none of these have considered the case of crewing agencies, but the impression from the literature on segmented, outsourced, labour markets corresponds to the position in the shipping industry: at one extreme, there are employment agencies providing a 'buffer stock' (Booth et al. 2002) of 'warm bodies' (Parker 1994); at the other extreme, other agencies specialise in supplying well-qualified staff to meet industry shortages, temporary and otherwise.

Studies of the impact of outsourcing of labour on training are less common, but the work of Forde and MacKenzie on outsourcing and training in the UK construction and telecommunications industries has been particularly noteworthy. MacKenzie's (2000) study of labour force training at BT plc followed the outsourcing of the telecommunications company's civil engineering and cabling work to contractors. The contractor firms subsequently struggled to deliver on contracts because of shortages of skilled labour. Accordingly, BT encouraged contractor firms to set up their own training schemes and BT accredited those it approved: BT thus found itself obliged to regulate training within a labour market from which it had withdrawn. Forde and MacKenzie's (2004) paper on training in the construction industry suggests that an over-dependence on contingent labour (sub-contractors and self-employed workers) is associated with low levels of apprenticeships and skill shortages. And a further study of the construction industry by Forde et al. (2008) reported that construction firms were unwilling to further extend their existing reliance on agency labour because of perceived problems with the quality of that outsourced labour. Detailed studies of the impact of offshore outsourcing on overseas training standards, parallel to this study, have not been located, but concerns have been raised about the quality of overseas training in a number of industry sectors where outsourcing is occurring (for example, in the computer software industry – Asprey et al. 2006), and some states have legislated to require qualified immigrants to sit additional examinations to ensure that they meet the required national standards (for example, the US requirements on immigrant nursing staff – Fulbright Commission 2004). In contextualising this paper we take globalisation to signify a process, rather than an event or outcome or a mere intensification of trade (Hirst and Thompson, 1999), and we take this process to entail the evolution of new economic structures. Since one of the drivers of globalisation is the flow of capital across national boundaries

to avoid regulatory costs, and since some of those evolving new economic structures are designed partly to facilitate regulatory avoidance, it is a given of much writing on globalisation (e.g. Dicken 2001) that effective governance of globalised industries is highly problematic. Indeed, the shipping industry can be taken as an exemplar of the problems of governance of globalised industries. Thus, all vessels must be registered with a national ship registry and are subject to that nation's shipping regulations wherever the vessel trades, a jurisdiction known as 'Flag State Control'; the various flag-States are represented at the International Maritime Organisation and translate into their national shipping regulations those IMO conventions to which they are signatories. The ship registry currently with the largest tonnage is that of Panama, originally set up by American shipping interests after the First World War to avoid what they viewed as onerous US laws regulating crewing standards. This first venture in creating an 'off-shore' commercial registry (aka 'open registry' or 'flag of convenience') was gradually followed by others, gathering pace from the 1980s, until today there is even a Mongolian Registry, despite the fact that Mongolia lies 850 miles from the sea. The commercial registries market is a segmented one, with some registries seeking to provide an efficient and effective service to ship operators who, in turn, seek to market themselves to charterers as 'quality' carriers. But many other commercial registries simply offer cheap registration to operators seeking to save money by regulatory avoidance, for example by registering their vessels with commercial registries which allow vessels to operate with smaller crewing levels (as specified under the registry's 'Safe Manning' regulations) than the crewing levels allowed by competitor registries (Bloor 2013). This is the 'rush to the bottom' phenomenon (in both labour standards and environment standards) which many commentators on globalisation have commented upon (e.g. Lasselle et al. 2004).

The shipping industry can also be taken as an exemplar of the evolution of structures to address the problems of globalisation. The industry has a 'polycentric' governance structure (Black, 2008), fragmentary, complex, multi-level and overlapping in character. There are regional regulators, such as the European Union, as well as international regulators. There are local regulators, such as port health authorities, as well as national regulators. Port State Control, the enforcement of international regulations on all berthing ships in a nation's port regardless of flag, has evolved to try and address the deficiencies of Flag State Control (Bloor et al. 2006). Private transnational governance (Bartley, 2007) has also emerged: most importantly, the oil majors have set up their own Ship Inspection Report Programme (SIRE) to vet the seaworthiness of vessels in the tanker trade (Bloor et al. 2013) in an attempt to avoid the reputational damage caused by major marine oil pollution incidents.

