What Does Data on Functional Income Distribution tell us about Trends in and Correlates of Income Inequality in The Asia-Pacific?

(Apa Data Mengenai Pengagihan Pendapatan Berfungsi Beritahu Kita Mengenai Tren dan Kaitan Ketidaksamaan Pendapatan di Asia-Pasifik?)

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ABSTRACT

This paper presents an analysis of the trend and patterns of the share of labour in GDP, the gap between wage and productivity, and inequality with a focus on Asia-Pacific countries for the period between 2004 and 2017. Descriptive analysis confirms a downward trend in labour income shares during the study period in most of the countries in the Asia-Pacific. Our analysis also shows that majority of the Asia-Pacific countries additionally witnessed a rise in the gap between labour productivity and wage, defined as the shortfall of wage from labour productivity as a percentage of wage. Furthermore, inequality, measured through the income Gini index also increased in these countries. Panel econometric regression results suggest that trade openness and FDI have a negative association with the labour share in GDP in the Asia-Pacific countries while being positively associated with the gap. Economic growth and structural transformation processes have also not been favourable in raising the labour share in GDP. Among other findings, technological development has not been labour-friendly in most of these countries. Non-agricultural employment share in total employment has a negative association with the labour share in GDP and is positively associated with the gap. Yet our analyses have confirmed that the reduction in labour share in income is associated with rising inequality in the Asia-Pacific countries. We conclude by discussing the role of two related major instruments of government policies -- revenue generation, and public expenditure on social sectors -- for addressing challenges related to widening inequality in the region.

Keywords: Labour share in GDP, functional income distribution, labour productivity, wage, inequality, Asia-Pacific Countries
JEL: D31, D33, E24, E25, J24, O53

ABSTRAK

Kertas kerja ini membentangkan analisis arah aliran dan corak bahagian buruh dalam KDNK, jurang antara upah dan produktiviti, dan ketidaksamaan dengan tumpuan kepada negara-negara Asia Pasifik untuk tempoh antara 2004 dan 2017. Analisis deskriptif mengesahkan arah aliran menurun dalam bahagian pendapatan buruh semasa tempoh kajian di kebanyakan negara di Asia Pasifik. Analisis kami juga menunjukkan bahawa majoriti negara Asia-Pasifik juga menyaksikan peningkatan dalam jurang antara produktiviti buruh dan upah, yang ditakrifkan sebagai kekurangan gaji daripada produktiviti buruh sebagai peratusan gaji. Tambahan pula, ketidaksamaan, diukur melalui indeks Gini pendapatan juga meningkat di negara-negara tersebut. Keputusan panel regresi ekonometrik menunjukkan bahawa keterbukaan perdagangan dan FDI mempunyai kaitan negatif dengan bahagian buruh dalam KDNK di negara-negara Asia-Pasifik sambil dikaitkan secara positif dengan jurang tersebut. Pertumbuhan ekonomi dan proses transformasi berstruktur juga tidak menggalakkan dalam meningkatkan bahagian buruh dalam KDNK. Antara penemuan lain, pembangunan teknologi tidak mesra buruh di kebanyakan negara ini. Bahagian guna tenaga bukan pertanian dalam jumlah guna tenaga mempunyai perkaitan negatif dengan bahagian buruh dalam KDNK dan dikaitkan secara positif dengan jurang tersebut. Namun analisis kami telah mengesahkan bahawa pengurangan bahagian buruh dalam pendapatan dikaitkan dengan peningkatan ketidaksamaan di negara-negara Asia Pasifik. Kami membuat kesimpulan dengan membincangkan peranan dua instrumen utama berkaitan dasar kerajaan -- penjanaan hasil, dan perbelanjaan awam untuk sektor sosial -- untuk menangani cabaran yang berkaitan dengan meluaskan ketidaksamaan di rantau ini.

Kata kunci: Bahagian buruh dalam KDNK; agihan pendapatan berfungsi; produktiviti buruh; upah; ketidaksamaan; Negara-negara Asia Pasifik

INTRODUCTION

In recent decades, there has been a growing interest in functional income distribution (Krueger 1999; Golli, 2002; Bentolila & Saint-Paul 2003; EC 2007; IMF 2007; Daudey & Garcia-Penalosa 2007; ILO 2008; Atkinson 2009; Smeeding & Thompson 2010; Bond & Harding 2011; Guerriero & Sen 2012; Suzuki et al. 2019). The functional income distribution determines how the national output is distributed among the factors of production such as capital and labour. Labour remuneration, expressed as a share of value added or GDP, is known as the labour share and the residual is, therefore, the capital share (Dünhaupt 2013). Labour income share has also emerged as a policy-relevant inequality measure and is also acknowledged as an indicator to assess progress toward the United Nations Sustainable Development Goals (ILO 2019). It is also important to mention that inequality in Asia and the Pacific is on the rise. Many countries, including those acknowledged as models of economic dynamism and prosperity, have experienced a widening of existing income gaps (ESCAP 2018).

Our work is specifically inspired by new research into aspects of inequality by Piketty (2014) and Milanovich (2018). In advanced countries since the 1980s, with the weakening bargaining power of labour groups and a growing influence of business owners, a class of people has emerged who derive income from both labour and capital, creating new policy challenges beyond the old issues of redistribution. Academic studies have focused on a range of channels specific to international trade and technological progress influencing employment, wages, and the labour share (Harrison 2002; Bentolila & Saint-Paul 2003; Guscina 2006; Ellis & Smith 2007) while some have also considered factors such as the economic growth, foreign direct investment, and social policies (Guerriero & Sen 2012).

Though globalization (in the forms of trade liberalization, foreign direct investment and global value-chain) is argued to raise the level of income and foster the national economy, its specific effect on labour and its overall distributional impact is controversial, given that not all groups of society can take advantage of its benefits (Harrison et al. 2011, Dorn et al. 2018; Lee et al. 2019; Lee et al. 2020; Haseeb et al. 2020). A limited number of studies, however, attempted to assess the impact of globalization on the labour share (Harrison 2002; Guscina 2006; EC 2007; IMF 2007; Guerriero & Sen 2012; Suzuki et al. 2019; Hu et al. 2020; Chortareas & Noikokyris 2021; Durongkaveroj 2022). These studies, using computed indices of labour share in GDP, showed a declining trend of the labour share and explored the factors behind the trend.

Most research on FDI and inequality display mixed evidence in favour of the thesis that FDI causes wage inequality, either at the industry level or country level (Liang & Mai 2003; Marjit et al. 2004; Das 2005; Decreuse & Marrek 2015). When it comes to the relation between technology and labour share, one view is that since the early 1980s, technological change has become capital-augmenting, rather than labour-augmenting which has contributed to the decline in the labour share (IMF 2001; Acemoglu 2002; Bentolila & Saint-Paul 2003; Guscina 2006; Ellis & Smith 2007; Lawless & Whelan 2011; O'Mahony et al. 2019). However, Das (2019) argued that while technological progress was the key driver in advanced Asia, with globalization playing a smaller contributing role, in developing Asia, the evolution of labour shares was driven predominantly by the forces of globalization, with a very limited role for technology.

Structural transformation appears to be one of the most important determinants of labour share (Lewis 1955; Kravis 1959; Kuznets 1955). As poor economies are dominated by a traditional agricultural sector with very low wages and a big surplus of labour (Lewis 1955), the few capitalists in the modern sector can hire labour at minimal wages; therefore, productivity gains are not compensated by wage increases (Jayadev 2007; Maarek 2010), and the labour share remains at very low levels. As the economy develops, productivity increases and greater segments of the workforce start moving from the traditional agricultural sector into positions of organized wage labour in the modern sector. Wages will rise, as well as employment, because of the presence of an unlimited supply of labour - an increasingly larger share of income will be earned by workers as opposed to entrepreneurs (Kravis 1959; Kuznets 1955). However, with the economy growing more and more, the mechanism will necessarily reduce its magnitude and, therefore, the effect of rising wages is stronger for low levels of development (Daudey & Garcia-Peñalosa 2007). Wage is also expected to increase after the depletion of the labour surplus (the Lewis turning point).

Labour share is also affected by the amount of human capital that workers possess (Diwan 2001; Daudey & Garcia-Peñalosa 2007; Luo & Zhang 2010). Higher educational attainment influences labour through its effect on wages and employment. Also, pro-worker labour institutions can have an important and positive redistributive role in the economy, restoring the equilibrium between capital and labour, and counteracting possible negative effects generated by asymmetries in economic power between workers and employers (ADB 2005; EC 2007; Guerriero 2019). However, the stratification of labour can have strong implications on measured labour income and labour share, beyond institutions. A small share of workers with extremely high human capital (or other means of ensuring extremely high labour income) may distort the overall picture (ILO 2019).

