PRIME MINISTER'S DEPARTMENT
DEPARTMENT OF STATISTICS MALAYSIA

KOLOKIUM STATISTIK 2022

PRELIMINARY REVIEW OF THE RELATIONSHIP BETWEEN REAL WAGES AND LABOUR PRODUCTIVITY

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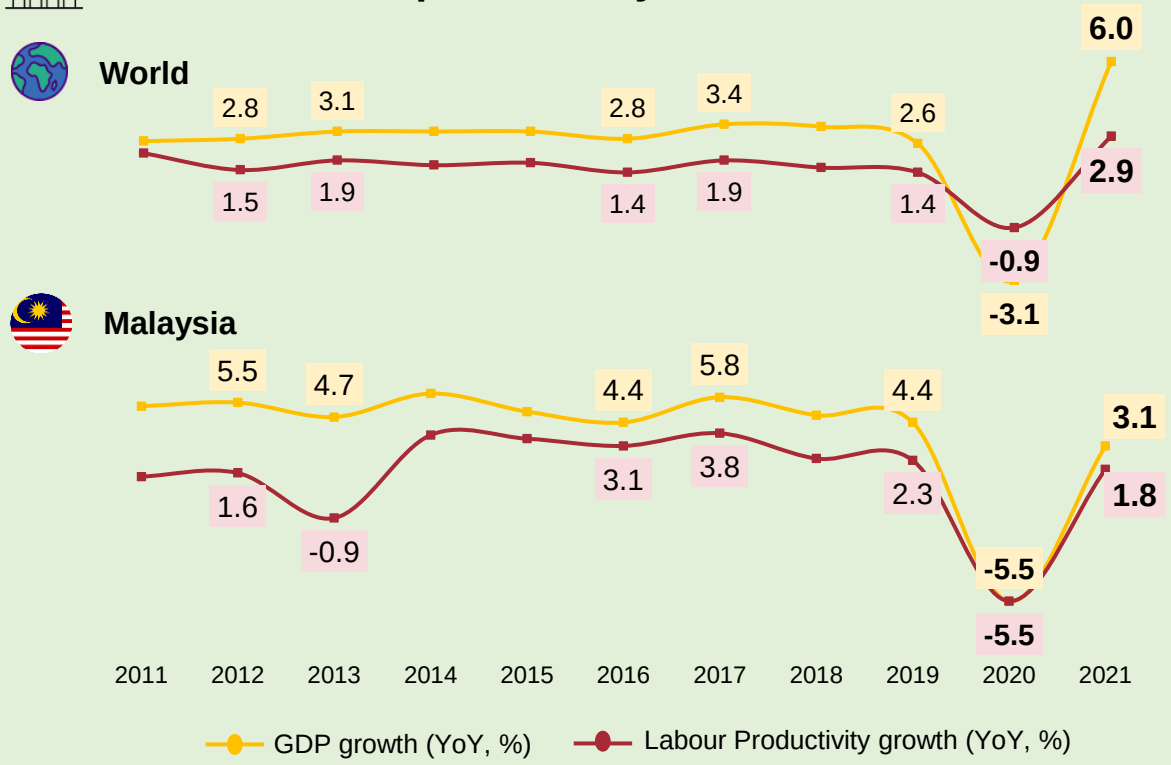
Content