Shipping industry governance has also attempted to move beyond 'command and control' approaches. Some writers such as Braithwaite and colleagues (Ayres and Braithwaite 1992; Braithwaite 2005; Braithwaite & Drahos 2000) and Gunningham et al. (1998) have pointed to 'responsive regulation' or 'smart regulation' strategies for globalised sectors which incentivise regulatees towards pro-active compliance and flip 'markets in vice' into 'markets in virtue' (Braithwaite 2005). But other writers (Haines 2003; Nelkin 2002) have argued that international regulations can never be invariantly applied, enforcement being modified and vitiated by differences in 'local regulatory character' (Haines 2003), arising from different national economic, political and cultural contexts. The afore-mentioned IMO white-list requires national maritime administrations to supply documentary evidence that they have audited training standards in their local METs, an example of what Ayres and Braithwaite (1992) and Hutter, in her study of UK railway regulation,

(Hutter 2001) have termed 'enforced self-regulation'. Enforced self-regulation (according to Hutter, never particularly effective in the case of the railways) is particularly susceptible to erosion by difficult economic circumstances, political pressure and local cultural practice, as we have sought to demonstrate previously (Sampson 2004; Sampson and Bloor 2007) with the shipping industry as an example. Ayres and Braithwaite (1992) envisaged enforced self-regulation as being effective only if backed up, in an enforcement pyramid, by the prospect of punishment for the non-compliant, by what they called a 'benign big gun'. Big gun punishment for non-compliant States in the case of seafarer training, would comprise deletion of those States from the IMO 'white list' and the consequent non-recognition of seafarer qualifications by port-States (backed up by port-State inspections of seafarer certificates on berthing ships). However, deletion from the white list is only a practical punishment option for States that are small-scale suppliers of maritime labour: non-recognition of the seafarer certification provided by major suppliers of seafarer labour would cause large-scale labour shortages and massive disruption of world trade. Thus, paper compliance (the supply of documentary evidence of local audits, without international inspection) has been until very recently the only requirement facing the major labour supply countries. The qualification 'until very recently' is necessary here, because a regional body unconnected with IMO, the European Maritime Safety Agency, conducted an on-the-spot inspection of education and training institutions in the Philippines (the world's largest supplier of seafarers) in 2010. Following that inspection report, the Filipino government has shut down three maritime academies and re-organised the government agency which oversees maritime training (Leander & Osler 2012). However, it remains a possibility that, following further reports from EMSA inspectors, the Philippines will fail to satisfy the requirements of the European Commission with serious consequences for the employment of Filipino seafarers on EU-flagged vessels.

Haines (2011) has sought to apply Archer's (2003) work on human agency to the field of governance. She sees 'optimal vigilance [...] defined as the level of attention to risk appropriate in a particular context' (Haines 2011, p. 121) as arising out of the complex local relationships between agency and structural elements. Various structural elements are identified which impact on agency to undermine vigilance. Thus regulatory autonomy is shaped by the structural elements of capacity and expertise – the resources provided to regulators and the skills they possess. Another important structural element is political support, that is, the level of protection provided to regulators by governments in response to commercial pressures to weaken the regulatory regime. Haines applies this agency/structure analysis to two examples of Australian governance systems, but it seems clear that the same conceptual tools could be used to facilitate cross-national comparative studies of governance systems.

Drawing on these various literatures, this paper explores some of the challenges facing those who are engaged in the attempt to standardise vocational qualifications and skills across globalised labour markets. Following on from the section on the study methods, the paper describes in turn, firstly, the crewing agencies' activities in supplying just-in-time, casualized labour with the requisite certifications, and then the practices in the different study countries in examining those sitting for officers' certificates/licenses. We note in particular the limited resource available for such assessments in the new labour supply countries. The paper goes on to describe ship operators' lack of trust in the effectiveness of those examinations and concerns about the development of computerised assessments. The next section shows these concerns to be largely borne out by various deficiencies that we identify in current computerised assessment systems. We then point to

a training double-bind whereby institutions and countries on the supply-side of the seafarer labour market feel pressure both to introduce more rigorous assessment to improve training quality and pressure to relax training standards to increase the supply of seafarers. We conclude that ship operators, in outsourcing their labour, have lost control of the quality of the labour force and 'enforced self-regulation' has not succeeded in enforcing international training standards and rigorous assessments; segmented labour markets have emerged and global governance has been undermined by 'local regulatory character'.

Methods

The research upon which this paper primarily draws was commissioned and funded by the European Maritime Safety Agency (EMSA). It involved case studies in six major seafarer labour supply countries (three traditional European maritime countries and three of the major new labour supply countries) serving European flagged ships and interviews with selected industry stakeholders, regulators and employers. Each case-study entailed visits by two researchers to each country and the conduct of observational visits to maritime education and training institutions (METs) , national and regional examination centres, and national regulatory bodies. To ensure some consistency with regard to the establishment of an overview of all the case study countries, one researcher (Sampson) visited all six countries joining Bloor or Gekara respectively. In addition use was made of an 'observation guide' in visiting MET institutions.

