The Australian National University
Centre for Economic Policy Research

DISCUSSION PAPER

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Abstract

Discussion around total factor productivity gains for the Australian Economy often focuses on infrastructure bottlenecks, technology adoption, competition and labour market flexibility. Although a potential area for gains, management is typically omitted from the public policy debate because it is considered too hard to quantify and as a result there is no concrete case for improvement. In this paper we describe our approach to measuring management as a productivity driver in service firms, developed as part of a study commissioned by the Australian Commonwealth Government. Management, as measured by internal stocks of intellectual assets are significantly related with higher productivity: our analysis predicts that a low performing firm could realise an increase in productivity of up to 13.3% if it were to improve its intellectual asset. However, after controlling for intellectual assets competition and ownership structure are not significant determinants of firm level productivity. We also discuss policy initiatives available to policy makers.

Key words: productivity, service industries, public policy, intellectual assets, management.

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1. Introduction

This study develops an approach for measuring firm level productivity in service firms and investigates determinants of productivity. The measurement approach is applied to 77 services firms using a methodology on “High Performing Workplaces” commissioned by the Australian Commonwealth Government. Contrary to manufacturing firms where tangible stocks of inputs and outputs can be recorded and counted, the inputs and resources of services firms are harder to measure as these firms draw on intellectual assets such as knowledge, skills and relationships for the creation of economic value and output. As the services sector is a large and growing contributor to economic output and growth in modern economies, advances in measurement approaches are fundamental towards lifting the productivity of nation states. The study addresses this challenge by advancing knowledge with regard to firm performance through a more fully articulated notion of measures of workplace productivity.

One contribution of this study is the identification of the possible determinants of productivity in services firms. Whilst previous studies have examined workplace productivity in manufacturing firms, this study extends such work into the service sector and provides total factor productivity estimates for the sample of service firms surveyed in this study.

A second contribution of this article is the analysis of employee data (in addition to firm level Human Resources Management and Financial data). Employee voice is when a firm’s workforce is given an opportunity to express their views on the firm’s management practices and leadership. Over 55% of respondents in this study were non-managerial employees. Employee voice provides a more comprehensive view of the firm than when a single executive or manager voices his opinion, as traditionally sought in surveys of this kind. A focus on employee voice distinguishes this approach from previous approaches such as the World Management Survey and the Irish and UK studies of High Performance Work Systems.

2. The Services Sector

The services sector is a large and growing contributor to economic output across nation states and the global economy. In 2011, services industries contributed 78% of industry value added (IVA) to gross domestic product (GDP) in the United Kingdom (UK) (World Bank, 2014). Similar patterns have been seen in modern economies, such as Australia, the United States, Japan, France and Germany where in 2011 services respectively contributed 68%, 79%, 73%, 79% and 69% of IVA to GDP (World Bank, 2014). The services industries are also important because of their scale, potential for export growth and generation of well-paid jobs. In the UK, services are the largest employer at 79.9% of total employment. This is also the case in Australia at 76.4%, the United States at 81.2%, Japan at 71.1%, France at 75.4% and Germany at 73.7% (OECD, 2013). For these nations, employment in service industries exceeds the share of total employment for any other sector, including manufacturing, mining and agriculture.

However, growth in value added in services industries has not outpaced the increase in employment and, in general, labour productivity growth (gross value added per employee) performance has been poor in recent decades. In the UK, from 2007 till 2012, the annual industry contribution to growth in service sector labour productivity was negative for the wholesale, retail, trade, accommodation, food services, transportation and storage industry sector and for the financial and insurance industry sector (OECD, 2014). The gross value added per hour worked (constant prices) for these two sectors was negative at -1.5% and -2.3
% respectively from 2007 till 2012 (OECD, 2014). This pattern of negative and slow growth in the productivity of services firms compared to the economy as a whole is a concern that has also been observed in other developed nations, including the USA, Australia, France, Japan and Germany. In Australia, the average annual labour productivity percentage growth rates for the Property and Business Services industry sector have been negative in the last 2 out of 3 decades at -1.6 % (1975-85), -2.0 % (1985-95) and 0.9 % (1995-2005). This suggests that an opportunity exists for policy makers to direct greater policy effort towards improving the productivity performance of services industries.

