

What does the Australian PSI® tell us about ABS data?

This research note examines the statistical relationship between the **Australian PSI®** and various Australian Bureau of Statistics (ABS) data series that are relevant to services activity, using charts, tables and regression analysis. The findings suggest there is a strong relationship between the **Australian PSI®** and ABS data on services and the economy more generally.

Since 2003, Ai Group has compiled and published Australia's leading performance index for the services industries, the Australian Performance of Services Index (**Australian PSI®**). The **Australian PSI®** is compiled with data from a monthly survey of a representative sample of services businesses. The **Australian PSI®** is a 'diffusion' index, calculated from a weighted composite of five key activity indicators including sales, new orders, employment, supplier deliveries and stocks. Different weights are attached to these indicators (derived from ABS data), which are combined into the headline index and into indexes for each sub-sector. The **Australian PSI®** and the detailed series for sub-indexes and sub-sectors are seasonally adjusted.

An index reading in the **Australian PSI®** above 50 points indicates activity is, on balance, expanding; below 50, that it is declining. The distance from 50 points indicates the strength of the expansion or decline. Survey respondents are asked to specify for each question whether their activity for that indicator (e.g. new orders) has either increased ("up"), decreased ("down") or remained the same ("no change") from the previous month.

The relationship between the **Australian PSI®** and the relevant ABS data is strongest for ABS annual growth rates rather than for quarterly or monthly movements in the ABS data. In most cases this relationship appears to be concurrent, but the earlier release date for the **Australian PSI®** gives it a 'lead' on the ABS data, even where the statistical relationship appears to be wholly concurrent.

Our research analysis found a 'leading' margin for a number **Australian PSI®** series in addition to the headline results, including:

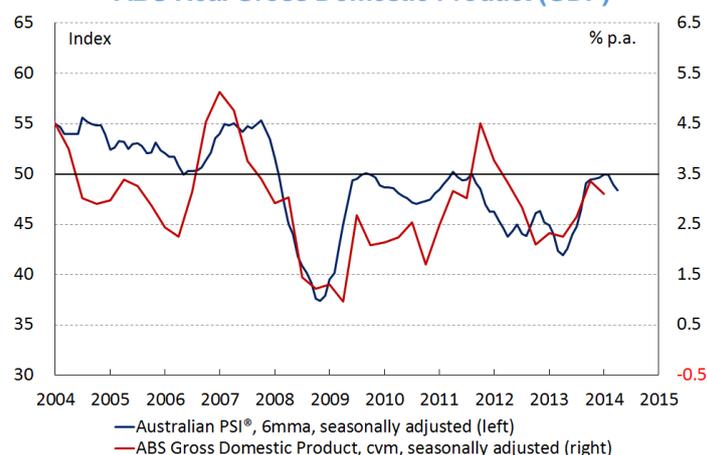
- between the **Australian PSI®** headline index and annual growth in ABS real **Gross Domestic Product (GDP)**, real **Domestic Final Demand (DFD)**, services **gross value added (GVA)** and **nominal sales**;
- between the **Employment** sub-index and annual growth in ABS services **hours worked**;
- between the **Wages** sub-index and annual growth in ABS private services sector **Wage Price Index (WPI)**;
- between the **Input Prices** sub-index and annual growth in ABS **Producer Price Index (PPI)**;
- between the **Selling Prices** sub-index and annual growth in ABS **Consumer Price Index (CPI)**; and
- between the **Capacity Utilisation** sub-index and the ABS market sector industries **multifactor productivity index (MFP)**.

This note adds to earlier Ai Group research which investigated the relationship between the **Australian PSI®** and official GDP and services output measures (see [Correlations of Ai Group Performance Indices with Official Economic Data](#), 2010).

It also compliments Ai Group's recent detailed analysis on the **Australian PMI®** and its relationship with relevant ABS data (see [How does the Australian PMI compare to ABS data?](#), 2014).

These relationships are examined in turn in the charts and text below. Their statistical correlation values are summarised in Table 1 below.

CHART 1: Australian PSI® vs ABS Real Gross Domestic Product (GDP)



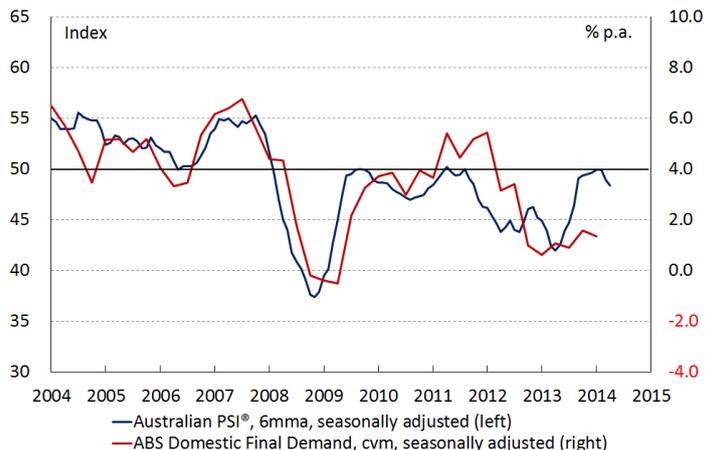
Sources: Ai Group, ABS *National Accounts*.