In visiting maritime education and training institutions researchers examined curricula and examination materials, maintained detailed fieldnotes, and undertook informal interviews with key personnel. National Maritime Administrations and their regional offshoots (local maritime administrations) were visited and detailed interviews established the nature of the structure of the examination systems utilised in relation to seafarers and details of examination procedures and conduct. To give a flavour of these case study visits, one such visit lasted twelve days, entailed six visits to METs (both state-run and private, including one MET that had so far been unsuccessful in seeking accreditation) in both the capital and a provincial city, collection of specimen examination questions, brief observation of simulator-based training and collection of specimen simulator tests, formal and informal discussions with MET staff, three recorded formal interviews with regulators and a group meeting with the national board of examiners. The methods used in the six case studies were not uniform and depended on the size of the maritime education and training field in the countries visited. The methods corresponded to the 'rapid assessment techniques' (Bloor 2006) developed particularly by researchers working for UN agencies such as the World Health Organization and the United Nations International Drug Control Program, where multiple methods

such as observation and key informant interviews have been used to provide reliable information in a relatively short time-scale (see, for example: Chambers 1981; Fitch et al. 2000; Rhodes et al. 1999).

In addition to interviews with regulators, seventeen formal recorded interviews (on average lasting 60 minutes each) were also conducted with senior fleet personnel managers (or equivalent) to ascertain their views on the quality of recruits and on international training and assessment standards and procedures. Although the UK remains an important centre of the maritime industry, care was taken to interview foreign-based, as well as UK-based, fleet personnel managers, all of whom were recruited through the existing database of industry contacts maintained by Cardiff's Seafarers International Research Centre. The interviews were semi-structured in nature (a format which both allows the free exploration of emergent themes and which is more acceptable to senior and expert interviewees) and the interviews were all digitally recorded and transcribed prior to analysis with the aid of NVivo software. Additionally a Delphi group (not reported on here) was convened in order to establish a degree of consensus about the core criteria in the conduct of rigorous assessment procedures in this industry sector. The national maritime administrations of the six case study countries took part in the study on the understanding that the countries concerned would not be named in any reports of the research and we have therefore taken care that neither direct nor deductive disclosure results from the publication of this paper.

Where relevant, this article also makes secondary use of material collected in two further studies: an earlier EMSA-funded study of training capacities in selected new labour supply countries; and a British Academy-funded pilot study of seafarer training. The methodologies of both of these additional studies have been fully reported elsewhere (Bloor and Sampson 2009; Sampson 2004) and included observational fieldnotes on visits to METs, focus groups with seafarers and interviews with maritime administration officials and industry stakeholders.

The Demand for Just-In-Time Recruits

Across modular supply chains efforts are made to minimise costs by ensuring that required goods and services are delivered just-in-time and do not generate extensive associated inventory-holding costs (warehousing, 'dead time', etc). The just-in-time principle is also applied to outsourced labour. In the main, contemporary ship operators do not permanently employ a pool of qualified labour from which they draw for the crewing of vessels: rather, they contract with specialist crewing agencies or ship management companies for the just-in-time supply of suitably qualified crew as, and when, they are required. Crewing agencies in turn access local casualized labour for

employment on short-term contracts. It is the crewing agency's responsibility to ensure that the crew they supply are in possession of the requisite international qualifications. Such qualifications include internationally recognised seafarer licences (often termed Certificates of Competency) which are issued by national maritime administrations following the successful completion of approved examinations and additional ancillary qualifications which are obtained from nationally approved training centres after attendance at short courses.

Assessment of Seafarers' Competencies

As a consequence of this labour supply process, and the associated casualized nature of the seafarer labour force, throughout the sector there is a strong reliance on certification attesting to the training and qualifications of seafarers. Additionally, there have been strong and sustained efforts to standardise the competencies of seafarers accessing the international labour market. Under the umbrella of the international STCW regulations however, national maritime administrations remain primarily responsible for the oversight and conduct of seafarer examinations and have considerable autonomy with regard to all aspects of the assessment and licensing process. This inevitably produces variation in practice with the potential to produce variations in standards which require further exploration and scrutiny. Such variations in assessment practice are of particular potential significance given that it has already been established that there are major differences in the quality of education and training provided both within and across countries (Sampson 2004, Sampson and Bloor 2007).