3. Measurement and Policy Initiatives by Nation States

Initiatives by nation states and federal governments to measure firm level productivity and investigate determinants of productivity, including management practices, have proliferated in the last decade. The Australian Productivity Commission stated in its 2009-10 Annual Report Recent Developments in Australia’s Productivity that:

> Whatever the measurement challenges, an increase in overall productivity depends on the performance of individual firms, and on the competitive pressures that results in better performing firms and industries prevailing over others.

In 2008, the Irish Government together with the Irish National Centre for Partnership and Performance conducted a study entitled New Models of High Performing Work Systems in Ireland (Flood et al., 2008). The study reports that firms who adopt high performance workplace systems can achieve a 14.8% increase in labour productivity (equivalent to over €44,000 per employee or €12 million per median company of 270 employees). In 2009, the UK Commission for Employment and Skills commissioned the development of a survey tool on High Performance Working to investigate skills utilisation and workplace performance in UK workplaces. The 2013 Executive Report entitled High Performance Working in the Employer Skills Surveys identified three groups of practices that characterise high performance working: employee involvement, skills acquisition and motivational practices. The UK Engage for Success initiative likewise advocates a management approach that places employee engagement at the centre of the productivity debate. In 2009, in Australia, the Deputy Prime Minister, Ms Julia Gillard, launched a study of the significance of leadership, culture and management to workplace productivity in Australian services firms. Ms Gillard explained the need to unlock the nation’s productivity puzzle by making leadership and management a national policy priority and held a conference in which she stated:

> "...to truly unlock the productivity of our nation ... we need workplace leadership and the requisite cultures and skills that will build upon the foundations of the Fair Work Act to encourage innovation, employee engagement and cooperation in our workplaces."

Much of this research on high performing workplaces suggests that when work is organised to support high levels of employee involvement firm performance improves. In contrast to a focus on employee commitment and employee voice evoked in such studies, the World Management Survey traces the management technologies and processes implemented by manufacturing firms and their associations with productivity performance. Commissioned by governments in over 20 countries worldwide, including Europe, the UK, Asia and North America (see Bloom et al., 2007), as well as Australia (see Green et al., 2009), this research has been critical to the identification of management as a determinant of firm productivity.
that warrants national policy focus. Bloom et al., (2007 p.5) reports that a single point increase in management practice score is associated with the same increase in output as a 25% increase in the labour force or a 65% increase in invested capital. In 2013, the US Census included for the first time measures of management practices in its nationwide manufacturing survey.

So what does the future hold for policy makers charged with lifting the productivity of services firms? We suggest in this paper that an opportunity exists to make available to firms validated benchmarking tools that allow firms to track and measure their productivity performance. A second opportunity is to raise awareness and close potential knowledge gaps amongst executives and managers as to the workplace cultures and capabilities required to address productivity challenges. A third opportunity is to identify the barriers that prevent firms from realising their potential and to sponsor intervention programs directed at helping firms reduce such barriers.

4. The Measurement Framework
Data was collected as part of a study of services firms commissioned by the Australian Commonwealth Government entitled Leadership, Culture and Management Practices of High Performing Workplaces in Australia. Whilst the services sector is a large and growing part of the Australian economy, this sector has received less policy attention than other industries such as a manufacturing (Green et al., 2009). In Australia, the largest proportion of service firms is concentrated in the Property and Business Services (P&BS) industry division. The majority of participating firms in this study are from P&BS. The industry groupings of the 77 firms which participated in our study are shown in Table 1.