Changes in the **Australian PSI®** (six month moving average) are well aligned with annual growth rates in ABS real Gross Domestic Product (GDP). This is to be expected, since the services industries collectively contribute up to 75% of the real output of the Australian economy.

A simple linear regression model using data from 2003 to 2014 suggests that an **Australian PSI®** index reading (6mma) of 50.0 points is equivalent to around a 3.0% p.a. increase in real GDP for the same quarter. This is just below Australia's long-run average GDP growth rate of 3¼%. The model also suggests that a 1.0 point increase in the **Australian PSI®** index (6mma) at the end of each quarter is equivalent to around a 0.14 percentage point increase in the annual growth rate of real GDP for the same quarter.

Both the **Australian PSI®** and the ABS real GDP data show that Australian national output growth slowed sharply in 2008-09, as the Global Financial Crisis (GFC) began to affect Australia. Growth rates subsequently recovered in 2011 and 2012 but came under pressure again in 2013 and 2014, due to the high Australian dollar, renewed global risks, elevated local costs and other factors. The **Australian PSI®** did not display the same peaks as real GDP growth in 2006-07 and 2011-12 (over 4.0% p.a.). This is most probably because it excludes the mining sector that contributed so strongly to these peak growth rates.

CHART 2: Australian PSI® vs ABS Domestic Final Demand



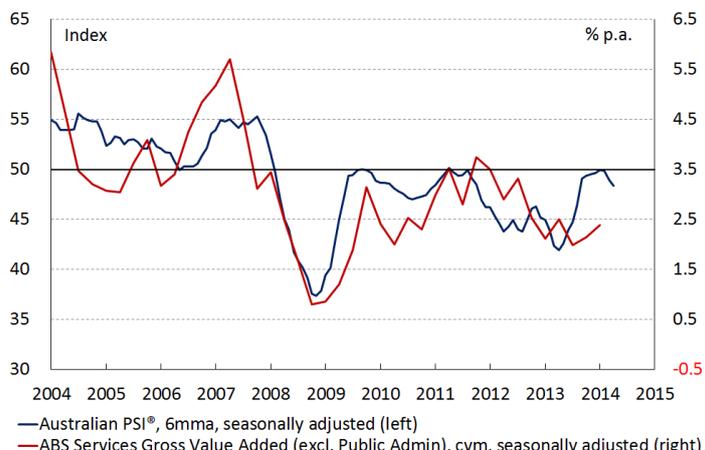
Sources: Ai Group, ABS *National Accounts*.

Changes in the **Australian PSI®** (six month moving average) are closely aligned with annual growth rates in ABS real Domestic Final Demand.

A simple linear regression model using data from 2003 to 2014 suggests that an **Australian PSI®** index reading (6mma) of 50.0 points is equivalent to around a 3.9% p.a. increase in real Domestic Final Demand for the same quarter. This model also suggests that a 1.0 point increase in the **Australian PSI®** index (6mma) at the end of each quarter is equivalent to around a 0.32 percentage point increase in the annual growth rate of real GDP for the same quarter. Statistically, the correlation between the **Australian PSI®** and real Final Demand is stronger than for real GDP.

The **Australian PSI®**'s close relationship with Domestic Final Demand reflects the fact that this key ABS data series measures total Australian consumption plus investment but abstracts the effects from net exports and inventories. Since Domestic Final Demand excludes the surge in mining exports of recent years (but not the local mining investment activity that preceded it), Domestic Final Demand is a better indicator of local economic conditions than is real GDP, as measured by the **Australian PSI®**.

CHART 3: Australian PSI® vs ABS Services Gross Value Added¹



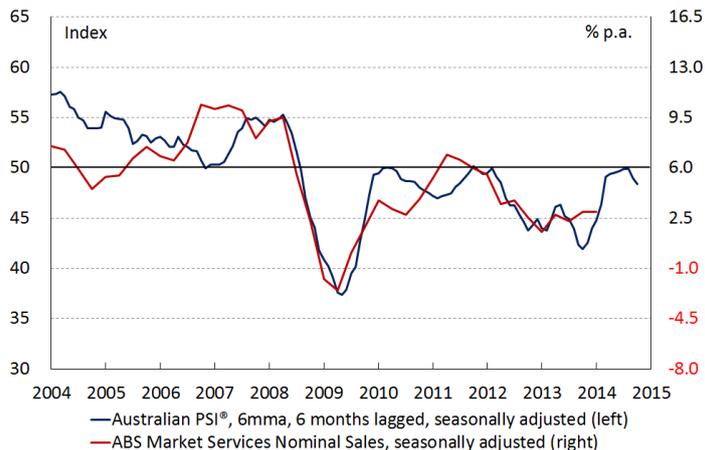
Sources: Ai Group, ABS *National Accounts*.