Against this backdrop of the aforementioned discussion, while we are interested in the global patterns

in factor income share, we are primarily interested in the experience of Asian countries as they, as a group, have emerged as the centre of global economic activity, driven by a combination of the economic dynamism of the People's Republic of China, India, and several other middle-income Asian countries, and sluggish growth in the OECD economies. Yet, rising inequality in Asia is a major concern. Thus, the nature of functional income distribution in Asia is critical for understanding what is happening in the global inequality patterns.

Therefore, the main objective of this paper is to present an analysis of the key trends in and patterns of the share of labour in GDP and inequality in countries of Asia and the Pacific region, highlight policy-relevant stylized facts, analyse the reasons behind observed trends, study possible drivers and expected future changes in the labour share and inequality, and assess the relationship between labour's share in GDP and inequality. Methodologically, the paper utilizes cross-country panel data which is modelled using standard econometric techniques to shed light on the determinants of the labour income share.

INEQUALITY TRENDS, PATTERNS AND STYLIZED FACTS

TRENDS OF LABOUR SHARE IN GDP BY SUB-REGIONS IN THE ASIA-PACIFIC

This section presents the status and trends of labour share in GDP in the Asia-Pacific countries.[1] Figure 1 presents the trends of labour share in GDP by sub-regions in the Asia-Pacific.[2] The sub-regional averages are the population-weighted averages of the respective country figures in the specific sub-regional groupings. In addition, in Figure 1, the trend in the average world labour share in GDP is presented. The world labour income share presents a downward trend in the period from 2004 to 2017, with a clear countercyclical behaviour during the financial crisis and in its aftermath. The world average share declined from 53.7 per cent in 2004 to 51.4 per cent in 2017. Except for ANZ, all the sub-regions in Asia-Pacific held much lower labour shares in GDP than the world average. Among the five sub-regions of the Asia-Pacific countries, even with a declining trend, ANZ always held the highest share and its share remained much higher than the world average during all the years between 2004 and 2017. Among the other sub-regions only Eastern Asia, since 2010, started converging towards the world average. Southern Asia saw the biggest fall in labour share followed by Pacific countries and Southeast Asia while East Asia retained a high labour share and even improved.

Table 1 presents a summary of the change in the share between 2004 and 2017 and the relative ranking among the Asia-Pacific countries. The average labour share of the Asia-Pacific countries declined from 51.1 per cent in 2004 to 47.2 per cent in 20017. While 25 countries, among the 39 Asia-Pacific countries listed in Table 1, experienced a fall in labour share between 2004 and 2017, 14 countries improved their shares. In 2017, among the 39 Asia-Pacific countries, the highest labour share in GDP was for Vanuatu (67.4 per cent) and
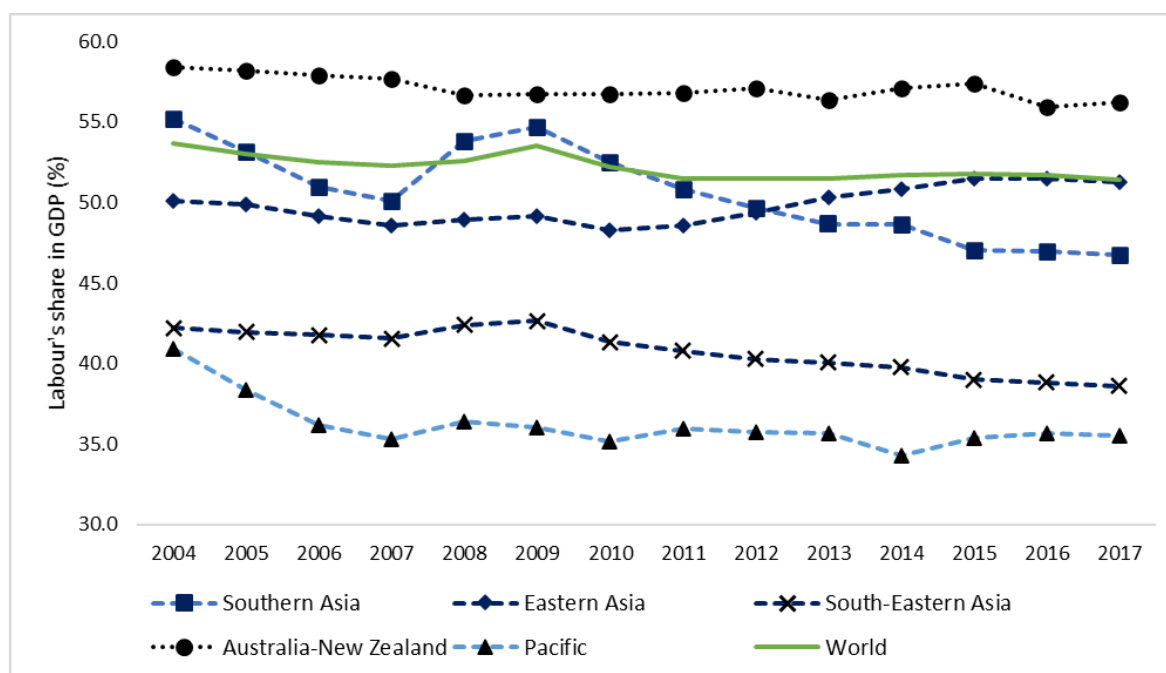

FIGURE 1. Trends of labour share in GDP in the Asia-Pacific region
Source: Author's calculation from the ILO database. https://ilostat.ilo.org/topics/labour-income/

TABLE 1. Country-wise labour share in GDP and ranking of Asia-Pacific countries between 2004 and 2017

Country	2004		2017	
	Labour share (%)	Rank	Labour share (%)	Rank
Southern Asia	55.2		46.7	
Afghanistan	46.3	20	44.6	22
Bangladesh	45.4	24	42.2	25
Bhutan	45.7	22	45.2	21
India	60.7	2	49.0	15
Iran (Islamic Republic of)	32.3	36	36.2	35
Maldives	43.2	27	41.0	29
Nepal	41.0	29	37.1	33
Pakistan	40.8	30	42.2	26
Sri Lanka	33.9	33	37.1	34
Eastern Asia	50.1		51.3	
China	49.9	12	51.3	8
DPR Korea	29.9	38	29.6	38
Hong Kong, China	55.7	4	54.0	4
Japan	54.6	6	54.2	3
Macao, China	27.9	39	31.7	36
Mongolia	33.1	34	41.4	28
Republic of Korea	54.9	5	53.8	5
Taiwan Province of China	52.2	8	52.5	6
South-Eastern Asia	42.2		38.6	
Brunei Darussalam	47.6	17	47.9	17
Cambodia	44.5	25	37.6	32
Indonesia	41.5	28	38.1	31
Lao PDR	53.6	7	49.7	12
Malaysia	31.5	37	41.8	27
Myanmar	46.4	19	44.4	23
Philippines	33.0	35	26.6	39
Singapore	45.6	23	49.2	13
Thailand	49.7	15	48.2	16
Timor-Leste	48.4	16	46.8	18
Vietnam	47.1	18	40.5	30
Australia-New Zealand	58.4		56.2	
Australia	59.9	3	57.2	2
New Zealand	50.9	9	51.2	9
Pacific	40.9		35.5	
Fiji	40.4	31	45.5	20
French Polynesia	50.2	10	51.2	10
Guam	49.9	13	51.2	11
New Caledonia	50.0	11	51.5	7
Papua New Guinea	38.3	32	30.7	37
Samoa	43.8	26	43.7	24
Solomon Islands	49.8	14	49.1	14
Tonga	46.2	21	45.7	19
Vanuatu	71.2	1	67.4	1
Average of Asia-Pacific	51.1		47.2	
World	53.7		51.4	

Note: Rank among 39 Asia-Pacific countries. The higher the position in the ranking means higher the share
Source: Author's calculation from the ILO database. https://ilostat.ilo.org/topics/labour-income/

the lowest share was for the Philippines (26.6 per cent). While most of the countries maintained similar rankings between 2004 and 2017, major changes in rankings occurred for Cambodia, Fiji, India, Malaysia, Mongolia, Singapore and Viet Nam. There are also some striking country-level comparisons. For example, between 2004 and 2017, while India, Bangladesh and Vietnam experienced a sizeable reduction in labour share in GDP, in the case of Malaysia the labour share increased by a large margin.