Within the six case-study countries that we focussed on, we identified three general models being utilised in the assessment of seafarers. One was a devolved model where responsibility for assessment was placed entirely in the hands of universities and the acquisition of appropriate qualifications from recognised universities automatically entitled trainee seafarers to a licence to serve as a junior officer once they had 'clocked-up' the requisite amount of sea-time as a cadet. The second model in contrast relied entirely upon centralised examinations conducted by, or on behalf of, national maritime administrations. Having passed such examinations, seafarers were issued with licences provided that they had accumulated sufficient sea-time serving as cadets on relevant types of vessels. In the third assessment model, that we identified, a combination of these approaches was in use i.e. some licences were issued on production of qualifications from a small number of approved higher education institutions and for the remainder of cadets (those who had attended other colleges) centralised examinations were conducted. In all cases evidence of requisite periods of practical experience aboard vessels as trainee 'cadets' had also to be produced and endorsed.

For the purposes of this paper, more important than the variations between countries in terms of the conduct of authorised examinations, were the very considerable, associated, differences in the methods of assessment employed in relation to seafarer examinations. For example, within one Maritime Administration an oral examination conducted by a specially convened panel of suitably qualified examiners was the primary form of seafarer assessment, whilst in another a very different combination of computer-based examinations was utilised (relying upon a computer-based multiple choice examination and a separate simulator-based test). In general, we found that in each of the six different case study countries there were variations in assessment practices which encompassed: differences in where assessment occurred (i.e. at colleges or central state examinations centres/private state approved examination centres); differences in whom the examiners were (e.g. national maritime administration officials or college lecturers); differences in whether or not assessments were undertaken by single individuals or by panels of experts; differences in whether or not candidates were personally known to, and taught by, assessors; and differences in the form of assessment (oral examination, written essay based examination, paper and/or computer-based multiple choice tests, individual simulator tests, group simulator tests, short answer papers and/or any combinations of these). Further, it was possible to identify some similarities between new labour supply countries and their approach to assessment, which was less labour-intensive and more reliant upon new technologies than the approaches taken in the three traditional European maritime labour supply countries which we studied.

The new labour supply countries, processing thousands of seafarer licence applications each year, faced major problems relating to human resource, as explained by one maritime administration official:

> 'There are only [a very small number of] board members doing examinations, and every year there would be about 10,000 examinees, how good an examination can it be without the computerised examination system? [...] the sheer numbers of examinees cannot be [handled] by so few examiners. Even if they doubled or even they make it tenfold, which the government will not do because of the budget' (maritime administration official) (Country B).

There was, as a result, strong pressure to consider methods of speeding up the examination process whilst utilising only the existing human resource (i.e. lecturers, examiners etc). This produced a great interest in the conduct of computer based forms of assessment using automated marking and relying heavily upon multiple choice questions. Computerised assessment was also attractive to those national maritime administrations whose examination systems had previously been subject to corruption scandals, as a way of limiting human involvement and enhancing transparency:

'I'll have to be frank […] if you are the examinee, and I conduct the examination, I have the capability to determine whether you should pass or not irrespective… So, in most cases, you want to pass, I pass you for a fee. That is what happens here' (maritime administration official) (Country B).

Pressure to increase supply in order to meet a growing international demand for officers and satisfy the requirement for just-in-time recruitment seems to form a major part of the drive for new and supposedly more efficient computer-based assessment technologies.

Ship Operators' Reactions

Whilst employers were broadly unaware of the detailed ways in which licence issue occurs in different maritime labour supply countries, the development of computerised assessments for seafarers had created considerable unease amongst industry stakeholders. Most ship operators recruit labour via a range of crewing agencies based locally in a variety of labour supply countries and even those who retained direct contact in the recruitment process of certain officer positions (usually the most senior positions on board such as Captain and Chief Engineer) placed a strong reliance on seafarer licences in attesting to standards of competence, skills, and knowledge across the labour force. These employers were frequently unhappy about the inherent limitations associated with multiple choice examinations in relation to the assessment of many skills which they regarded as essential in the management of their vessels and there were persistent concerns relating to issues of seafarer competence more generally.

In some cases variations in examination practices undermined confidence in the establishment of basic minimum standards underpinning the issue of internationally recognised licences in accordance with the STCW regulations. In these circumstances a two-tier labour market has emerged as employers differentiate not only between countries in terms of recruitment practices but also between training and education establishments within countries. In this latter case ship operators were choosing to disregard national certificates and rely instead upon local knowledge and past experience in deciding on the provenance of seafarer supply.