Background

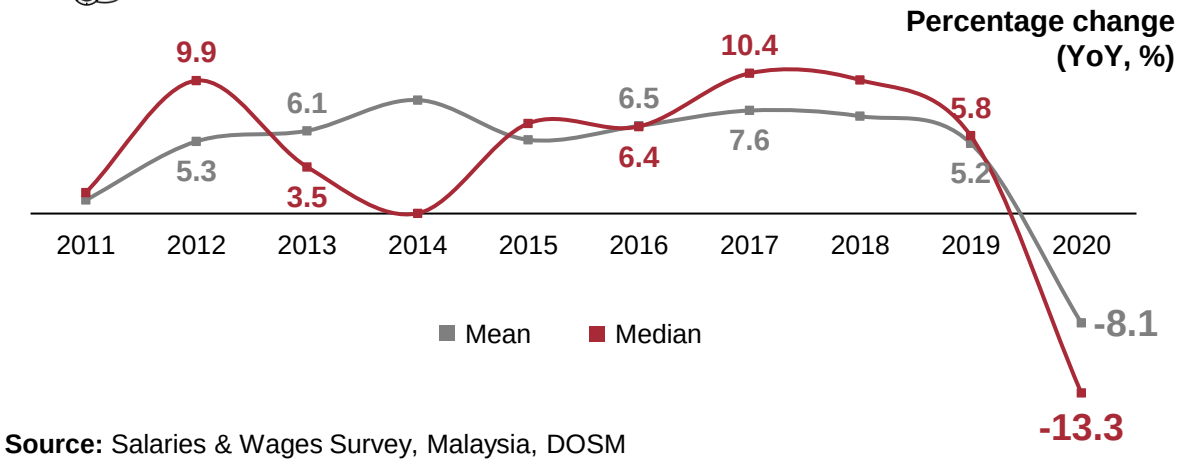
GDP & Labour productivity



Global economy **dived 3.1 per cent** in 2020 and **rebounded 6.0 per cent** in 2021 against the preceding year. The world's labour productivity recorded **a decrease of 0.9 percent** in 2020 pick back up by **2.9 per cent** in the following year**.**

Likewise, Malaysia has experienced **almost similar movement** as the world for both macroeconomic indicators.

Malaysia's Salaries & Wages



Source: Salaries & Wages Survey, Malaysia, DOSM

Mean monthly salaries & wages **fell for the first time** since the series began in 2011 **declined by 8.1%** while **median** monthly salaries & wages recorded a **double-digit decrease of 13.3%** in 2020.

Objective

"To gauge some insights on the **relationship between wages and labour productivity** in Malaysia by leveraging the availability of official labour market statistics."

Literature review

There are **two approaches** to determine the relationship of labour productivity and real wages whereby one can move the other in both direction. The first approach is the **marginal productivity theory** which indicated that real wages driven by labour productivity. In contrast, another approach conveyed that labour productivity may be influenced by changes in real wages is in line with **efficiency wages theory.**

Source: Cruz, (2022). Labor productivity, real wages, and employment: evidence from a panel of OECD economies over 1960-2019.

Katovich and Maia (2018) found that the **rise in workers' productivity in Brazil were matched by real salary increases** and improvements in job quality in the agriculture and commerce sectors. Likewise, a study by Herman (2020) **using correlation and regression analyses** found that **labour productivity had a positive impact on wages** in the Romanian manufacturing sector from 2008 to 2016. High incentives would encourage workers to increase output; thus accelerated the productivity growth.

Source: Katovich, E., S. & Maia, A., G. (2018). The relation between labor productivity and wages in Brazil: A Sectoral Analysis.
Herman, E. (2020). Labour Productivity and Wages in the Romanian Manufacturing Sector.

A study in **South Africa** found that **increase in wages significantly resulted in higher productivity**. The extra real wages had attributed to job growth in the country and motivated substitution from informal to formal employment (Klein, 2012). Similarly, **by using Granger Causality Test** for **manufacturing industries in Tanzania**, Islam et al. (2015) also found that real wages have a significant impact on the productivity of the country's manufacturing sector.

Source: Klein, N. (2012). Real Wage, Labor Productivity, and Employment Trends in South Africa: A Closer Look.
Islam et al. (2015). Real wages and labour productivity in Tanzania: How do they link?.

On the contrary, a study found that the **labour productivity had no effect on real net wages** in Macedonia during and after the economic crisis of 2007. Although there has been a slight but steady growth in salaries, it was not due to other factors.

Source: Trpeski et. al. (2016). Labor Productivity and Real Wages In Macedonia: An Overview Before and After the Global Economic Crisis.