Changes in the **Australian PSI®** (six month moving average) are well aligned with annual growth rates in real output for the equivalent ABS services sectors (gross value added volume measures).²

A simple linear regression model using data from 2003 to 2014 suggests that an **Australian PSI®** index reading (6mma) of 50.0 points is equivalent to around a 3.2% p.a. increase in services sectors' real output for the same quarter. This model also suggests that a 1.0 point increase in the **Australian PSI®** index (6mma) at the end of each quarter is equivalent to around a 0.17 percentage point increase in the annual growth rate of real output for the services sector in the same quarter.

Both the **Australian PSI®** and the ABS services sectors' real output data show that services output declined sharply in 2008-09, in response to the slow patch following the GFC. Growth subsequently recovered in 2010 but has so far failed to regain the pace of growth achieved prior to the GFC, due to the high Australian dollar, weak consumer and business confidence, heightened risk aversion, elevated local costs, technology changes and other local and global factors.

CHART 4: Australian PSI® vs ABS Market Services Sector Nominal Sales³



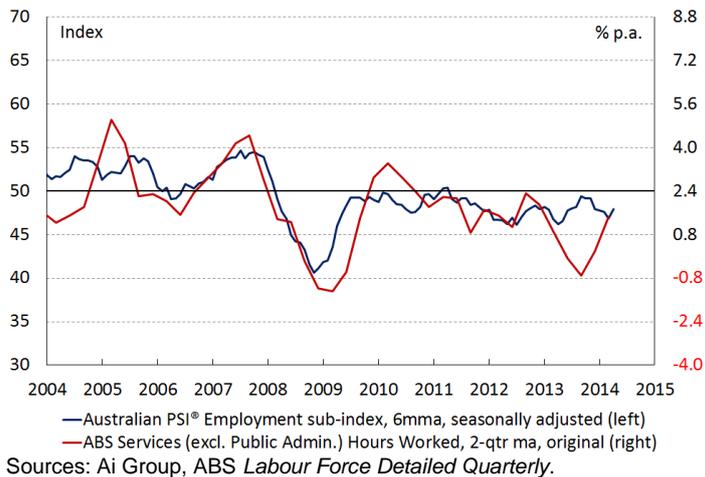
Sources: Ai Group, ABS *Business Indicators*.

Changes in the **Australian PSI®** (three month moving average) are closely aligned with annual growth in ABS 'market services sector' nominal sales. The **Australian PSI®** appears to lead the ABS data by around six months.⁴

A simple linear regression model using data from 2003 to 2014 suggests that an **Australian PSI®** reading (6mma) of 50.0 points is indicative of around a 5.3% p.a. increase in market services nominal sales, two quarters later. This model also suggests that a 1.0 point increase in the **Australian PSI®** (6mma) at the end of each quarter is equivalent to around a 0.49 percentage points increase in the annual growth rate of market services nominal sales six months later.

One explanation for the **Australian PSI®**'s close relationship with market services nominal sales may be the tendency among **Australian PSI®** respondents to think about their output in nominal or value terms, rather than in price-adjusted or volume terms, given the nature of their services provision. This 'nominal' approach to thinking about sales is normal and necessary in business and reflects standard accounting practices.

CHART 5: Australian PSI® Employment Sub-index vs ABS Services Hours Worked⁵



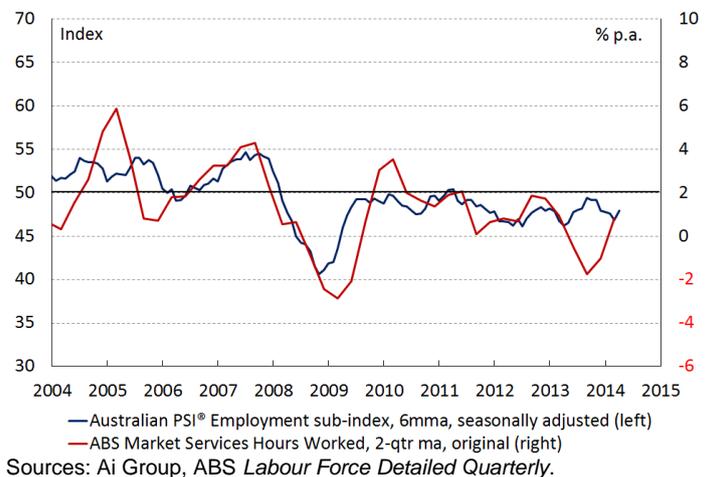
The **Australian PSI®** Employment sub-index commenced in February 2003 as a monthly data series.

Changes in the **Australian PSI®** Employment sub-index (six month moving average) is related to the annual growth rate in the ABS data series for 'services hours worked'.⁶

A simple linear regression model using data from 2003 to 2014 suggests that an **Australian PSI®** Employment sub-index reading (6mma) of 50.0 points is indicative of around a 2.0% p.a. increase in services hours worked (two-quarter moving averages) in that quarter. This model also suggests that a 1.0 point increase in the **Australian PSI®** Employment sub-index (6mma) at the end of each quarter is equivalent to around a 0.3 percentage point increase in the annual growth rate of services hours worked (two-quarter moving averages) in the same quarter.