The sharp decline in the labour share in India has been argued to be related to trade openness. Trade, by dampening the bargaining power of labour, reduced the labour share (Maiti 2019). Although the export-oriented readymade garments industry, which employed many female workers, flourished in Bangladesh the bargaining power of garment workers didn't increase much. A trade union or other labour organizations have not been allowed in the RMG industry in Bangladesh and wages remained suppressed for decades (Raihan 2020). In other South Asian countries too, the much lower levels of labour share, in comparison to the world average, indicate that while most of the South Asian countries experienced high economic growth followed by increased openness and economic liberalization, real wages didn't increase much in tandem.

Among the Eastern Asian countries, between 2004 and 2017, while China, Macao (China), Mongolia and Taiwan Province of China increased their shares, DPR Korea, Hong Kong (China), Japan, and the Republic of Korea experienced a fall in their shares. Taking a much longer time horizon, starting from the early 1970s, China experienced a decline in the labour share in GDP. This was attributed to two major changes in power relations—the disappearing social contract between the state and workers and declining workers' power relative to management (Qi 2019). According to Zhou (2016), the decrease in labour share in China was closely related to economic growth, the increasing extent of globalization, and firms with heterogeneous characteristics. However, the labour share of GDP in China has risen sharply since 2011, reversing the trend in the previous decade of imbalanced growth. This is due to the rebalancing of the Chinese economy where, services and consumption, rather than industry and investment, are increasingly driving growth (Huang & Lardy 2016; Choyleva 2018). Also, the minimum wage regulation contributed to the rise in the share of labour in China (Zhana et al. 2020).

Except for Brunei Darussalam, Malaysia, and Singapore, all other South-Eastern Asian countries experienced a fall in the labour share between 2004 and 2017. Malaysia registered a rise in labour share from 31.5
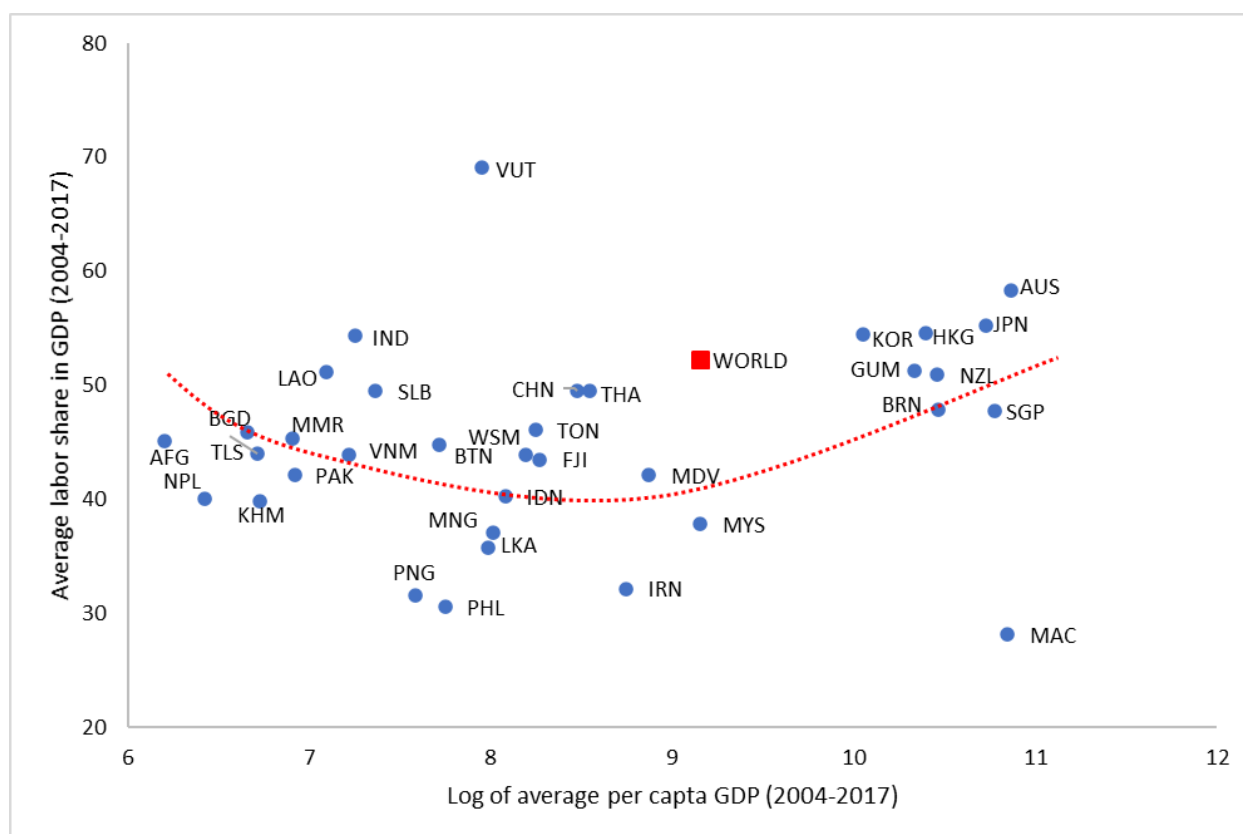

FIGURE 2. Per capita GDP and labour share in GDP in countries of Asia-Pacific
Source: Author's calculation from the ILO database. https://ilostat.ilo.org/topics/labour-income/

per cent in 2004 to 41.8 per cent in 2017. According to Ng et al (2018), the increase in labour share in Malaysia was mainly due to the growing importance of more traditional service subsectors and SMEs in the economy, which in turn was associated with greater reliance on low-skilled foreign workers during this period. In the case of Australia, looking at the declining labour share, Stanford (2018) argued that by 2017, the labour share of GDP had reached its lowest level in almost 60 years, reflecting both the longer-run structural shift in factor distribution (away from labour, and toward profits) and more cyclical and immediate factors (such as continuing fluctuations in prices for Australia's resource exports). Finally, out of the nine Pacific countries, while Fiji, French Polynesia, Guam, and New Caledonia increased their labour income shares, Papua New Guinea, Samoa, Solomon Islands, Tonga, and Vanuatu experienced a decline in their labour shares.

Figure 2 plots the average labour share in GDP (2004-2017) against the average per capita GDP (2004-2017) of the Asia-Pacific countries. There seems to be a U-shaped association, where the labour share declines with the rise in per capita GDP but increases at a high level of per capita GDP. Vanuatu and Macao seem to be outliers in the scatterplot. As is also evident from the scatterplot, most of the Asia-Pacific countries held average labour shares, for the period 2004-2017, much lower than the world average.

TRENDS OF LABOUR PRODUCTIVITY, WAGE, AND THE GAP BETWEEN PRODUCTIVITY AND WAGE IN THE ASIA-PACIFIC COUNTRIES

Falling labour shares also imply that wages have been growing at a slower pace than labour productivity. Table 2 presents the data on labour productivity, wage, and the gap between labour productivity and wage in the Asia-Pacific countries for the years 2004 and 2017.[3] The calculated indicators of labour productivity and wage for the Asia-Pacific countries show that wages remained below productivity for all the countries for all the years under consideration. One important reason behind the gap between productivity and wage is that though the pace of technological progress constrains productivity growth, which also depends on where a country is compared with the world's technological frontier, catching up countries can show higher productivity growth by adopting better existing technologies than those on the frontier. In contrast, the growth of wages is constrained by the bargaining power of labour and various policies and regulations related to the labour market.

Das (2019) argued that the slower growth of wages relative to the productivity phenomenon can have a range of macroeconomic implications, including aggregate demand and wage inequality. Increases in the capital share at the expense of the labour share raise income inequality because capital holdings tend to cluster in the upper tail of the income distribution. Furthermore, if the labour share reduction is more significant in the unskilled sector, the income disparity will increase even more. Changes in factor shares have implications not only for income distribution but also for fiscal policy design. Lower-income families, for example, have a larger marginal propensity to consume, so a lowering labour share can stifle aggregate demand growth.

Table 2 also presents the gap between labour productivity and wage where the gap is calculated as the shortfall of wage from labour productivity as a percentage of wage. The sub-regional averages of gaps are calculated using the weights of the population of respective countries. Between 2004 and 2017, while the average gaps of the world and the Asia-Pacific countries increased, four out of the five sub-regions in the Asia-Pacific also witnessed a rise in the gap. Only Eastern Asia experienced a fall in the gap, primarily due to the fall in the gap in China. In 2017, the gap was the highest for the Pacific followed by South-Eastern Asia and Sothern Asia, and all these three sub-regions registered higher gaps than the world average for both 2004 and 2017. ANZ always maintained a lower gap than the world average, and for Eastern Asia, the gap became lower than the world average in 2017. The Pacific's high average gap is driven by the very high gap of Papua New Guinea, and Papua New Guinea constitutes around 80 per cent of the population of the pacific island countries.