'In [Country X] we are quite selective. I'm not sure of the [METs] we have blacklisted but there is a list we don't touch. Generally we use the [MET Y] because we have had very good results […] [the others are] a waste of time' (Employer)

However, such attempts to 'pick winners' among the METs, regardless of the frailties and subjectiveness of the 'picking winners' approach, disregard the single most important indicator of

relevant knowledge and competencies, namely seafarers licenses. Thus a reliance entirely on computer-based assessment methodologies in license examinations, particularly utilising multiple choice questions, would further undermine operators' confidence in seafarer licenses. A great dilemma for operators is that such methodologies are becoming popular in the new labour supply countries which provide the largest numbers of seafarers to the international fleet.

Variations in Assessment and Inspections

Employers' concerns about the quality of assessments of seafarer training were largely borne out by our case study data. Thus, where multiple choice questions were used for license assessments, we found instances where the appropriate question bank (from which questions were randomly generated) was very small and in another instance past questions (still within the question bank) were in the public domain for legal reasons. Such circumstances encourage candidates to prepare for examinations by rote learning and encourage instructors to 'teach to the test'. We also found examples of questions which were inappropriate in the sense that they did not test the knowledge required by international regulations (and of course required by employers). For example: 'Who first discovered the world was round? A) B) C)'.

Relatedly, it is very difficult to design multiple choice questions which test higher order cognitive skills. We collected specimen multiple choice questions from the case study countries and graded them according to Bloom's well-known taxonomy of different types of cognitive skills – 'level 6: evaluation', 'level 5: synthesis', 'level 4: analysis', 'level 3: application', 'level 2: comprehension', and 'level 1: knowledge' (Bloom, 1956). We found 71% of all the specimen questions only tested the bottom two levels of Bloom's cognitive taxonomy, knowledge and comprehension, none of the specimen questions tested the top two levels of Bloom's taxonomy, evaluation and synthesis, and only 14% (all from just one country) tested the analysis skills of candidates. The higher cognitive skills required by officers, such as report-writing, were not being assessed.

Bridge and engine simulators can be used to assess seafarer competencies which cannot be readily assessed by multiple choice questions and simulators are indeed currently used for assessment purposes by some maritime administrations (although only by one of those in our six case studies) and there is an expectation that they may be more widely used in future. Industry stakeholders were also generally supportive of the use of simulators to assess competencies. However, we found a number of problems with their current use.

One difficulty associated with simulator assessments is that of the tension between two different assessment criteria, that of validity (i.e. appropriateness for purpose) and that of reliability (i.e.

consistency of testing across a range of instruments, across assessors and across time). In the single administration where simulator assessment was directly utilised for license examinations, reliability of the assessment was assured by the automatic marking of simulator exercises by the simulator assessment software itself. Candidates were assessed individually, criteria were clear, and passes and fails were objectively established. However, the simulator scenarios themselves were rather artificial and rudimentary: plotting a course from A to B and dealing with oncoming and crossing traffic in the bridge scenarios; and identifying and solving two operating problems in the engine scenarios. The incorporation of more complex (and more valid) scenarios that, for example, involved understanding the engine as a set of integrated systems, or dealing with bridge emergencies that involved communication and team-working skills, would necessarily result in a loss of assessment reliability due to the need for human assessors, moderation of marks, candidates being assessed in groups (to represent a bridge team), rotation of assessment tasks within the group, consistency of rotated tasks, and so on.

A second difficulty associated with simulator assessment is that of security. In the same administration as that above, where simulator assessment was used for license examinations, the administration lacked the resources to establish its own dedicated simulator centres for assessment purposes, and to employ its own invigilators. Instead, assessments were conducted on simulators located in METs and invigilated by MET staff. Although the examination scenarios were kept locked away at the METs and the scenario chosen for a given examination was selected by a member of the administration staff, the bank of scenarios from which the selection was made was small (containing as few as seven scenarios for some examinations). Most of the METs were commercial operations trading on their reputations for 'cramming' candidates through such examinations, following four days of specifically tailored simulator training. The MET staff of course had detailed knowledge of the various scenarios contained in the question bank. Instructors therefore 'taught to the test' and the validity of the test as an assessment of broad competency was consequently low. Moreover, in a license assessment we were able to observe, security was less than perfect: it would have been possible for candidates who had just taken the assessment to pass on advance knowledge of the scenario to those candidates waiting their turn on the simulator. And, although CCTV footage was available to national administration officials to check that invigilation procedures had been complied with, a manpower shortage meant that such CCTV checks were only conducted if a complaint was lodged.