<table>
<thead>
<tr>
<th>Industry</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment, Education and Social Assistance Services</td>
<td>18</td>
</tr>
<tr>
<td>Computer System Design and Related Services and Software Publishing</td>
<td>14</td>
</tr>
<tr>
<td>Advertising</td>
<td>10</td>
</tr>
<tr>
<td>Membership and Advisory Services</td>
<td>8</td>
</tr>
<tr>
<td>Management Consulting and Market Research</td>
<td>6</td>
</tr>
<tr>
<td>Legal and Accounting Services</td>
<td>6</td>
</tr>
<tr>
<td>Architects and Engineering Services</td>
<td>6</td>
</tr>
<tr>
<td>Tourism</td>
<td>3</td>
</tr>
<tr>
<td>Construction services</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
</tr>
</tbody>
</table>

Our approach measures the value of firms’ assets and capital stocks as recorded by the firms’ Chief Financial Officers (CFOs) in statutory financial statements. This data was collected from the firms’ CFOs or Financial Controllers in the case of smaller firms. In addition, our
approach measures firms’ intellectual assets in six areas, as follows: innovation, employee experiences, fairness, leadership, adaptability and customer experience, as perceived by the workforce. Multi-source data (being data from staff at different levels of authority and in different functional areas) was obtained in order to reduce the risk of self-report survey bias. As such, a focus on employee responses, in addition to CFO and Human Resources Manager responses, distinguishes this approach from previous studies. In this study, employee response rates averaged at 50.5% per firm.

**Firm Productivity**

The measure of firm level productivity developed in this study is Total Factor Productivity. It is calculated using a Cobb-Douglas approximation based on cost shares in an equivalent way to the Australian Productivity Commission’s official calculations of national industry level productivity. Productivity measures how efficiently inputs are converted into output by a firm. The quantity of output a firm produces depends on the quantities of the tangible inputs its uses (labour, capital equipment and intermediate inputs) plus the technology, intellectual assets and knowhow of the firm in combining and transforming these inputs into services and goods for which customers are willing to pay a premium. Thus, an equivalent way of viewing productivity is as a residual measuring how output varies in firms beyond that due to observable inputs.

The Cobb-Douglas approximation involves taking the ratio of output to a weighted product of inputs, with the weights corresponding to the share of total cost for each input. Output was measured using revenue and inputs were measure using cost data. For services firms, labour tends to be the main input and the study was designed to capture this item in addition to the cost/input measures from standard financial reportsii. For comparison purposes, firm productivity was normalised by industry sub-sector so as to compare like with like.

**TFP** for a firm is the ratio of its output \( Y \) to a composite index of its inputs:

\[
TFP = \frac{Y}{I}
\]

The index of input \( I \) is calculated as the weighted geometric mean of a firm’s labour input \( L \) and its other inputs \( M \). Capital inputs are accounted for in \( M \) and not treated as a separate inputiii:

\[
I = L^a M^b
\]

where \( a \) is the share of a firm’s total costs spent on labour and \( b \) is the share of total costs spent on all other inputs. Thus, if the cost of labour is \( X \) and cost of all other inputs is \( Y \) then:

\[
a = \frac{X}{X+Y} \quad \text{and} \quad b = \frac{Y}{X+Y}.
\]

**Variables used to measure Firms’ Intellectual Assets**

19 constructs were used to measure the intellectual assets of the participating firms. These were all well-established constructs from across the disciplines in the academic literature. All questions used a 7 point Likert scale. The 19 constructs were grouped into six categories as follows:
**Innovation (I):**
1. CFO perception of the organisation’s innovation outcomes (OECD Oslo Manual, 2005: Australian Bureau of Statistics, 2008);
2. CFO perception of the organisation’s support for innovation (adapted from the OECD Oslo Manual, 2005);
3. Employee perception of the organisation’s innovation outcome (Wongtada & Rice, 2008).

**Employee Experience (E):**
4. Employee perceptions of their level of commitment to the organisation (Mowday & Steers 1979);
5. Employee’s experience of their positive and negative emotions at work (adapted from Watson, Clark & Tellegen, 1988);
6. Employee job satisfaction (Felstead, Gallie, Green & Zhou, 2007);
7. Employee turnover intention; and

**Fairness (F):**
9. Employee perceptions of distributive fairness (Brashaer, Brooks & Boles 2004);
10. Employee perceptions procedural fairness (Brashaer et al., 2004).

**Leadership (L):**
   Employee perceptions of their immediate supervisor’s leadership skills in three areas (adapted from Carless, 2000):
11. Developmental orientation;
12. Authentic leadership; and
13. People management.