Although the majority (around 70%) of Australia's workforce are full-time (defined in the ABS labour force data as 35 hours or more per week), the percentage of part-time workers has grown over the past 30 years, from a bit under 18% in 1984 to an historical high of 30.6% in February 2014, as labour flexibility, workforce participation and workforce diversity have improved. In this context, the total number of hours worked probably provides a faster indication of real labour demand than does the total number of employees over time. This is particularly the case in the services industries, which include the retail and hospitality sectors that are the biggest employers of part-time and casual workers.

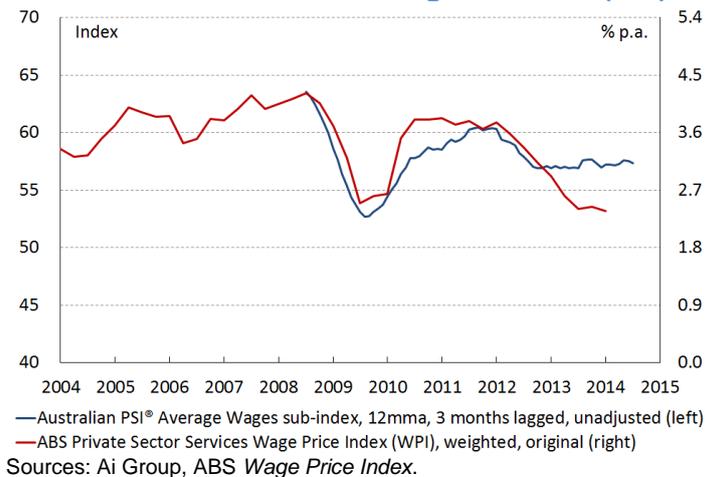
CHART 6: Australian PSI® Employment Sub-index vs ABS Market Services Hours Worked⁷



Changes in the **Australian PSI®** Employment sub-index (six month moving average) relates well to the annual growth rate in the ABS data series for 'market services hours worked' (two-quarter moving averages).⁸ This ABS measure of hours worked in the services industries is similar to the 'services hours worked' series discussed above, but it excludes the *Education and training*, and *Health care and social assistance* sectors, which include large numbers of public sector workers. It is therefore better aligned to the private sector businesses that make up the sample population of the **Australian PSI®**.

A simple linear regression model using data from 2003 to 2014 suggests that an **Australian PSI®** Employment sub-index reading (6mma) of 50.0 points is indicative of around a 1.6% p.a. increase in market services hours worked in that quarter (two-quarter moving averages). This model also suggests that a 1.0 point increase in the **Australian PSI®** Employment sub-index (6mma) at the end of each quarter is equivalent to around a 0.4 percentage point increase in the annual growth rate of market services hours worked in the same quarter (two-quarter moving averages).

CHART 7: Australian PSI® Average Wages Sub-index vs ABS Private Sector Services Wage Price Index (WPI)⁹



The **Australian PSI®** Average Wages sub-index commenced in October 2007 as a monthly data series.

Changes in the Average Wages sub-index (12 month moving average) are closely aligned with the annual growth rates in the ABS *Wage Price Index (WPI)* data series for private services sectors (which commenced in September 1997) and appear to lead it by around three months.¹⁰

A simple linear regression model using **Australian PSI®** wages data from 2007 to 2014 suggests that an **Australian PSI®** Average Wages sub-index reading (12mma) of 58.0 points is equivalent to around 3.3% p.a. growth in the ABS private services WPI for the following quarter. This model also suggests that a 1.0 point increase in the **Australian PSI®** Average Wages sub-index (12mma) at the end of each quarter is equivalent to around a 0.2 percentage point increase in the annual growth rate of the private services WPI for the next quarter.

Wage growth across the services industries decelerated sharply in 2008-09, in response to the slower economy following the GFC. It subsequently recovered in 2010 but has since decelerated gradually, reflecting ongoing subdued local and global economic conditions, lower background inflation and a weaker labour market since 2011.

CHART 8: Australian PSI® Average Selling Price Sub-index vs ABS Consumer Price Index (CPI)



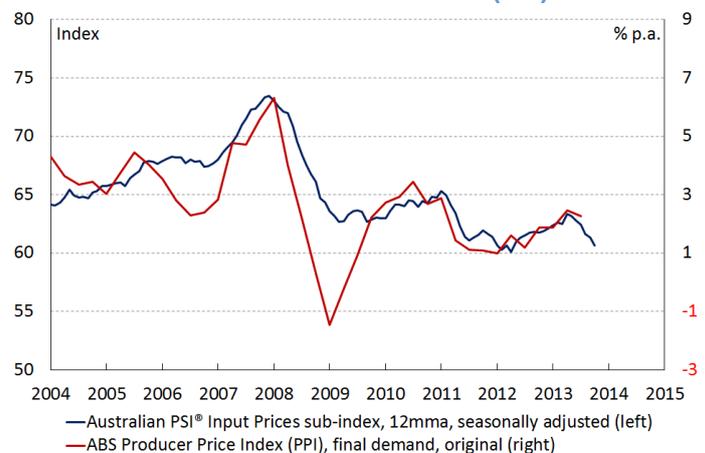
The **Australian PSI®** Average Selling Price sub-index commenced in October 2007 as a monthly data series.