Whilst problems with validity were most strongly prevalent in relation to the application of new technologies to assessment process, it is important to note that it is not only here that problems

were identified. Traditional maritime labour supply countries tended to have robust assessment systems utilising a mixture of methods and producing a high degree of validity in the assessment process. However in some of these states there were problems relating to the reliability of examination systems and their capacity to produce consistency in standards. For example, in one labour supply country where approved universities were responsible for the assessment which would directly lead to the issue of a licence (without further examination) lecturers expressed concern that there were inconsistent standards applied across the institutions concerned. These colleges were in competition with each other for students and had an interest in the maintenance of high pass rates. Whilst an adequate range of assessment practices were in use, in a process where no internal or external moderation of examinations or assessments occurred, and where assessments took a variety of forms, variations in standards were able to flourish and could be seen as legitimate cause for concern. In a second traditional European maritime labour supply country, a similar system pertained with regard to a small number of maritime universities whose degrees automatically qualified seafarers (with the correct amount of sea-time) for licenses. Whilst in this country some central examinations were conducted for students, who attended other institutions, amongst those whose degrees conferred the award of a licence there was once again no system for internal or external assessment moderation. The most consistent practice was found in a European state where examinations were conducted by specially convened panels of experts who were required to arrive at a consensus with regard to a candidate's performance and decide upon whether the candidate had attained a pass or a fail.

The Examination and Training Double-Bind

 Just as ship operators are aware of the deficiencies of multiple choice format assessments, they are also aware of the uneven quality of the seafarer education and training underpinning apparently standardised and internationally recognised qualifications. As a result, some operators will only accept crew that have been trained in certain countries or will recruit from a country they have concerns about but differentiate between cadets from colleges that they believe offer quality training and those from colleges which they feel are substandard; distrustful of licenses as evidence of competency, they attempt to 'pick winners' on the basis of training history:

> 'A good library [is important] and next is equipment. Of course [College Z] are alright. Another maritime school, almost all over… very poor… very poor equipment and very poor, sometimes, instructors also' (Employer).

Operators are likewise aware of the need to improve training standards through robust government accreditation schemes. As afore-mentioned, the International Maritime Organisation has introduced a requirement for national maritime administrations to supply documentation to IMO on the inspection and accreditation of METs, but this 'enforced self-regulation' is an approach more often associated with paper compliance than substantive compliance. Those countries supplying satisfactory documentation will have their training programmes internationally recognised on the IMO 'white list'. Some ship operators have been very critical of the large numbers of METs that some national administrations in the new labour supply countries have accredited, with implied criticism of those administrations' inspection and accreditation systems (see Sampson 2004, for a detailed report).

Some operators conduct their own additional shore training to remedy perceived deficiencies in educational standards, or trial shipboard assessments of would-be recruits, weeding out those whom they deem inadequate despite possession of the requisite paper qualifications. This mistrust of international qualifications does not simply apply at entry (officer cadet) level but also pertains in relation to the licences required by the most senior officers. For example, one operator we spoke to went to the considerable effort and cost of sending newly recruited masters to sea for a trial period (working alongside experienced masters) in order to allow for a thorough assessment of their skills and competence. However, the multiplicity of largely autonomous sources in the complex global seafarer labour supply chain makes quality control a difficult task for a shipping industry which is also not always united on the quality agenda in labour sourcing.

As a result of the costs and risks they incur in association with the shortcomings of current licensing systems, some ship operators (concerned about damage to expensive equipment and concerned about ship safety) have urged maritime administrations and international regulators to make improvements to the national and international enforcement of maritime education and training standards. This leads to the puzzling question of why it is that those on the 'demand' side in the seafarer labour market have not been more successful in raising the quality of the labour being supplied: in free market situations, if those with the buying power demand better quality, then they can generally be expected to get their own way. In part, the answer to the puzzle is that ship operators are making demands, not only on the quality of seafarer labour, but also on the quantity. Indeed, industry analysts and the shipping press have long been reporting staff shortages in certain grades (especially senior officers) and in certain trades (eg. gas carriers) – see for example, BIMCO/ISF 2005; Lloyds List 2008. The retreat of most ship operators from training their own national recruits and the shift, discussed earlier, to just-in-time recruitment, puts pressure on

crewing agencies (and thus on training providers) to sacrifice quality for immediacy of delivery. In other words, those institutions and countries on the 'supply' side of the seafarer labour market are in a double-bind, feeling pressure on the one hand to improve training quality and introduce more rigorous assessment, and pressure on the other hand to relax training standards to increase the supply of seafarers. This pressure may be enhanced by the need for new labour supply countries to maximise revenues that can be accrued as a consequence of the export of labour and the return 'home' of remittances. Indeed a senior official in one maritime administration told us that some Japanese ship operators who were major employers for his nation's seafarers had told him that his nation's seafarer licensing assessments were too rigorous and that he and his colleagues in the maritime administration were, in effect, damaging his nation's foreign exchange earnings by employing assessment standards that were too restrictive relative to some other major seafarer labour supply countries. He concluded that: 'Maybe we are too strict with the examination' (fieldnote).