Methodology

Data Source

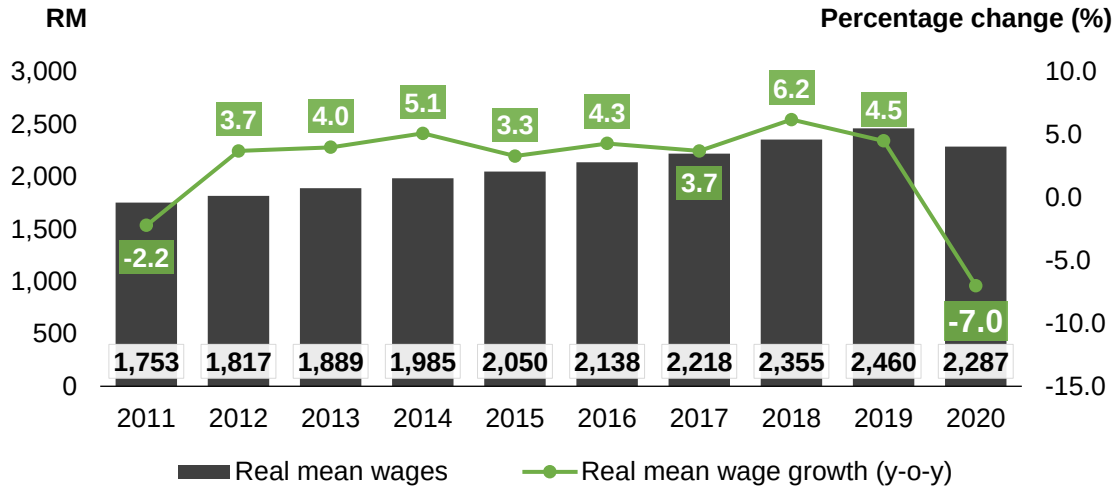
- **Salaries & Wages Survey**
- **Monthly Manufacturing Statistics**
- **Quarterly Services Statistics**
- **Quarterly Labour Productivity Report**
  - Annual growth of value added per employment
- **Consumer Price Index (CPI)**
  - Real mean wages

Analysis

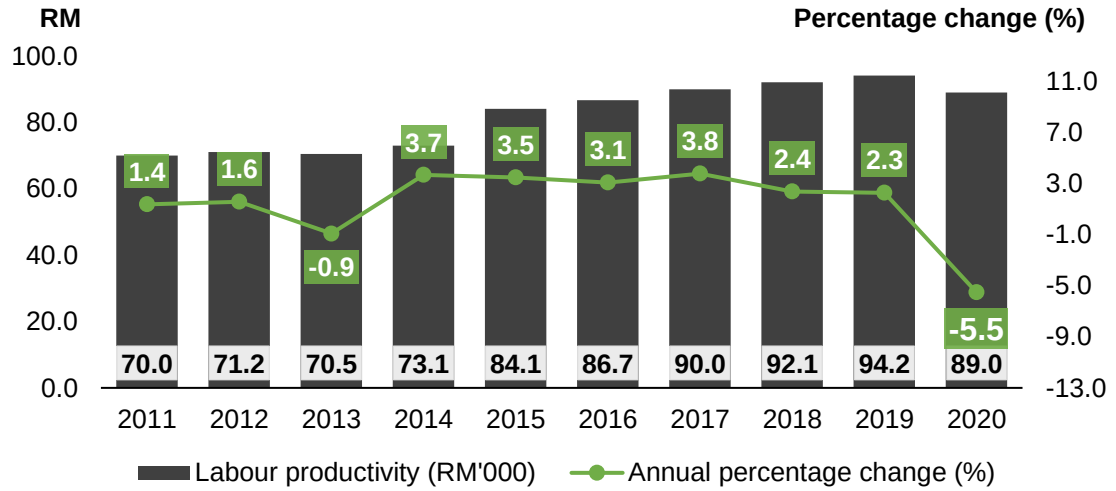
1. **Descriptive**
2. **Correlation regression**
3. **Granger Causality Test**