One explanation for the rise in gaps could be that there is pressure in the international export market to remain competitive. Therefore, as countries participate more in international trade, the gap might increase. Furthermore, as we discussed in the earlier section, FDI, education, per capita GDP, technology, and labour institutions can also have important implications for the differences in such gaps.

Figure 3 presents a scatter plot, over the period 2004-2007, of individual countries' average gap in per cent on the vertical axis versus average per capita GDP on the horizontal axis. Macao (China) appears as an outlier. It also, appears that the gap increases with per capita GDP as we move from a low-income or lower-middle-income country to an upper-middle-income country. However, the gap declines as we move toward high-income countries. There is a wide variation among upper-middle-income countries. For example, while China and Thailand are close to the trend line, the Philippines and Papua New Guinea are far from the trend line. Among the lower-middle income countries, India has the lowest gap. This can be attributed to India's strong labour union and strong labour regulations.

TREND IN INEQUALITY IN THE ASIA-PACIFIC COUNTRIES

Economic policies in most of the Asia-Pacific countries highlight the importance of accelerated economic growth

TABLE 2. Country-wise labour productivity, wage, and gap of Asia-Pacific countries between 2004 and 2017

Country	Labour productivity (US$)		Wage (US$)		The gap between labour productivity and wage (%)	
	2004	2017	2004	2017	2004	2017
Southern Asia	3190.5	5779.4	1585.4	2637.7	87.8	115.8
Afghanistan	1329.3	2084.8	615.5	929.8	116.0	124.2
Bangladesh	1778.4	2855.7	807.4	1205.1	120.3	137.0
Bhutan	3748.2	7453.0	1713.0	3368.8	118.8	121.2
India	2433.7	5458.7	1477.3	2674.8	64.7	104.1
Iran (Islamic Republic of)	18757.3	23384.0	6058.6	8465.0	209.6	176.2
Maldives	20458.3	22527.4	8837.9	9236.2	131.5	143.9
Nepal	1142.4	1472.3	468.4	546.2	143.9	169.5
Pakistan	3358.6	3986.6	1370.3	1682.4	145.1	137.0
Sri Lanka	5304.4	10084.9	1798.2	3741.5	195.0	169.5
Eastern Asia	12600.8	20596.7	6705.4	10820.0	98.4	93.9
China	4215.2	12745.0	2103.4	6538.2	100.4	94.9
Hong Kong, China	53173.9	73240.7	29617.9	39550.0	79.5	85.2
Japan	85579.9	90112.3	46726.6	48840.9	83.2	84.5
Macao, China	69799.9	92467.2	19474.2	29312.1	258.4	215.5
Mongolia	5152.6	9250.2	1705.5	3829.6	202.1	141.6
Republic of Korea	38822.6	53178.3	21313.6	28609.9	82.2	85.9
South-Eastern Asia	5870.6	9010.1	2410.1	3575.6	141.6	167.3
Brunei Darussalam	83472.9	71901.0	39733.1	34440.6	110.1	108.8
Cambodia	1181.0	2150.6	525.5	808.6	124.7	166.0
Indonesia	5666.0	8881.5	2351.4	3383.9	141.0	162.5
Lao PDR	1611.5	3412.9	863.7	1696.2	86.6	101.2
Malaysia	19264.2	25247.7	6068.2	10553.6	217.5	139.2
Myanmar	1304.1	3607.3	605.1	1601.6	115.5	125.2
Philippines	4927.8	7934.0	1626.2	2110.4	203.0	275.9
Singapore	71229.8	87762.2	32480.8	43179.0	119.3	103.3
Thailand	7849.0	11362.4	3900.9	5476.7	101.2	107.5
Timor-Leste	1610.8	2092.7	779.6	979.4	106.6	113.7
Viet Nam	1905.9	3263.9	897.7	1321.9	112.3	146.9
Australia-New Zealand	94926.0	105459.8	55865.0	59611.1	71.9	78.2
Australia	100894.4	111906.3	60435.8	64010.4	66.9	74.8
New Zealand	65536.9	72512.8	33358.3	37126.5	96.5	95.3
Pacific	6072.4	9335.6	2577.6	3394.5	151.0	200.3
Fiji	10309.9	13447.5	4165.2	6118.6	147.5	119.8
Guam	62395.2	65791.0	31135.2	33685.0	100.4	95.3
Papua New Guinea	4109.7	8163.4	1574.0	2506.2	161.1	225.7
Samoa	12606.8	14243.8	5521.8	6224.5	128.3	128.8
Solomon Islands	2733.5	3500.9	1361.3	1718.9	100.8	103.7
Tonga	10647.3	14434.4	4919.0	6596.5	116.5	118.8
Vanuatu	6106.1	6675.5	4347.5	4499.3	40.5	48.4
Average of Asia-Pacific	8057.8	12646.1	4164.8	6307.6	100.4	115.5
World	19077.1	23730.7	10244.4	12197.6	86.2	94.6

Note: Both labour productivity and wage are expressed as per employed person per annum.
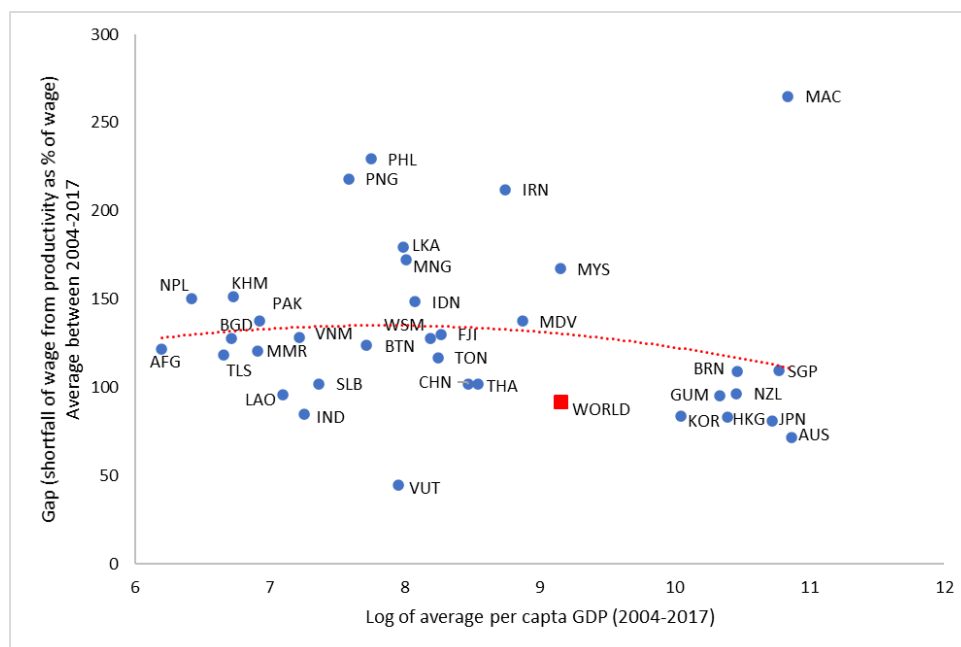
FIGURE 3. Per capita GDP and 'gap' among the Asia-Pacific countries
Source: Author's calculations

along with the reduction in poverty and improvement in the inequality scenario. However, despite economic growth, many countries of this region witnessed a rise in the inequality measured by the Gini index[4]—most notably in India, Indonesia, and Sri Lanka, and at much lower levels, in Japan and the Republic of Korea. Importantly, the Gini coefficient also rose by 0.8 percentage points to 43 per cent during 2004-2017 for the entire region (Figure 4).

It should be mentioned that the data on the Gini index is problematic as there is no consistent time series data of Gini (even the income-based version, let alone wealth, consumption, and other Gini Coefficients) for most of the Asia-Pacific countries. However, Standardized World Income Inequality Database, Version 9.1[5] tries to compile consistent time series data on the Gini index, which has been used to construct Figure 4. Also, in most of the Asia-Pacific countries inequality, data is derived from household surveys and the concern is that the actual inequality picture is thought to be worse than the survey estimate, as these household surveys mostly fail to capture information from ultra-rich households. Similarly, they also tend to miss many at the lowest end of the income distribution—they often have no fixed address or migrate, at times illegally, work informally if at all, do not respond to phone or internet inquiries—all reducing their participation in any survey.