**Adaptability (A):**
14. Employee perceptions of their firm’s responsiveness to change (Barringer & Bluedorn, 1999; Bhattacharya, Gibson & Doty, 2005);
15. Employee on the job learning (Hafsteinsson, Donovan & Breland, 2007);
16. Employee behavioural flexibility (Beltran-Martin, Roca-Puig, Escrig-Tena & Bou-Llusar, 2008);
17. Employee skills flexibility (Beltran-Martin et al., 2008).

**Customer Orientation (C):**
18. Employee perceptions of the firm’s customer orientation (Dev, Zhou, Brown & Agarwal, 2009; Narver & Slater, 1990);
19. Employee perceptions of the firm achieving its customer satisfaction goals (adapted from Widener, 2007).
Figure 1: Intellectual Assets of High and Low Performing Firms
5. An Application
In order to demonstrate how this measurement framework would work in practice, it was applied to 77 Australian services firms. An index was calculated in which the firms’ intellectual asset score was calculated\textsuperscript{iv}. On the basis of this score, the participating firms were classified into three broad categories: high, mid or low performing. Firms that were more than one standard deviation above the mean were considered to be ‘higher performing firms’ (HPFs). In a similar fashion, firms that were more than one standard deviation below the mean were considered to be ‘lower performing firms’ (LPFs)\textsuperscript{v}. This resulted in 19.48\% of the sample falling into the high performing group and 16.88\% into the low performing group.

By grouping the participating firms in high and low performing groups, the performance differences and gaps between these became clear. Figure 1 charts the results of this analysis. The blue line shows the average performance of the HPFs on their intellectual assets on each of the 19 performance measures. The red line shows the average performance of the LPFs. The Figure shows that there are significant performance differences between HPFs and LPFs.

The differences in the stocks of intellectual assets between high and low performing firms are associated with significant differences in firm level productivity, as discussed below.

Firm Productivity
The relationship between stocks of intellectual assets and firm level productivity was analysed by regressing firm total factor productivity on firms’ intellectual asset stocks plus a number of controls for possible confounding influences on productivity. The regression analysis shows that stocks of intellectual assets is a significant determinant of firm productivity at .015 (p=0.05) (see Table 2). The strength of the relationship, as measured by the regression coefficient of .015, is both statistically significant and economically important.

For policy makers, the economic importance of this result is best expressed as a percentage difference in productivity between high and low performing firms. Table 3 shows that on average if a low performing firm was to increase its intellectual asset stocks to be on par with that of a high performing firm, the firm would realise a predicted 13.3\% increase in total factor productivity. This change in productivity is significantly larger than the average annual percentage growth rates in productivity for the services sectors, previously discussed in section 2.

The controls included in the regression of productivity include: the size of the firm (number of employees and number of workplaces), the age of the firm, the ownership structure of the firm, and the firms’ industry environment. Most of these controls are insignificant. Firm size and the number of workplaces are not significant as determinants of workplace productivity. The age of the firm is significant at 0.004 (p = 0.01). Ownership structure is not significant for any of the five types of ownership; neither is competition significant. The percentage of output exported is however significant at 0.004 (p= 0.05). Capital assets are not included in the regression since they were included in the calculation of total factor productivity.
Table 2: Regression Model: Intellectual Assets and Firm Productivity  
(Independent Variable is Industry Adjusted Total Factor Productivity)