Descriptive analysis

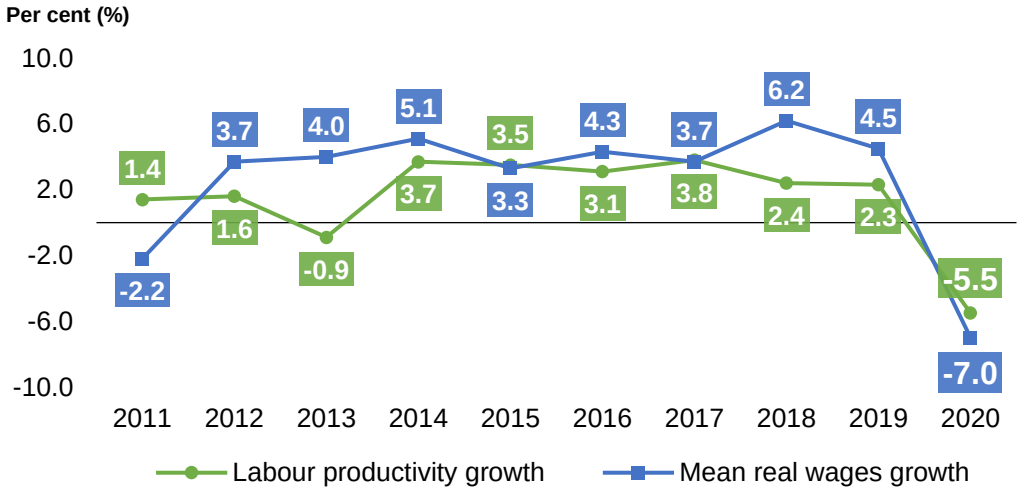
Mean real wages



Labour productivity (VA per employment)



Source: Author's calculation from Salaries & Wages Survey Report and Consumer Price Index, Malaysia, DOSM



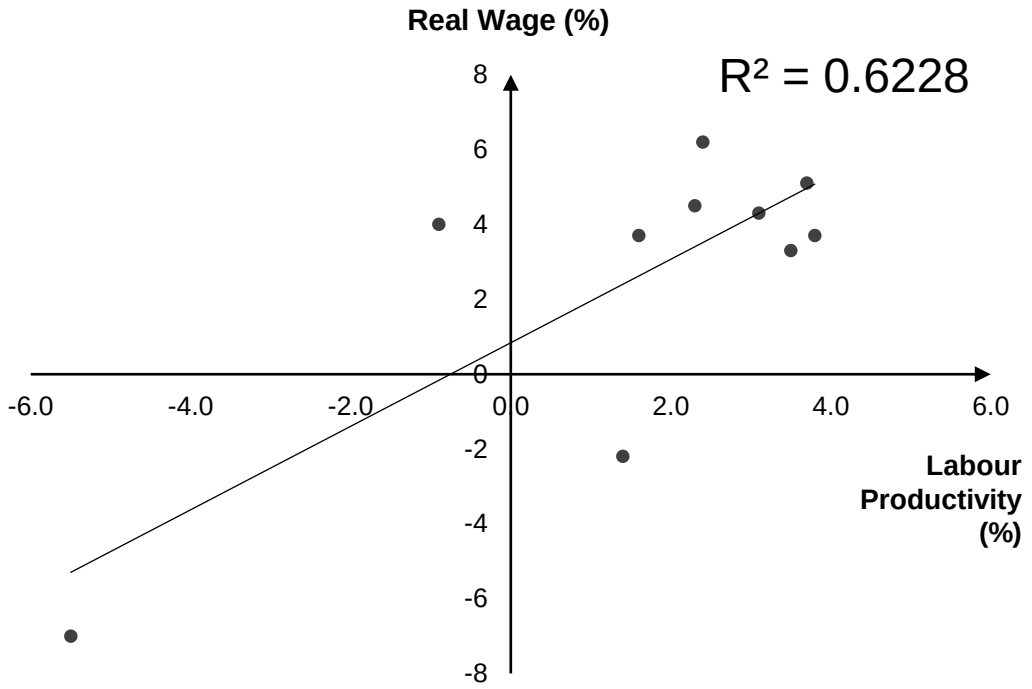
The **real mean monthly salaries & wages** received recording the largest reduction by **7.0 per cent to RM2,287** in 2020.