METHODOLOGY

To explore the correlates of income inequality in the Asia-Pacific countries we consider three cross-country

panel regression equations. The description of variables and sources of data are reported in Table 3. Among the variables, listed in Table 3, there are some structural drivers of inequality (i.e. trade openness institutions) and some policy drivers (e.g. education, tax-GDP, human capital).

In these regression models, we have applied fixed-effect and random effect estimators and haven't considered GMM or system GMM estimators (which can be considered in future exercises). The cautionary note here is that our analysis may be subject to endogeneity and any measurement-related issues and, therefore, our estimated results are not offering any causal analysis, rather these results will reveal the associations among the variables under consideration.

To explain the reasons for observed trends in the share of labour in GDP, in line with Guerriero and Sen (2012), a cross-country panel regression is employed based on the following specification:

$$lab\_sr_{it} = f \{trd\_sr_{it}, \log(pc\_fdi)_{it}, edu_{it},$$
$$\log(pc\_gdp)_{it}, \log[(pc\_gdp)^2]_{it}, nagemp\_sr_{it}, \quad (1)$$
$$tech_{it}, lab\_ins_{it}, r\_dummies\}$$

where i and t designate country and time respectively.

Total trade as a percentage of GDP is a standard and frequently used proxy for openness to trade used in the cross-country panel regression models (Sachs & Warner 1995; Rama 2003). FDI can also have an important implication for the labour share (Decreuse & Maarek 2015). To measure the level of education, we use average schooling years in the total population aged 25 or over (Barro 1991; Barro & Salai-Martin 2004; Barro & Lee 2010; Wood & Ridao-Cano 1999). Real GDP per
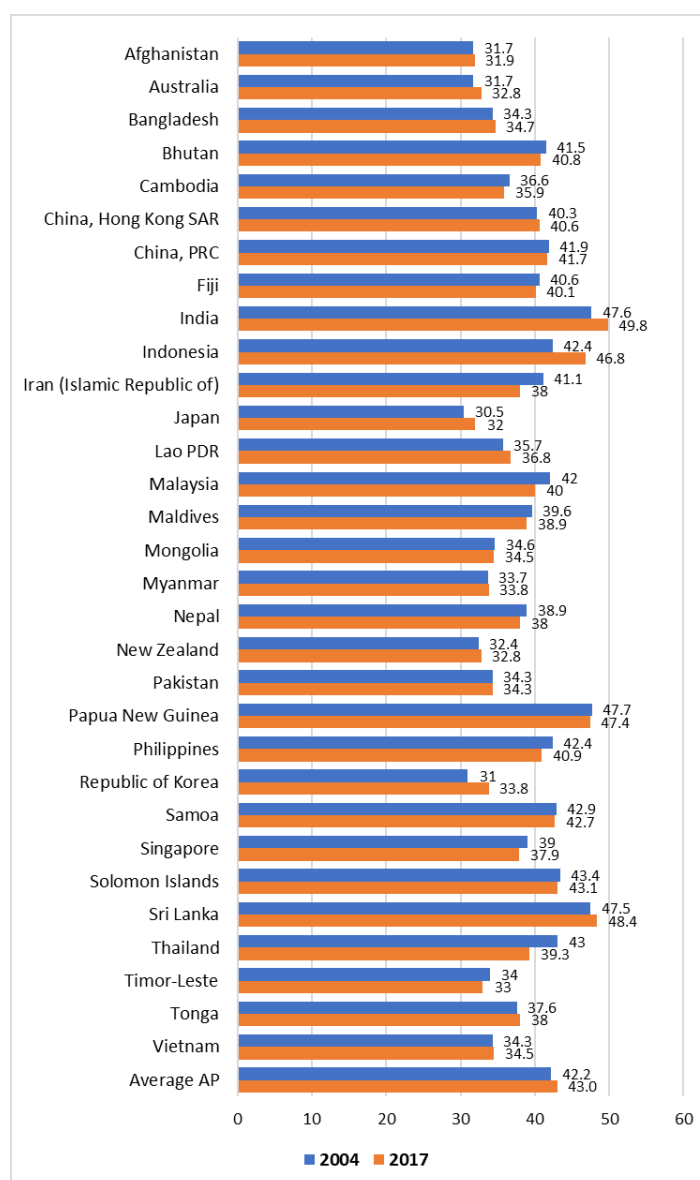
Data Source: The Standardized World Income Inequality Database, Version 9.1

FIGURE 4. Gini index of the Asia-Pacific countries in 2004 and 2017

capita is a proxy for structural determinants correlated with levels of income. To consider the possibility of decreasing or increasing returns, the squared value of the measure is also added to the regressors. The share of non-agricultural employment in total employment is also considered. The non-agricultural sector is dominated by the services sectors. Aum and Shin (2020) argued that the declining trend of labour share coincided with the rapid rise of software investment, which left a larger impact on service industries and high-skill, cognitive occupations (than middle-skill, routine occupations). As discussed in Section 2, technology and labour market institution have important implications for the differences in labour share in GDP across countries and over time. The summary statistics are presented in Table 4.

To explore the factors affecting the gap between labour productivity and wage in the Asia-Pacific countries we consider the following cross-country econometric model, indicated in equation 2.

$$gap_{it} = \text{f } \{trd\_sr_{it}, \log(pc\_fdi)_{it}, edu_{it},$$
$$\log(pc\_gdp)_{it}, \log[(pc\_gdp)^2]_{it}, nagemp\_sr_{it}, \quad (2)$$
$$\log(tech)_{it}, lab\_mkt_{it,} r\_dummies\}$$

According to Strain (2019) international trade and technological advances may have important implications for the wage-productivity gap. Hartmann et al. (2017) argued that a rising gap between labour productivity and wage can lead to higher inequality. Also, as in equation 2, real GDP per capita is considered as a proxy for structural determinants correlated with levels of income and its squared value is added to the regressors. FDI

TABLE 3. Description of variables and sources of data in the cross-country panel regressions

Variable	Description	Data source
lab_sr	Labour share in GDP (%)	ILO database[6]
trd_sr	Trade share in GDP (%)	World Bank, World Development Indicator Database[7])
pc_fdi	Per capita foreign direct investment inflow (US$)	Calculated from World Bank, World Development Indicator Database
edu	Average years of schooling (Number)	UNDP[8]
pc_gdp	Real GDP per capita (US$)	World Bank, World Development Indicator Database
nagemp_sr	Share of non-agricultural employment in total employment (%)	World Bank, World Development Indicator Database
tech	An index of technology and innovation. A higher value means higher technological development	Global Competitiveness Index
lab_ins	An index of the strength of labour market institutions. A higher value means stronger labour institutions	Global Competitiveness Index
r_dummies	Dummies for four sub-regions (Southern Asia, Eastern Asia, South-Eastern Asia, and Pacific while considering ANZ base the base)	Author
gap	An index of the gap between labour productivity and wages. It is the difference between labour productivity and wage, and expressed as a percentage of wage	Author's calculation
g	Gini index of income inequality	The Standardized World Income Inequality Database, Version 9.1
hc	An index of human capital based on years of schooling and returns to education	Penn World Table 10.1
tax-gdp	The ratio of tax to GDP (%)	World Bank, World Development Indicator Database
pc_remit	Per capita remittance inflow (US$)	Calculated from World Bank, World Development Indicator Database
pc_capstk	Per capita capital stock (US$)	Calculated from Penn World Table 10.1
m_exp	The ratio of military expenditure to GDP (%)	World Bank, World Development Indicator Database
pop	Total population (number)	World Bank, World Development Indicator Database

Source: Author

TABLE 4. Summary statistics of variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Labour share in GDP (%)	462	45.24	8.58	21.10	71.20
Trade share in GDP (%)	462	99.33	79.94	0.17	442.62
Per capita foreign direct investment inflow (US$)	462	984.98	2913.20	0.04	24830.61
Average years of schooling (Number)	462	7.58	3.01	2.30	12.80
Real GDP per capita (US$)	462	12212.60	16985.79	333.22	71992.15
Share of non-agricultural employment in total employment (%)	462	67.60	22.67	21.70	99.94
An index of technology	275	3.55	0.88	2.17	5.64
An index of labour institution	275	4.42	0.63	3.01	5.92
An index of the gap between labour productivity and wages	462	129.89	49.20	40.45	373.93
Gini index of income inequality	248	38.52	4.96	30.50	49.80
An index of human capital	248	2.52	0.61	1.44	3.97
The ratio of tax to GDP (%)	248	15.73	12.81	1.74	149.28
Per capita remittance inflow (US$)	248	0.00	0.00	0.00	0.00
Per capita capital stock (US$)	248	0.10	0.11	0.00	0.44
The ratio of military expenditure to GDP (%)	248	1.75	0.91	0.19	4.42
Total population (million)	248	111.00	297.00	0.10	1390.00

Source: Author

is associated with higher productivity and increased demand for skilled labour can lead to a rise in the gap if wage does not rise in correspondence (Peluffo 2013). As higher education can lead to an increased level of awareness among the workers, education can help reduce the gap between labour productivity and wage. Since the average labour productivity and wages are much higher in the manufacturing and tertiary sectors than those in the agricultural sector, the dominance of the non-agricultural sector in total employment may suggest a higher gap between labour productivity and wage. The presence of labour organizations (i.e., trade unions) can have a positive impact on reducing the gap.