Conclusion

In summary, the new seafarer supply countries studied in this research varied in the extensiveness of their use of computerised assessments, but they all experienced resource pressures on their seafarer examination systems which led them to what might be regarded as an over-reliance on particular forms of assessment such as multiple choice examinations. The limitations of such forms of assessment do not appear to be influencing current decisions about the future forms of assessment to be employed in the examination of seafarers, but rather such choices seem to be driven strongly by cost and resource considerations. Indeed, the Board of Examiners of one national maritime administration met to consider plans for partial computerisation of multiple choice assessments during the period of our fieldwork. While industry stakeholders were generally supportive of the use of bridge and engine simulators in assessments, they were very critical of the use of the multiple choice format assessments which constituted the greater part of the computer-based assessment systems currently in use. Study of specimen examinations collected during fieldwork shows these criticisms to be justified insofar as multiple choice questions did not assess candidates' higher cognitive skills of evaluation and synthesis, and for the most part only tested knowledge and comprehension. Other serious problems were also identified in existing computerised assessment systems, amongst them the smallness of question banks and the placing of question banks in the public domain (which encouraged rote learning and teaching to the test), simulator assessments which did not address communication and team-working competencies, and various security issues.

The dissatisfaction of ship operators with training and assessment standards for licensing and certification of officers had led some of them to seek other means to distinguish suitable recruits, apart from paper qualifications. Some industry stakeholders only valued candidates trained in particular countries or at particular colleges which they regarded as adhering to higher standards. Others offered remedial training, and many conducted trials of would-be recruits. Stakeholders were critical of the effectiveness of the IMO 'white list' as a mechanism for ensuring that only institutions offering quality training and assessments would receive local accreditation.

It might be expected that this widespread dissatisfaction with examination standards from the demand side of the seafarer labour market would lead to quality improvements from the supply side. However, there are ship operators who are not driven by quality, but merely by cost considerations, in relation to the recruitment of seafarers and exert little positive pressure on administrations and colleges in relation to improvements in standards. There are also labour shortages, particularly with regard to senior ranks, and market exigencies which constrain employers from 'voting with their feet' and recruiting elsewhere when they encounter low standards in particular maritime administrations. More importantly, perhaps, national maritime administrations recognise that they are engaged in a multi-million dollar business of major significance to their national economies with regard to the training, certification, and supply of seafarers, and often are more than happy to leave final responsibility for quality controls to employers.

In progressively moving from the direct control of recruitment and training (through cadetships and apprenticeships) to an outsourced global labour market, ship operators have lost control over the quality of the labour force. Concerns over the quality of recruits have, in turn, led ship operators to call for better regulatory controls over training and certification. However, the responsibility for the enforcement of international regulatory standards on training for seafarers lies with the government authorities of the new labour supply countries. Even where they maintain a commitment to high standards within the seafarer labour market, difficulties in the conduct and control of examinations are emblematic of the problems faced by many government authorities. The cross-national picture is a variable one, but some countries faced problems in respect of corruption, due to differences in what Haines (2003) has called the local 'regulatory character', where effective regulatory performance is inhibited by local economic, cultural and political influences. More straightforwardly, some countries simply lacked the skilled personnel and economic resources to effectively examine the enormous numbers of trainees needed to maintain the million-strong labour pool required to crew the international merchant fleet. As Haines (2011) has pointed out, optimal vigilance among local regulators requires sufficient resources, high levels of expertise, and political

support for regulator autonomy; such necessary pre-conditions are not always to be found in the new labour supply countries. To combat corruption and shortages of resources whilst continuing to license large numbers of seafarers, some government authorities have chosen to curtail regulatory autonomy by the adoption of computer-based assessments, and especially to the use of multiple choice formats; other countries have been actively considering a similar move. Ship operators, in turn, have voiced their disapproval of such assessments, which do not test higher cognitive skills, and cannot be relied upon to sift out seafarers without the desired levels of competence. Thus, government authorities in the new labour supply countries find themselves in a double-bind, as they seek, in most cases, to supply both high quality and a high quantity of seafarer recruits.