Malaysia's **labour productivity** marked a sharp decreased **by 5.5 per cent in 2020**, bringing down the level to **RM89,022 per employee**.

As we overlay the annual growth of mean real wages and labour productivity, wage **grew faster** than productivity **except for 2011 and 2020**. Wage took a deeper plunge than labour productivity following the unprecedented circumstances in 2020.

Source: National Account, Labour Productivity and author's calculation based on Salaries & Wages survey, Malaysia, DOSM

Correlation regression analysis



Pearson's correlation

Correlation			
		Labour Productivity	Real Wages
Labour Productivity	Pearson Correlation (r)	1	.789**
	Sig. (2-tailed)		.007
	N	10	10
Real Wages	Pearson Correlation (r)	.789**	1
	Sig. (2-tailed)	.007	
	N	10	10

Note: **Correlation is significant at 0.01 level (2-tailed)

A **scatter plot** revealed **a positive relationship** between real wages and labour productivity, indicated by the **coefficient of determination** at 0.6228. The correlation model was deemed fit considering **62.3 per cent** of the data fitted the linear trend line.

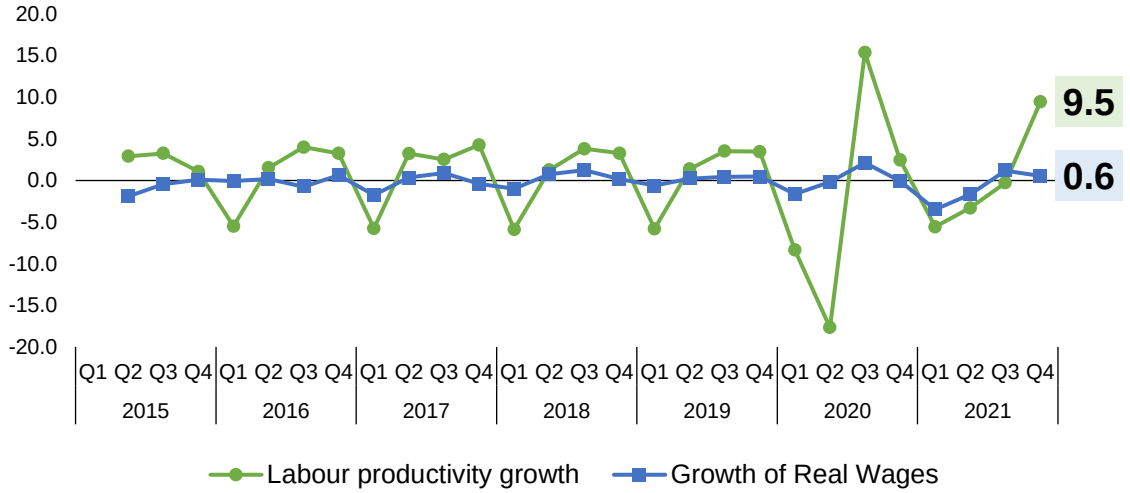
The Pearson's correlation coefficient (r) of 0.789 at the significance level of **0.007 (α < 0.01)** clearly demonstrated that there existed a **strong positive relationship** between real wages and labour productivity.