The association between inequality and labour share in GDP is measured through the estimation of the simple cross-country panel econometric model reported in equation 3. Given that we are interested in seeing the association between labour share and Gini, we avoided adding explanatory variables which we considered in the estimation equation for labour share (equation 1). The only exception is per capita GDP, which we included to control for the differences in the level of economic development.

$$g_{it} = f \{lab\_sr_{it}, hc_{it}, tax\text{-}gdp_{it}, \log(pc\_remit)_{it}, \\ \log(pc\_capstk)_{it}, m\_exp_{it}, \log(pop)_{it}\} \quad (3)$$

ESCAP (2018) highlighted that inequality in Asia and the Pacific was on the rise as unequal access to basic opportunities left large groups of people behind and contributed to widening inequalities of outcomes, particularly in income and wealth. ADB (2014) argued that though technological change, globalization, and market-oriented reform had been the key drivers of Asia's remarkable growth and poverty reduction, they also had significant distribution consequences. According to ADB (2019), despite recent economic growth, income inequality is one of the most profound social, economic, and political challenges in Asia-Pacific countries.

An additional version of this baseline specification is also taken into account in the main analysis. We used both the fixed-effect (FE) and random-effect (RE) estimators for the estimation purpose. Both the FE and RE estimators include T-1year dummy variables in the regressions model to account for time-fixed effects throughout the T years. The motivation is the possibility that the analysed relationships could be impacted by common trends and annual specific shocks. Additionally, following the completion of a test for group-wise heteroskedasticity on the benchmark specification with year dummies, robust standard errors are used (White 1980) to adjust for the presence of heteroskedasticity of the residuals (Greene 2008). Country-level fixed effects are taken into account in the model with the FE estimator. Sub-regional dummies are included in the model with the random-effect estimator. To include the technology and labour market institution variables,

as the data is available for 25 countries for a limited number of years, we ran a separate regression for these two variables under different specifications.

EMPIRICAL RESULTS AND ANALYSIS

FACTORS AFFECTING THE TRENDS OF LABOUR SHARE IN GDP

Table 5 presents the regression results of the models while considering labour share in GDP as the dependent variable. The regression results of the original model (without regional dummies) for FE and RE estimators are similar. However, the Hausman test suggests the supremacy of the FE estimator over the RE estimator. Therefore, we report here only the results of original model with the FE estimator in specification 1. Results of specification 1 show that the explanatory variables, related to trade, FDI, education, per capita GDP and its squared value, and non-agricultural employment, are statistically significant. One percentage point rise in the trade-GDP ratio is associated with 0.031 percentage points fall in the labour share in GDP. Also, a doubling of the per capita FDI is associated with 0.179 percentage points fall in the labour share in GDP. In the case of education, an increase in the average years of schooling by one year is associated with 0.423 percentage points rise in the labour share in GDP. Moreover, a doubling of the per capita GDP is associated with 12.9 percentage points fall in the labour share in GDP. The squared value of per capita GDP has a positive coefficient indicating an increasing return at the higher level of per capita GDP. Finally, one percentage point rise in the non-agricultural employment share is associated with 0.169 percentage points fall in the labour share in GDP.

In specification 2, sub-regional dummies are added to the RE estimator of the original regression equation. While adding the four sub-regional dummies, ANZ is considered as the base. The coefficients of the dummy variables for four sub-regions are insignificant suggesting that, relative to ANZ, all the four other sub-regions maintain the overall association found in the original regression.

Specification 3 presents the regression results involving the technology and labour market institution variables in the cross-country panel regression. Here, based on the Hausman test, we have reported only results using the FE estimator. Under this modified specification, it appears that, compared to the results reported in Specification 1, the signs of the coefficients of variables remain unchanged. The technology variable has a negative and significant association with the labour share, and a unit increase in the technology index is associated with 0.851 percentage points fall in the labour share in GDP. Finally, the labour market institution variable has a positive and significant

association with the labour share, and a unit increase in the labour institution index is associated with 0.649 percentage points rise in the labour share in GDP.

Regression results reported in Table 5 suggest that trade openness has negative association with the labour share in GDP in the Asia-Pacific countries. This raises concerns about the pattern of globalization in the Asia-Pacific countries (Suzuki et al. 2019). Our findings that FDI has a negative association with the labour share in GDP in the Asia-Pacific countries is supported by studies by Baranwal (2019) on India, Steenbergen et al. (2020) on Indonesia, and Zhang et al. (2021) on China. The labour share is strongly and negatively correlated with per capita GDP, which indicates that economic

growth and structural transformation processes in many Asia-Pacific countries have also not been favourable in raising the labour share in GDP. Also, technological development has not been labour friendly in most of these countries, as technological advancement in the Asia-Pacific countries has been rather capital intensive. Non-agricultural employment share in total employment has a negative association with the labour share in GDP, which can be explained by the strong presence of duality and informality in labour markets of the economies in Asia-Pacific which also exacerbate income inequality (Aoyagi & Ganelli 2013; Dao et al. 2014; Aoyagi et al. 2015; Gonzalez et al. 2015; Jain-Chandra et al. 2016). Education has a positive association with

TABLE 5. Cross-country panel regression of labour share in GDP for the Asia-Pacific countries

Variables	Dependent variable: Labour share in GDP		
	(1)	(2)	(3)
	FE	RE	FE
Trade share in GDP	-0.031***	-0.026***	-0.025***
	(0.005)	(0.004)	(0.006)
Log of per capita foreign direct investment inflow	-0.179*	-0.164*	-0.304**
	(0.099)	(0.100)	(0.143)
Average years of schooling	0.423**	0.287*	
	(0.195)	(0.168)	
Log of real GDP per capita	-12.943***	-16.173***	-20.790***
	(4.046)	(3.673)	(6.646)
Square of the log of real GDP per capita	0.871***	1.117***	1.371***
	(0.249)	(0.219)	(0.391)
Share of non-agricultural employment in total employment	-0.169***	-0.168***	-0.101*
	(0.039)	(0.038)	(0.058)
Dummy for Southern Asia		-5.081	
		(5.321)	
Dummy for South-Eastern Asia		-3.060	
		(5.111)	
Dummy for Eastern Asia		2.165	
		(5.337)	
Dummy for Pacific countries		0.822	
		(5.526)	
Index of technology			-0.851*
			(0.432)
Index of labour market institutions			0.649*
			(0.383)
Constant	103.130***	114.991***	130.667***
	(15.389)	(14.359)	(25.389)
Year dummies	Yes	Yes	Yes
Fixed effect	Yes	No	Yes
No. obs.	462	462	275
No countries	33	33	25
R-squared	0.2244	0.2205	0.1902
Prob > F	0.000	0.000	0.000

Source: Author's calculations
Note: Standard errors in parentheses. * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

the labour share in GDP. Education enhances labour productivity and wages and thus can contribute to the rise in labour share in GDP. Countries with a higher level of educational achievement showed a higher level of labour share in GDP. Therefore, education can be an important tool to rebalance the economic and social powers between labour and capital. Finally, pro-worker labour institutions can have a positive association with the rise in the labour share in GDP.

FACTORS AFFECTING THE GAP BETWEEN LABOUR PRODUCTIVITY AND WAGE

Table 6 presents the regression results related to the factors affecting the gap between labour productivity and wage. Results from the regression model with the FE estimator (specification 1) show that a percentage point rise in the trade-GDP ratio is associated with 0.168 percentage points rise in the gap. Also, a doubling of the per capita FDI is associated with 1.27 percentage points rise in the gap. In the case of education, an increase in the average years of schooling by one year is associated with 4.338 percentage points fall in the gap. Moreover, a doubling of the per capita GDP is associated with 69.4 percentage points rise in the gap. The squared value of per capita GDP has a negative coefficient indicating a decreasing return at the higher level of per capita GDP. Finally, one percentage point rise in the non-agricultural employment share is associated with 1.118 percentage points rise in the gap.