As previous studies of employment agencies (see McDowell et al. 2008) have shown, outsourcing of seafarer labour has led to more segmented markets. Some individual METs try to position themselves as suppliers of high quality recruits (in contra-distinction to the 'warm bodies' supplied by their competitors) supplying crews to 'blue riband' carriers catering for niche-market charterers, in contra-distinction to other operators who offer cheaper freight-rates made possible by the lower labour costs of their poorer quality seafarer-recruits. We point here to the crucial importance of the loss of ship operator control over crew training (despite the existence of an extensive international regulatory framework on training) in the emergence of such segmented markets. Arguably, there is a tension in all market economies between widening (and cheapening) the labour supply on the one hand, and reaping the benefits of productivity that stem from worker expertise and initiative on the other. However, this tension is more visible and more acute in respect of an outsourced labour force where firms have lost control of worker training.

Many ship operators - dissatisfied with the quality of potential recruits - find themselves having to expend time and resources to screen suitable recruits because they have lost faith in licenses as evidence of training quality. Our study of the impact of offshore outsourcing on training standards in a globalised industry shows parallels with MacKenzie's (2000) previously noted local case study of labour force training at BT plc, where the UK telecommunications company found itself having to re-intervene in a local labour market from which it had previously withdrawn, accrediting training schemes for contractor firms. Likewise, studies of the contracting-out of health and other public services in developing countries have shown that successful contracting-out requires the contractor to devote substantial additional sums to monitor the execution of the contract. In other words, if ship operators wish to continue to transfer the burden of the costs of training and certification to developing states it may be that they need to be prepared to contribute to the costs of seafarer examinations and MET accreditation/inspection, possibly through a training levy paid when ships are

registered with national ship registries, which can then be forwarded to the International Maritime Organisation for disbursement. This would address some of the resource problems faced by national maritime administrations and might be expected to go some way to improving the rigour of assessments for seafarer licenses in some states. It would not, however, address the dilemma faced by states in whose interest it is to pump labour out onto the seafarer labour market, recognising it as a valuable source of foreign earnings vital to many national economies.

Issues of the establishment of global standards within education are already of salience with regard to the international provision of safety critical services, for example within the medical profession (Wojtczak et al. 2000, Schwarz et al. 2007). Given the shipping industry's status as a traditional industry transformed by globalising economic processes, and given the industry's extensive international regulatory framework on training standards (STCW), then the industry's problems with assuring a quality global labour force may be of wider interest to observers of other sectors where globalisation is less advanced but where safety or quality standards are regarded as high priority. The problems of global governance of the shipping industry are not typical, but they may be proto-typical. Moreover, the shipping industry's long tradition of international regulation, its respected UN agency dedicated to international regulation of the industry, its numerous international conventions, and its continuously developing polycentric governance structure, all suggest that the shipping industry may be a 'critical case' (Goldthorpe et al. 1968) for effective governance: if good governance cannot be established in this globalised industry, then the prospects for governance of other globalising sectors may be poor.

In contrast to those many macro studies of globalisation which survey overall patterns of trade and flows of investments and people, we have focussed here on the effects of globalising processes within a single industry sector (shipping) and a single activity (training), and we have focussed on the problems of global governance as they relate to one aspect of that activity, namely the enforcement of international training standards through effective assessments of officers' competencies in licensing examinations. This particular empirical focus has enabled us to contribute to contemporary debates (previously described) about the possibilities of effective governance of globalised industry. Our case study of the globalised shipping industry argues a general point concerning the complexity and challenges associated with the establishment of global standards in relation to education and training. Our data confirm previous work on the relative ineffectiveness of 'enforced self-regulation' as a governance strategy. Enforced self-regulation can only be effective as a governance strategy if non-compliance is ultimately punishable by a 'big gun'. In the case of seafarer certification, the only big gun available to the IMO (deletion of a labour supply country from the IMO white list) could not

be deployed: some labour supply countries (like some banks) are too big to fail. Where there is no fear of the deployment of a big gun and where there are commercial or other rewards for non-compliance, then enforced regulation may degenerate into a paper exercise that bears little relation to the reality that those papers purport to describe.

Further, investigation of the global governance of seafarer assessments indicates that differential access, cross-nationally, to scarce resources for governance purposes may be a real barrier to overall effectiveness. Developing countries with few resources may feel constrained to resort to inappropriate computerized assessments for budgetary reasons. Effective global governance may be thought to presuppose a fair distribution of governance resources. In 1995 the UN Commission on Global Governance concluded that mechanisms to manage the highly integrated global economy were lagging behind integration processes. We have shown that, even where there is an extensive international regulatory framework constructed by a specialist UN agency (the International Maritime Organisation), what Haines (2003) has called 'local regulatory character' – local political influences, local cultural practices, economic pressures and networks of corruption – serve to undermine effective global governance. Further, the case of the globalised shipping industry also argues the enduring importance of nation states in the enforcement of global regulations: local political environments and cross-national differences governance resources can be crucial mediating factors in shaping local vigilance in enforcement.

Acknowledgements

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