Changes in the **Australian PSI®** Average Selling Prices sub-index (six month moving average) are closely aligned with annual growth in the ABS weighted median *Consumer Price Index* (CPI).

A simple linear regression model using **Australian PSI®** data from 2007 to 2014 suggests that an Average Selling Price sub-index reading (6mma) of 50.0 points is equivalent to around 3.3% p.a. growth in the weighted median CPI. The model also suggests that a 1.0 point increase in the **Australian PSI®** Average Selling Price sub-index (6mma) at the end of each quarter is equivalent to around a 0.2 percentage point increase in the annual growth rate of the weighted median CPI for the corresponding quarter.

Growth rates in service output prices slowed markedly in 2008-09, in response to slower demand following the GFC and have remained moderate since then. Slower local wage growth, the high level of the Australian dollar, weaker background inflation and subdued economic conditions have put significant pricing pressures on local services.

CHART 9: Australian PSI® Input Price Sub-index vs ABS Final Producer Price Index (PPI)



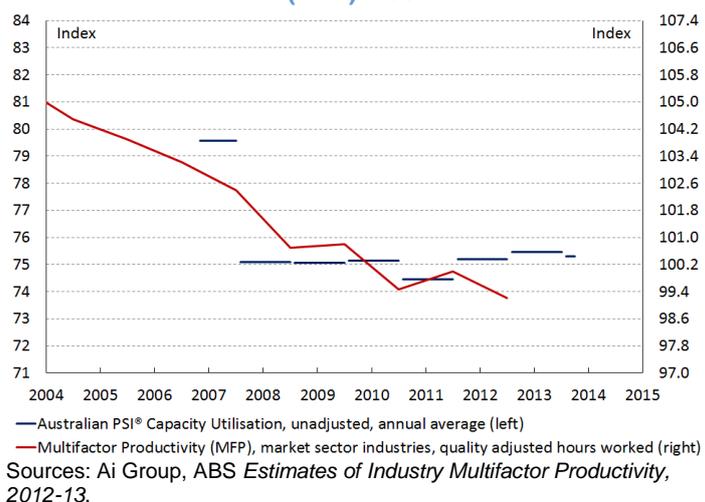
The **Australian PSI®** Input Price sub-index commenced in February 2003 as a monthly data series.

Changes in the **Australian PSI®** Input Price sub-index (12 month moving average) are closely aligned with annual growth rates in the ABS *Producer Price Index* (PPI).¹¹

A simple linear regression model based on the entire history of the **Australian PSI®** Input Price sub-index from 2003 to 2014 suggests that a reading (12mma) of 65.0 points is equivalent to around 2.6% p.a. growth in final producer prices, as measured by the ABS. This model also suggests that a 1.0 point increase in the **Australian PSI®** Input Price sub-index (12mma) at the end of each quarter is equivalent to around a 0.3 percentage point increase in the annual growth rate for the ABS PPI for the corresponding quarter.

Growth in services input prices decelerated significantly in 2008-09, following the GFC disruptions, and again from 2011, due to subdued non-mining activity and the appreciation of the Australian dollar. However, growth in services input prices picked up from mid-2013, possibly as a result of the temporary depreciation of the Australian dollar between May 2013 and February 2014.

CHART 10: Australian PSI® Capacity Utilisation Sub-index vs ABS Market Sector Industries Multifactor Productivity (MFP) Index



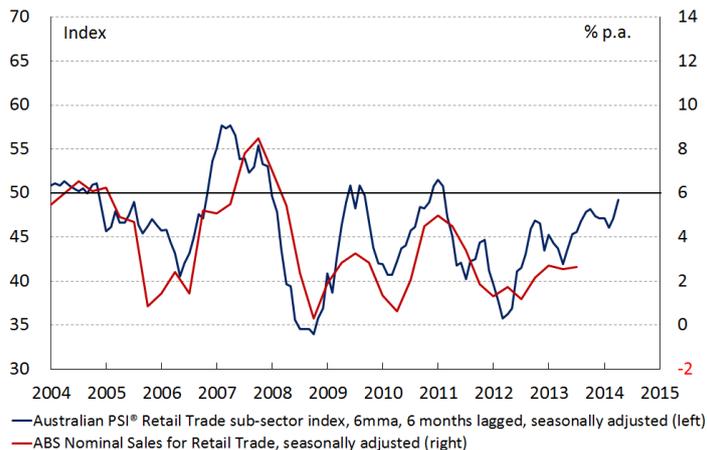
The **Australian PSI®** Capacity Utilisation sub-index commenced in October 2007 as a monthly data series.