TABLE 6. Cross-country panel regression of the gap between labour productivity and wage in Asia-Pacific

	Dependent variable: Gap between labour productivity and wage		
	(1)	(2)	(3)
Variables	FE	RE	FE
Trade share in GDP	0.168***	0.136***	0.139***
	(0.035)	(0.032)	(0.045)
Log of per capita foreign direct investment inflow	1.270*	1.105*	2.160**
	(0.692)	(0.595)	(0.962)
Average years of schooling	-4.338**	-3.114**	
	(1.365)	(1.288)	
Log of real GDP per capita	69.368**	95.323**	120.712**
	(28.283)	(23.351)	(44.940)
Square of the log of real GDP per capita	-4.784***	-6.593***	-7.636***
	(1.743)	(1.452)	(2.670)
Share of non-agricultural employment in total employment	1.118***	1.021***	0.618*
	(0.276)	(0.258)	(0.354)
Dummy for Southern Asia		6.728	
		(30.369)	
Dummy for South-Eastern Asia		-0.972	
		(29.014)	
Dummy for Eastern Asia		-18.994	
		(29.897)	
Dummy for Pacific countries		-13.091	
		(31.475)	
Index of technology			10.239**
			(4.824)
Index of labour market institutions			-2.068*
			(0.918)
Constant	-173.395*	-255.935***	-173.395*
	(107.563)	(95.566)	(107.563)
Year dummies	Yes	Yes	Yes
Fixed effect	Yes	No	Yes
No. obs.	462	462	275
No countries	33	33	25
R-squared	0.1665	0.1621	0.1629
Prob > F	0.000	0.000	0.000

Source: Author's calculations
Note: Standard errors in parentheses. * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Under specification 2 of Table 6, coefficients of the dummy variables for four sub-regions are insignificant suggesting that, relative to ANZ, all the four other sub-regions maintain the overall association found in the original regression. Under specification 3, the technology variable has a positive and significant association with the gap, and a unit increase in the technology index is associated with 10.239 percentage points rise in the gap. Also, the labour market institution variable has a negative and significant association with the gap, and a unit increase in the index is associated with 2.068 percentage points fall in the gap.

As countries in the Asia-Pacific liberalized their trade regimes and attracted FDI, to remain competitive in the global export market, there has been some pressure depressing wage growth. Together with trade liberalization and FDI, technological development led to productivity growth at a faster rate than wage growth (Dao et al. 2017; Das 2019), which contributed to the rise in the gap. ESCAP (2018) argued that capital accumulation, technological growth, and trade openness all these factors contributed to an increase in inequality, on average, in Asia and the Pacific. In contrast, education increases workers' expectations about the wage (Becker & Chiswick 1966; Psacharopoulos 1993; Ashenfelter & Krueger 1994; Card 2001; Psacharopoulos & Patrinos

2018), and thus there is positive pressure on wage growth with the increased level of education. The regression results also suggest that the structural transformation and economic growth process in the Asia-Pacific region remained far from being inclusive. While Asia-Pacific's growth record in recent times has been remarkable, there is a growing concern that the benefits are not equitably shared as poverty remained high despite the recent decline and inequality was increasing (ILO 2018; Triggs & Urata 2020). Finally, the presence of stronger labour market institutions can have a negative association with the gap.

THE RELATION BETWEEN LABOUR SHARE IN GDP AND INEQUALITY IN THE ASIA-PACIFIC COUNTRIES AND ASSOCIATED DETERMINING FACTORS

Table 7 presents the regression results on the relationship between labour share in GDP and inequality in the Asia-Pacific Countries and associated determining factors. Results from the regression model with the FE estimator show that all the explanatory variables, except population, are statistically significant with expected signs. One percentage point rise in the labour share is associated with 0.076 percentage points fall in the Gini coefficient. A unit rise in the human capital index

TABLE 7. Cross-country panel regression of the Gini in the Asia-Pacific countries

Variables	Dependent variable: Gini index
	FE
Labour share in GDP	-0.076***
	(0.020)
An index of human capital	-5.291***
	(0.171)
The ratio of tax to GDP	-0.053**
	(0.023)
Log of per capita remittance inflow	-0.637***
	(0.162)
Log of per capita capital stock	2.134***
	(0.333)
The ratio of military expenditure to GDP	0.400**
	(0.175)
Log of total population	0.364
	(1.152)
Constant	45.331**
	(20.530)
Year dummies	Yes
Fixed effect	Yes
No. obs.	248
No countries	19
R-squared	0.3781
Prob > F	0.000

Source: Author's calculations.
Note: Standard errors in parentheses. * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

is associated with 5.291 percentage points fall in the Gini. Also, a percentage point rise in the tax-GDP ratio is associated with 0.053 percentage points fall in the Gini. A doubling of the per capita remittance inflow is associated with 0.637 percentage points fall in the Gini. In the case of per capita capital stock (a proxy for capital abundance), a doubling of the per capita capital stock is associated with 2.124 percentage points rise in the Gini. Moreover, a percentage point rise in the ratio of military expenditure to GDP is associated with 0.4 percentage points rise in the Gini. In a separate regression, we checked the sub-regional dummies and none of them appeared to be statistically significant—which conveys a meaning - the relationships in the general regression apply to all sub-regions.

Similar findings of lower labour share associated with a higher Gini coefficient have also been reported in studies by Karabarbounis et al. (2014), ILO (2015), and Erauskin (2020). Our regression results also indicate that the rise in human capital, through increasing years of schooling and returns to education, can reduce inequality. A similar finding was reported by Lee and Lee (2018). Our regression results also show that a higher tax-to-GDP ratio can be associated with a lower Gini which points to an important policy conclusion that inequality in Asia-Pacific could be addressed through a combination of taxation, social transfers and social expenditure (Park 2012; Zhuang 2018). Regression results also suggest that remittances have a positive association with the reduction in inequality in Asia and the Pacific. Similar findings were also reported in Adams (2006), Adams and Page (2005), Acosta et al. (2007), Brown and Jimenez (2007), Ruiz and Vargas-Silva (2009), Sawada and Estudillo (2006), and ADB (2012). Higher availability of per capita stock of capital, proxied as technological development, is associated with the rise in inequality. The relationship between technology and inequality could be multifaceted. While technology enhanced productivity, accelerated economic growth, enabled knowledge and information sharing and increased access to basic services, it also increased inequalities in the Asia-Pacific countries (ADB 2014; ESCAP 2018). Our regression results also show that a higher share of military expenditure in GDP would be associated with worsened inequality. Studies by Abell (1994), Ali and Galbraith (2003), Elveren (2012), and Hirnissa et al. (2009) also support this finding.

POLICY IMPLICATIONS AND CONCLUSION

Our analysis has documented a declining trend in the world labour income share between 2004 and 2017, with the financial crisis and its immediate aftermath exhibiting countercyclical behaviour. The world average labour share decreased from 53.7 per cent in 2004 to 51.4 per cent in 2017. All of the Asia-Pacific sub-regions, except ANZ, had substantially lower labour shares in GDP than the world average. ANZ consistently had the highest share among the five sub-regions in the Asia-Pacific region, and despite a downward trend, its share remained significantly greater than the world average across all the years from 2004 to 2017. Only Eastern Asia, among the other sub-regions, had started to converge toward the world average since 2010. East Asia maintained a high labour share and even increased it, whereas Southern Asia experienced the largest decline in labour share, followed by the Pacific region and Southeast Asia. We also calculated the gap between labour productivity and wage where the gap is defined as the shortfall of wage from labour productivity as a percentage of wage. Our analysis shows that between 2004 and 2017, while the gap in the world average increased, four out of the five sub-regions in the Asia-Pacific also witnessed a rise in the gap. Only Eastern Asia saw a reduction in the gap, mostly as a result of China. The Pacific had the largest gap in 2017, followed by South-Eastern Asia and Southern Asia, and all three of these sub-regions had gaps that were larger than the world average in both 2004 and 2017. Our analysis also suggests that despite economic growth, many countries in the Asia-Pacific witnessed a rise in the inequality measured by the Gini index—most notably in India, Indonesia, and Sri Lanka, with significantly lower levels in Japan and the Republic of Korea.