Source: Author's calculation based on data from DOSM

Granger Causality Test

Services sector

Percentage change (%)

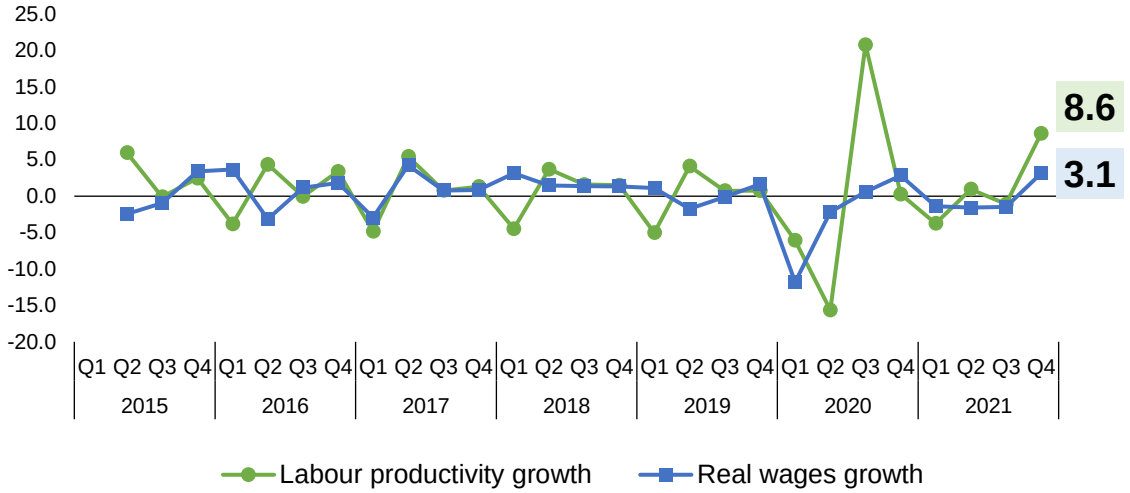


Lags: 3			
Null Hypothesis	**Obs.**	**F-statistic**	**Prob.**
RW_Services does not Granger Cause LP_Services	24	0.34492	0.7932
LP_Services does not Granger Cause RW_Services	24	3.18656	**0.0405**

Source: Author's calculation based on data from DOSM

Manufacturing sector

Percentage change (%)



Lags: 3			
Null Hypothesis	**Obs.**	**F-statistic**	**Prob.**
RW_Manufacturing does not Granger Cause LP_Manufacturing	24	3.54501	**0.0369**
LP_Manufacturing does not Granger Cause RW_Manufacturing	24	0.74029	0.5425

Note: RW = Real Wages;
LP = Labour Productivity

Discussion & Conclusion

1. Real wage registered higher growth than labour productivity. **There was a positive relationship between wages and productivity.** It is safe to assume that the rise of one variable will definitely influence the other.

2. It can be concluded that **real wages influenced efficiency and productivity** in the **Manufacturing sector**; while the scenario in the **Services sector** revealed that **the increase in labour productivity resulted in the wage rise**. Careful considerations must be exercised on these early findings, taking into account the diverse sub-sectors and industries disaggregation in both sectors.

3. Services sector comprised of both high value added sub-sectors as well as lower value added industries. Thus, if the causal relationship of wages and productivity is studied for each of these sub-sectors, **the results may vary**. Similarly, the efficiency wage theory that prevailed in the Manufacturing sector could only be true for high value-added sub-sectors.

4. To note that salaries & wages statistics were obtained for full-time equivalent paid employees while employment in the calculation of labour productivity encompassed employers, employee, own account workers and unpaid family workers. Although employees made up nearly 80 per cent of employment, the results of this study should be **interpreted with cautions given the different coverage** of the two variables.

"STATISTICS BLOOM IN HARMONY"

Doesn't matter far or near
Strength in numbers
we don't live in fear

Birds of feather flock together
Statistics our form of adour
We, will always live it up

So let us live in solidarity
And in the world arena we'll succeed
It is statistics that will come to be
The reason we will bloom in harmony

Everybody undivided
Data's where our hearts reside in
There will always be a bind

Just like fire that ignites
That's how brightly lit our dreams are
We'll reach higher than the stars

Sending love to one another
Leaving no one in a slumber
We will stand with unity

Mustering our courage while
Embracing our disparities
We'll achieve our victory

One dream with unity
One love with harmony

" STATISTICS BLOOM IN HARMONY" VIDEO

https://bit.ly/StatisticsBloomInHarmony

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