<table>
<thead>
<tr>
<th></th>
<th>Regression Coefficients</th>
<th>Standard Errors</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intellectual Assets Stock</td>
<td>0.015*</td>
<td>(0.006)</td>
<td>0.016</td>
</tr>
<tr>
<td>Firm Demographics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.004**</td>
<td>(0.001)</td>
<td>0.007</td>
</tr>
<tr>
<td>No. of Employees (FTE)</td>
<td>-0.000</td>
<td>(0.000)</td>
<td>0.159</td>
</tr>
<tr>
<td>No. of Workplaces</td>
<td>-0.009</td>
<td>(0.013)</td>
<td>0.508</td>
</tr>
<tr>
<td>Private Company</td>
<td>0.046</td>
<td>(0.109)</td>
<td>0.676</td>
</tr>
<tr>
<td>Ownership Structure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partnership/Sole Trader</td>
<td>0.208</td>
<td>(0.217)</td>
<td>0.343</td>
</tr>
<tr>
<td>Charity/Mutual</td>
<td>-0.058</td>
<td>(0.117)</td>
<td>0.623</td>
</tr>
<tr>
<td>Government Owned Firm</td>
<td>0.218</td>
<td>(0.138)</td>
<td>0.119</td>
</tr>
<tr>
<td>Family Business</td>
<td>-0.174</td>
<td>(0.100)</td>
<td>0.086</td>
</tr>
<tr>
<td>% Domestic Ownership</td>
<td>0.001</td>
<td>(0.001)</td>
<td>0.227</td>
</tr>
<tr>
<td>External Environment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of Competitors</td>
<td>0.001</td>
<td>(0.003)</td>
<td>0.723</td>
</tr>
<tr>
<td>% of Output Exported</td>
<td>0.004*</td>
<td>(0.002)</td>
<td>0.013</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.184*</td>
<td>(0.474)</td>
<td>0.015</td>
</tr>
</tbody>
</table>

| N (No. of Observations) | 77                      |
| R²                     | 0.241                   |

*p < 0.05, ** p < 0.01, *** p < 0.001

Table 3: Predicted Productivity Gains to Low Performing Firms from Increasing Intellectual Asset Stocks (Based on regressions in Table 2)

<table>
<thead>
<tr>
<th></th>
<th>Average Productivity for Low Performing Firms</th>
<th>Average Intellectual Asset Stocks for Low Performing Firms</th>
<th>Average Intellectual Asset Stocks for High Performing Firms</th>
<th>Predicted % Change in Productivity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2.028</td>
<td>57.912</td>
<td>75.866</td>
<td>13.278</td>
</tr>
</tbody>
</table>

Performance Gaps between High and Low Performing Firms
The analyses presented in Figure 1 shows that there are significant gaps and differences between high and low performing firms in their stocks of intellectual assets. These gaps are discussed in detail here.

Innovation
The largest performance gap between HPFs and LPFs is in the area of innovation. It is clear from Figure 1 that HPFs produce more new services and/or products (31% higher than LPFs), operational processes (36.8% higher) and managerial strategies and structures (27.8% higher). HPFs also produce more new ideas than LPFs (36.4% higher). HPFs are also more
effective at transforming ideas into concrete outputs and invest more resources to this effect. Indeed, the biggest differences between HPFs and LPFs are in those categories that concern innovation support, such as ‘dedicating resources to new strategic initiatives’ (64.9% higher for HPFs than LPFs); ‘putting in place mechanisms for capturing ideas from employees’ (e.g., town hall meetings, innovation zones) (57.4% higher), ‘following formal processes for systematically assessing and responding to ideas from employees’ (58.3% higher) and; ‘transforming ideas into new products/services, processes’ (44.9% higher). This shows that in HPFs, innovation processes are organised from idea generation all the way through to prototyping and trialling new products and service and commercialising these.

**Employee Experiences**

Employees in HPFs are more committed to their firms than employees in LPFs (29.8% higher, see again Figure 1). Employee commitment is characterised by three factors, including employees’ willingness to exert considerable effort on behalf of the organisation; a strong desire to maintain membership in the organisation; and a strong belief in the organisation’s goals and values. Committed employees exert higher levels of discretionary effort and consistently go beyond their formal job description to satisfy customers and develop novel solutions to emerging problems. Pride in the organisation, advocating the organisation to friends, and considering the organisation the ‘best possible’ employer, is more pronounced in HPFs than in LPFs. This is also where job satisfaction is highest (28.5% higher, see again Figure 1).

Employees’ turnover intentions are much smaller in HPFs than in LPFs (31.9% lower). This has financial consequences for the organisation, partly due to the cost associated with hiring new staff but and partly due to the loss of productivity resources (including knowledge and expertise) that occur when employees leave the firm. Thus, retention strategies must be put into place to secure knowledge and reduce the risk of leakage of intellectual capital.