Changes in the **Australian PSI®** Capacity Utilisation sub-index (financial year average) are approximately aligned with movements in the ABS's estimated Multifactor Productivity Index (MFP) for market sector industries, which is available on an annual indexed basis only. The ABS multifactor productivity estimates are calculated from real GDP per combined unit of labour (quality adjusted hours worked) and capital.

The ABS's latest MFP estimate for the market sector industries deteriorated sharply from around 2004, with the **Australian PSI®** Capacity Utilisation sub-index (annual average) following a similar path from 2007.

Subdued economic conditions in the non-mining related industries since the GFC, the persistently high Australian dollar over the past four years, and ongoing subdued consumer and business confidence have seen the local services industry still battling with excess capacity, as indicated by the lower capacity utilisation readings in the **Australian PSI®** over this period.

CHART 11: Australian PSI® Retail Trade Sub-sector vs ABS Nominal Sales for the Retail Trade Sector



Sources: Ai Group, ABS *Business Indicators*.

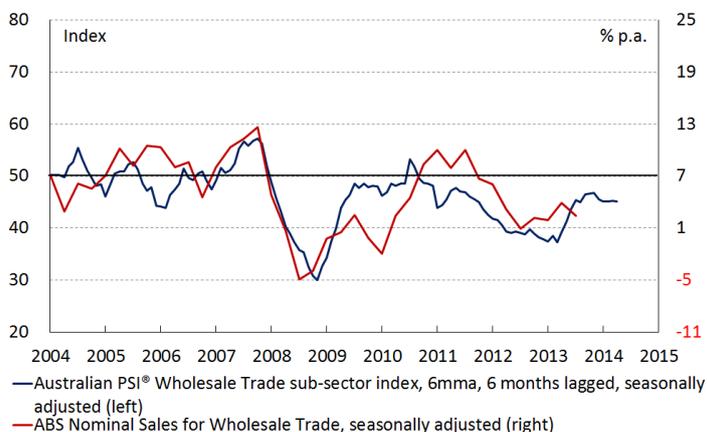
The **Australian PSI®** retail trade sub-sector index commenced in February 2003 as a monthly data series.

Changes in the **Australian PSI®** retail trade sub-sector index (six month moving average) are closely aligned with annual growth rates in nominal sales for the ABS retail trade industry and lead them by around six months.

A simple linear regression model using all available **Australian PSI®** data from 2003 to 2014 suggests that an index reading (6mma) of 50.0 points for the retail trade sub-sector is equivalent to around 4.9% p.a. growth in nominal sales for the ABS retail trade industry, six months later. The model also suggests that a 1.0 point increase in the **Australian PSI®** retail trade sub-sector index (6mma) at the end of each quarter is equivalent to around a 0.3 percentage point increase in the annual growth rate of the ABS retail trade industry's nominal sales, half a year later.

Growth in nominal sales for the local retail trade sub-sector has slowed notably to an average of 3.0% p.a. since 2008-09. Despite historically low interest rates, consumers have remained cautious following the GFC and reluctant to increase their discretionary spending. Technology disruptions are also affecting the sector, including the growth of online and offshore retailing and the emergence of new electronic version in some product categories (e.g. in music, books and home entertainment).

CHART 12: Australian PSI® Wholesale Trade Sub-sector vs ABS Nominal Sales for Wholesale Trade



Sources: Ai Group, ABS *Business Indicators*.

The **Australian PSI®** wholesale trade sub-sector index commenced in February 2003 as a monthly data series.

Changes in the **Australian PSI®** wholesale trade sub-sector index (six month moving average) are reasonably well aligned with annual growth rates in nominal sales for the ABS wholesale trade industry and lead them by around six months.

A simple linear regression model using all available **Australian PSI®** data from 2003 to 2014 suggests that an index reading (6mma) of 50.0 points for the wholesale trade sub-sector is equivalent to around 6.3% p.a. growth in ABS wholesale trade nominal sales six months later. The model also suggests that a 1.0 point increase in the **Australian PSI®** wholesale trade sub-sector index (6mma) at the end of each quarter is equivalent to around a 0.4 percentage point increase in the annual growth rate of ABS wholesale trade nominal sales, half a year later.

Similar to the retail trade industry, annual growth in nominal sales for the wholesale trade sub-sector has been subdued since 2008-09. This sub-sector has been facing weak demand and intense competition due to a high Australian dollar. Furthermore, an increasing number of large retailers are bypassing wholesalers and sourcing goods directly offshore.

CHART 13: Australian PSI® Property & Business Services Sub-sector vs ABS Nominal Sales for Real Estate, Professional & Administrative Services¹²



Sources: Ai Group, ABS *Business Indicators*.

The **Australian PSI®** property and business service sub-sector index commenced in February 2003 as a monthly data series.

Changes in the **Australian PSI®** property and business service sub-sector index (six month moving average) are well aligned with annual growth rates in aggregate nominal sales for the ABS *Real Estate, Professional and Administrative Services* industries,¹³ and lead them by around six months.

A simple linear regression model using all available **Australian PSI®** data from 2003 to 2014 suggests that an index reading (6mma) of 50.0 points for the property and business service sub-sector is equivalent to around 6.6% p.a. growth in ABS *Real Estate, Professional and Administrative Services* nominal sales six months later. The model also suggests that a 1.0 point increase in the **Australian PSI®** property and business service sub-sector index (6mma) at the end of each quarter is equivalent to around a 0.4 percentage point increase in the annual growth rate of ABS *Real Estate, Professional and Administrative Services* nominal sales, half a year later.

Nominal sales for the property and business service sub-sector declined sharply in 2008-09, following the GFC. It subsequently recovered as the mining investment boom boosted demand for related business-to-business services (despite weak demand from other sectors). Over the past year however, reduced investment and consulting activity from mining, manufacturing and other industries, as well as from governments, have dampened the flow of work to the business services sectors, even as construction-related real-estate services improve.

TABLE 1: AUSTRALIAN PSI® STATISTICAL CORRELATIONS¹⁴

PSI Indexes ¹⁵ (x)	ABS (y)	Time Period ¹⁶	Correlation	Simple linear Regression ¹⁷	R ² ; adjusted R ²
Australian PSI® (6mma)	Gross Domestic Product, chain volume measures, seasonally adjusted, % p.a. (Cat. 5206.0)	February 2003 to June 2014	0.67	$y = -3.81^{***} + 0.14^{***}x$	0.45; 0.44
	Domestic Final Demand, chain volume measures, seasonally adjusted, % p.a. (Cat. 5206.0)	February 2003 to June 2014	0.78	$y = -12.04^{***} + 0.32^{***}x$	0.60; 0.59
	Services Gross Value Added, ¹⁸ chain volume measures, seasonally adjusted, % p.a. (Cat. 5206.0)	February 2003 to June 2014	0.71	$y = -5.48^{***} + 0.17^{***}x$	0.51; 0.50
Australian PSI® (6mma, 6 months lagged)	Market Services Income from Sales of Goods and Services, ¹⁹ current prices, seasonally adjusted, % p.a. (Cat. 5676.0)	February 2003 to June 2014	0.78	$y = -19.13^{***} + 0.49^{***}x$	0.61; 0.60
Employment (6mma)	Services (excl. Public Administration) Total Actual Hours Worked, ²⁰ two quarter moving average, original, % p.a., (Cat. 6291.0)	February 2003 to August 2014	0.69	$y = -13.62^{***} + 0.31^{***}x$	0.48; 0.47
	Market Services Total Actual Hours Worked, ²¹ two quarter moving average, original, % p.a., (Cat. 6291.0)	February 2003 to August 2014	0.67	$y = -18.24^{***} + 0.40^{***}x$	0.44; 0.43
Average Wages (12mma, 3 months lagged, unadjusted)	Private Services Wage Price Index (WPI), weighted, ²² original, % p.a. (Cat. 6345.0)	October 2007 to June 2014	0.76	$y = -7.23^{***} + 0.18^{***}x$	0.59; 0.57
Average Selling Price (12mma, unadjusted)	Consumer Price Index (CPI), weighted median, seasonally adjusted, % p.a. (Cat. 6427.0)	October 2007 to June 2014	0.77	$y = -6.17^{***} + 0.19^{***}x$	0.59; 0.57
Input Price (12mma)	Producer Price Index, final demand stage, original, % p.a. (Cat. 6427.0)	February 2003 to June 2014	0.69	$y = -18.11^{***} + 0.32^{***}x$	0.48; 0.47
Capacity Utilisation (annual average, unadjusted)	Market Sector Industries Multifactor Productivity (MFP) Index, quality adjusted hours worked basis (Cat. 5260.0.55.002)	October 2007 to June 2014	N/A	N/A	N/A
Retail Trade Sub-sector (6mma, 6 months lagged)	Retail Trade Income from Sales of Goods and Services, current prices, seasonally adjusted, % p.a. (Cat. 5676.0)	February 2003 to June 2014	0.74	$y = -9.63^{***} + 0.29^{***}x$	0.55; 0.54
Wholesale Trade Sub-sector (6mma, 6 months lagged)	Wholesale Trade Income from Sales of Goods and Services, current prices, seasonally adjusted, % p.a. (Cat. 5676.0)	February 2003 to June 2014	0.59	$y = -13.29^{***} + 0.39^{***}x$	0.35; 0.33
Property and Business Services Sub-sector (6mma, 6 months lagged)	Property and Business Services Income from Sales of Goods and Services, ²³ current prices, seasonally adjusted, % p.a. (Cat. 5676.0)	February 2003 to June 2014	0.64	$y = -13.50^{***} + 0.40^{***}x$	0.41; 0.40

Sources: Ai Group; various ABS publications.