Positive emotions (such as feeling proud, valued, loved, cheerful and optimistic) are much more prevalent amongst employees in HPFs, whilst negative emotions (such as feeling anxious, inadequate, worried, depressed and fearful) are more prevalent amongst employees in LPFs. One in every four respondents (25%) in LPFs reports ‘feeling depressed’, whereas in HPFs it is one in every seven respondents (14%). ‘Feeling anxious’ is the most prevalent emotion in LPFs with 56% of respondents experiencing this emotion. This is followed by ‘being worried’, which ranks second highest at 41%. 70% of respondents in HPFs ‘feel proud’ about their workplace and 65% ‘feel valued’, versus 40% and 47% respectively in LPFs.

**Fairness**

HPFs outperform LPFs on procedural fairness and distributional fairness. Procedural fairness refers to how managers and supervisors implement procedures and processes in the organisation and whether these are implemented in an equitable and fair manner. Distributed fairness concerns the extent to which rewards and recognition are fairly distributed relative to a person’s efforts, responsibilities and contributions. Figure 1 shows that the greatest difference between HPFs and LPFs in this category is in distributed fairness where on average HPFs score 42.3% higher than LPFs, compared to a 16.6% difference in procedural fairness. Compared to employees in HPFs, employees in LPFs perceive that they are less fairly rewarded for their work efforts and contributions.
Leadership
Leadership is a process whereby one person exerts influence over another in an attempt to guide, influence and facilitate activities and relationships towards shared goals and objectives. Figure 1 illustrates that HPFs enjoy better quality leadership than LPFs. HPFs are associated with higher levels of authentic leadership, developmental orientation and people management. In practical terms, this means that leaders in HPFs:

- Spend more time and effort managing their staff than leaders in LPFs (28% higher);
- Encourage employee development and learning (20.8% higher);
- Welcome criticism and feedback as learning opportunities (18.9% higher);
- Foster involvement and cooperation amongst employees (18.4% higher);
- Are innovative and encourage employees to think about problems in new ways (17.8% higher);
- Give increased recognition and acknowledgement to employees (16.1% higher);
- Have a clear vision and goals for the future (15.5% higher);
- Give employees opportunities to lead work assignments and activities (14.5% higher);
- Have clear values and ‘practice what they preach’ (14.2% higher).

Leadership undoubtedly has one of the biggest impacts on an individual’s performance at work. In many cases, the relationship between a supervisor and a staff member determines the employee’s level of commitment to the organisation, and intention to stay or leave. Of a broad range of possible contributors to an employee’s performance at work, strong leadership skills have consistently been recognised to be amongst the most important factors to consider. When authentic leadership is in place, employees trust their supervisors and their ability to realise compelling visions of the future for the firm. Furthermore, leaders in HPFs provide intellectual stimulation and give employees at all level the opportunity to champion and lead change. In other words, the role of leadership is to provide a collective future where it is possible for many to participate in its realisation. Leaders in HPFs recognise that they are not omniscient and that they require input from followers to maximise decision and performance effectiveness. There is a persuasive argument that HPFs are those where all employees are enabled to contribute to their full potential. Leaders in HPFs also prioritise people management more so than leaders in LPFs. Such a leader spends much time in face-to-face conversations with staff and teams and is commonly available for ‘1-on-1 time’. He or she is a person who shows genuine interest in another person’s growth opportunities and cares about the members of the team.

Adaptability
HPFs are agile organisations that respond well to change in the environment, including cyclical and competitive changes. Employees in HPFs have higher levels of behavioural and skills flexibility and are curious to learn new things. These skills are important for firms to navigate through industry peaks and throughs and survive structural changes. Figure 1 shows that HPFs:

- Are good at responding to changes and shifts in customer needs and preferences, technology, regulatory changes, economic conditions, market opportunities / threats (18.9% higher than LPFs).
- Employ staff who enjoy learning new things and take on challenging and difficult job tasks (6.8% higher).
- Has staff who are highly competent at dealing with problems and/or uncertainty when it emerges (48.2% higher).
Has staff who can switch to higher level jobs within a short time and who routinely perform more than one job (57.2% higher).