AUSTRALIAN INDUSTRY GROUP AUSTRALIAN PSI® QUICK HISTORY

2003 Commenced as a monthly data series.

2007 New sub-indexes added.

Typical sample size: between 150 and 200 companies answer the **Australian PSI®** each month, with an average business size of around 30 employees each business each month.

The **Australian PSI®** uses an internationally standardised 'diffusion index' methodology. The **Australian PSI®** is part of a network of directly comparable surveys that are conducted globally by various organisations. These are compiled into a 'Global Services PMI' each month by Markit Economics. For more information about international PMI surveys and the Global PMI for services, see www.markiteconomics.com.

This note adds to earlier Ai Group research which studied the relationship between the **Australian PSI®** and the growth rates for various Australian GDP and services output measures (see [Correlations of Ai Group Performance Indices with Official Economic Data](#), 2010).

	Date commenced, monthly
Australian PSI®	February 2003
Activity sub-indexes	
Sales	Feb 2003
New Orders	Feb 2003
Employment	Feb 2003
Stocks	Feb 2003
Deliveries	Feb 2003
Capacity Utilisation	Oct 2007
Price sub-indexes	
Input Prices	Feb 2003
Selling Prices	Oct 2007
Average Wages	Oct 2007
Sub-sector indexes (a)	
Wholesale trade	Feb 2003
Retail trade	Feb 2003
Accommodation, cafes and restaurants ('hospitality')	Feb 2003
Personal and recreational services	Feb 2003
Health and community	Feb 2003
Property and business	Feb 2003
Finance and insurance	Feb 2003
Communications	Feb 2003
Transport and storage services	Feb 2003
State sub-indexes (b)	
NSW	Feb 2003
Vic	Feb 2003
Qld	Feb 2003
South Australia	Feb 2003
Western Australia	Feb 2003
Tasmania	Feb 2003

(a) ANZSIC 2006 classifications and annual average (2006-07) industry weights.

(b) State sub-indexes are not published with the **Australian PSI®** each month. They are available on an annual subscription basis only.

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What is the Australian PSI®? The Australian Industry Group Australian Performance of Services Index (Australian PSI®) is a seasonally adjusted national composite index based on the diffusion indexes for sales, orders/new business, deliveries, inventories and employment with varying weights. An Australian PSI® reading above 50 points indicates services activity is generally expanding; below 50, that it is declining. The distance from 50 is indicative of the strength of the expansion or decline. For further economic analysis and information from the Australian Industry Group, visit <http://www.aiigroup.com.au/economics>. *For further information on international PMI data, visit <http://www.markiteconomics.com> or <http://www.cipsa.com.au>.

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- ¹ Include *Wholesale trade, Retail trade, Accommodation and food services, Transport, postal and warehousing, Information media and communications, Financial and insurance services, Rental, hiring and real estate services, Professional, scientific and technical services, Administrative and support services, Education and training, Health care and social assistance, Arts and recreation services* and *Other services*. Excludes *Public administration*.
- ² See Footnote 1.
- ³ Include *Wholesale trade, Retail trade, Accommodation and food services, Transport, postal and warehousing, Information media and communications, Financial and insurance services, Rental, hiring and real estate services, Professional, scientific and technical services, Administrative and support services, Arts and recreation services* and *Other services*. Excludes *Public administration*.
- ⁴ See Footnote 3.
- ⁵ See Footnote 1.
- ⁶ See Footnote 1.
- ⁷ See Footnote 3.
- ⁸ See Footnote 3.
- ⁹ Include Wage Price Indexes (WPI) for all services sectors that are denoted as "Private" in the ABS publication. Weightings are based on *Private Sector Broad Industry Group* from December 1997 to December 2013 as published in Table 3, *Distribution of Expenditure on Wages, Wage Price Index, Australia* (ABS Cat. 6345.0).
- ¹⁰ See Footnote 9.
- ¹¹ Final demand stage of production.
- ¹² Sum of *Rental, hiring and real estate services, Professional, scientific and technical services, and Administrative and support services*.
- ¹³ See Footnote 12.
- ¹⁴ Alternative moving averages and lags were also tested during this study. The table only includes those results that are most relevant and representative. Seasonally adjusted unless indicated otherwise.
- ¹⁵ For monthly readings of the **Australian PSI**[®] sub-indexes and sub-sector indexes, the relevant quarter-end data are used to compare to the relevant ABS series for the corresponding quarter. For example, for the 2014 June quarter, the 12-month-moving-average for the **Australian PSI**[®] Input Prices sub-index for June 2014 is compared to the annual growth rate of the ABS final Producer Price Index (PPI) for the June quarter.
- ¹⁷ *** indicates P-value is less than 1%; ** indicates P-value is less than 5%; * indicates P-value is less than 10%.
- ¹⁸ See Footnote 1.
- ¹⁹ See Footnote 2.
- ²⁰ See Footnote 1.
- ²¹ See Footnote 3.
- ²² See Footnote 9.
- ²³ See Footnote 12.