Customer Experiences
Customer orientation involves taking the customer seriously and concerns efforts made by the organisation to shape its offerings and activities around the customers’ needs and interests. Figure 1 shows systematic differences between the customer orientation of HPFs and LPFs. These differences apply both to perceptions of customer satisfaction and to the efforts made by employees throughout the firm to understand and respond to customer needs. Employees in HPFs ‘exert more effort in trying to understand customer needs’ (22.5% higher than LPFs); ‘are better at acting on suggestions/feedback from customers’ (24.4% higher); and ‘do whatever it takes to create value for customers’ (24.2% higher).
In return, HPFs are better at achieving their customer satisfaction goals (32.7% higher) than LPFs. It is clear that HPFs spend significant amounts of time and resources to understand the needs of customers. They encourage customer feedback and employ staff who actively listens to the customers. In other words, HPFs seek dialogue and are curious to learn from others.

6. Conclusion and Policy Considerations
There has been much debate amongst scholars and managers as to whether higher stocks of intellectual assets are associated with superior financial performance (see; Flood et al., 2008; Huselid, 1995; Lev & Daum, 2004; Youndt, Subramaniam & Snell, 2004). It is clear from the selection of service firms surveyed here that firms with higher stocks of intellectual assets have significantly higher levels of productivity, even after controlling for size, ownership structure and the external business environment. In fact, firms with lower stocks of intellectual asset would increase their productivity by 13.3% if they were to improve their stock of intellectual assets to be on par with that of the high performing group. This is equivalent to more than a decade of productivity growth in the service sectors in many countries.

Whilst industry factors such as competition and export have traditionally been suggested as key areas for policy focus, this study provides evidence that an additional priority area for policy focus is internally generated intellectual assets. This area is not an area given much focus, if any, in current policy.

Furthermore, for policy makers, our study suggests that there are immediate and significant economic opportunities available to nation states if policy interventions are directed towards lifting the performance of lower performing firms. The prevailing assumption of the traditional economic policy framework is that firms utilise their resources and economic inputs with maximum efficiency (they operate on the production frontier). We see in this study that this is not always the case. A proportion of firms (those with low stocks of intellectual assets), operate below the production frontier, meaning they to not maximise the effectiveness of resource inputs and value created during transformation processes.

It is clear from this and other studies that much can be done by policy maker and others to lift the performance of firms, especially lower performing firms. One immediate opportunity is to raise public awareness and address potential knowledge gaps amongst executives and managers. Three types of knowledge gaps are likely to exist at the firm level. First, firms may not be aware that intellectual assets can drive productivity performance. Second, firms may not know how they perform on their intellectual assets; they may underperform or they may be within the high performing group. A lack of measurement standards leaves this gap wide
open. Third, even if firms know their position, they may not know how to improve their intellectual assets.

The potential role of policy makers in closing these knowledge gaps is threefold. By promoting measurement tools and standards, managers will acquire new knowledge that is likely to improve management practice and lead to new interventions (there is an old saying, ‘what we measure is what we manage’ (Ridgway, 1956)). Measurement tools inevitably lead to formal comparisons and benchmarking practice, which will prompt interventions and investments by managers seeking to be on par with their competitors, or to lead the pack. Measurement programs can also assist policy makers determine where intervention programs ought to focus and provide a standard to quantify their impacts.
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Acknowledgments
The "Leadership, Culture and Management Practices of High Performing Workplaces in Australia" research project was commissioned by the Workplace Innovation Fund within the Australian Federal Government Department of Innovation and the Society for Knowledge Economics.
Footnotes

i The Deputy Prime Minister’s speech at the 15th World Congress of the International Industrial Relations Work Congress, August 24-27, 2009, Darling Harbour Convention Centre, Sydney.

ii As a robustness check, TFP was also calculated using a regression method. The results were highly correlated with the Cobb-Douglas method reported here.

iii Regression analysis showed that capital inputs are not significant as a separate category.

iv The 19 items in the 6 categories of intellectual assets are scored out of 100. The items are weighted equally. An overall score is calculated by averaging the scores for the 6 categories to an overall score for each firm. The six categories are weighted equally to produce an Index of the firms’ scores. The resulting Index is converted to a z-score (a mean of zero and a standard deviation of 1).

v Participating firms received over 100 pages of benchmarking information. This included an Executive Summary which showed their scores on the six intellectual asset categories and their overall position on the Index relative to peers.