According to our analysis, trade openness and FDI are negatively associated with the labour share of GDP in the Asia-Pacific region. The processes of structural transformation and economic growth have not been beneficial in increasing the labour share of GDP. Additionally, because of the high capital intensity of technology, most of these countries have not experienced labour-friendly technological growth. The percentage of non-agricultural employment in total employment is inversely associated with the labour share in GDP. Education raises wages and labour productivity, which can help to increase the labour share of GDP. The rise in the labour share of GDP can also be positively associated with the existence of pro-worker labour institutions. Our analyses have also confirmed that the reduction in labour share in income is associated with rising inequality in the Asia-Pacific countries. With the current pattern of economic growth, trade openness, technological progress and educational development, there is a high risk that in many Asia-Pacific countries the labour share will stay low or even decline, further worsening the overall income distribution.

The evidence of widening income inequality in many Asia-Pacific countries underscores the need to undertake appropriate policies to narrow the income gap. Two major instruments of the government's policies are very relevant for addressing challenges related to widening income inequality. These interrelated instruments are (i) revenue generation (especially tax

and non-tax revenue), and (ii) public expenditure on social sectors (especially education, health, and social protection). However, the government's policy regimes are very different across Asia-Pacific countries. While many countries in East and Southeast Asia have been able to address inequality through appropriate social policies, most South Asian countries are yet to register success in this regard.

For instance, education is critical for economic growth and the overall development of Asian societies. While Asia-Pacific countries (such as Afghanistan, Bhutan, Bangladesh, Myanmar, and Nepal) has made considerable progress in gross enrolment in primary education for both genders, many countries (such as Afghanistan, Bangladesh, and Nepal) are lagging in ensuring quality education for all (UNICEF 2021). Countries in Southern Asia, in particular, spend an inadequate share of GDP on education (Asadullah et al. 2020); the education sector also suffers from poor quality public institutions (Asadullah et al. 2014; Asadullah et al. 2020). For example, in Bangladesh, between 2004 and 2017, the labour share remained low and unchanged. In contrast, in Malaysia labour share remained relatively higher and experienced a sharp increase during 2004-2017. This partly is owing to the legacy of better institutional quality which strongly correlates with Malaysia's achievements in human development indicators (Asadullah et al. 2021).

Therefore, part of the larger challenge to fight inequality lies in state capacity and governance. In several Asia-Pacific countries (e.g. Afghanistan, Bangladesh, India, Iran, and Indonesia), tax revenue in proportion to GDP declined and remained well below the required level. Given the culture of tax avoidance in many Asia-Pacific countries (Araki & Nakabayashi 2018; ADB 2020), the objective of achieving horizontal equity is compromised. Also, due to the heavy reliance on indirect taxes, the objective of achieving vertical equity is seriously undermined. This has resulted in a tax system which is regressive and inequality enhancing. Richer people become the largest beneficiaries of such a weak tax system.

On the expenditure side of fiscal policy, especially public expenditure related to education, health, and social protection, in many Asia-Pacific countries there has been little improvement in the allocation, in proportion to GDP, over the past decades. Even though public expenditure on social sectors should be used to counter widening income inequality, this instrument has not been used judiciously in many countries in the recent decade. Low public education and health expenditure do not help improve the productivity of workers and are not consistent with the effort to reduce poverty and inequality. One obvious implication of the low public expenditure on education and health is the high degree of out-of-pocket private education and health expenditure which is one of the major contributing

factors to growing inequality. Also, many governments' social protection programs are inadequate in addressing pockets of poverty and regional disparity in poverty.

Lastly, governments in many Asia-Pacific countries suffer from the usual problem of not getting their priorities right. While governments allocate resources for many "low-priority" activities such as military activities (from the viewpoint of development perspective), the resources left for social protection remain grossly inadequate. An added challenge therefore is to de-prioritize unproductive public spending that otherwise crowds out pro-poor budgetary allocations to human development.

NOTES

[1] The ILO database (https://ilostat.ilo.org/topics/labour-income/) provides the calculated data of the labour share in GDP for 189 countries for the period 2004-2017. In this ILO database, there are data for 39 Asia-Pacific countries. According to ILO (2019), in 2017, the global labour income share was 51.4 per cent. The ILO data showed that the capital share increased in the recent years. Though, most of the global income was still labour income, this income was distributed very unevenly. In 2017, the top 10 per cent workers earned 48.9 per cent of the labour income and the bottom 50 per cent workers earned only 6.4 per cent of the labour income (ILO, 2019).

[2] To have a better understanding of the differences in trend and pattern at the sub-regional levels, we grouped the Asia-pacific countries into five sub-regions: (i) *Southern Asia*: Afghanistan; Bangladesh; Bhutan; India; Iran (Islamic Republic of); Maldives; Nepal; Pakistan; Sri Lanka. (ii) *Eastern Asia*: China; Hong Kong, China; Macao, China; Taiwan Province of China; Republic of Korea, Democratic People's Republic of Korea; Japan; Mongolia. (iii) *South-Eastern Asia*: Brunei Darussalam; Cambodia; Indonesia; Lao People's Democratic Republic; Malaysia; Myanmar; Philippines; Singapore; Thailand; Timor-Leste; Viet Nam. (iv) *ANZ*: Australia; New Zealand, (v) *Pacific*: Fiji; New Caledonia; Papua New Guinea; Solomon Islands; Vanuatu; Guam; French Polynesia; Samoa; Tonga.

[3] One challenge of comparing labour productivity and wage is to have comparable data of productivity and wage across the Asia-Pacific countries. In this exercise, we calculated labour productivity as the real GDP per employed person. Real GDP considers both formal and informal activities. However, in the standard calculation of GDP, unpaid family work is not included. Our measure of labour productivity is an average measure and doesn't reflect any adjustments made for differing hours worked across countries or for part-time work. Also, In the absence of labour productivity data from the secondary source

at the aggregate level, we have computed labour productivity by dividing the GDP with the total employed persons which is, in fact, gross productivity rather than net productivity of labour. In the absence of any comparable and consistent data for wage, we calculated the real compensation per employed person by using the data of real GDP, labour share in GDP and number of employed persons. The data for number of employed persons is taken from the Penn World Table version 10.0 (https://www.rug.nl/ggdc/productivity/pwt/?lang=en).

4   Estimate of Gini index of inequality in equivalized (square root scale) household disposable (post-tax, post- transfer) income, using Luxembourg Income Study data (https://www.lisdatacenter.org/) as the standard (Source: The Standardized World Income Inequality Database, Version 9.1: https://fsolt.org/swiid/).

5   https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/LM4OWF

6   https://ilostat.ilo.org/topics/labour-income/

7   https://databank.worldbank.org/source/world-development-indicators

8   http://hdr.undp.org/en/data

REFERENCES

Abell, J.D. 1994. Military spending and income inequality. *Journal of Peace Research* 31: 35-43.

Acemoglu, D. 2002. Technical change, inequality, and the labour market. *Journal of Economic Literature* XL: 7-72.

Acosta, P.A. Lartey, K.K., Emmanuel & F. Mandelman. 2007. Remittances and the Dutch Disease. FRB of Atlanta Working Paper No. 2007-8. Federal Reserve Board of Atlanta. Available: www.frbatlanta.org/filelegacydocs/wp0708.pdf

Adams, R., Jr. 2006. Remittances, poverty and investment in Guatemala. *In C. Oxden* & *M. Schiff, eds*. *International Migration, Remittances and the Brain Drain*. Washington DC: World Bank.

Adams, R., Jr. & J. Page. 2005. Do international migration and remittances reduce poverty in developing countries? *World Development* 33(10): 1645–1669.

ADB. 2005. Labour Markets in Asia: Promoting Full, Productive, and Decent Employment. Asian Development Bank. Manila, Philippines.

ADB 2012. Global Crisis, Remittances, and Poverty in Asia. Asian Development Bank. Mandaluyong City, Philippines. https://www.adb.org/sites/default/files/publication/29831/global-crisis-asia.pdf

ADB 2014, Inequality in Asia and the Pacific. Asian Development Bank, Manila. https://www.adb.org/publications/inequality-asia-and-pacific

ADB 2019. Demystifying Rising Inequality in Asia. Asian Development Bank, Manila. https://www.adb.org/publications/demystifying-rising-inequality-asia

ADB 2020. A Comparative Analysis of Tax Administration in Asia and The Pacific. Asian Development Bank, Manila. https://www.adb.org/sites/default/files/publication/569626/tax-administration-asia-pacific 2020. pdf

Ali, H.E. & Galbraith, J. 2003. Military expenditures and inequality: Empirical evidence from global data. The University of Texas at Austin UTIP Working Paper No. 24.

Aoyagi, C. & Ganelli, G., 2013. The Path to Higher Growth: Does Revamping Japan's Dual Labour Market Matter? IMF Working Paper 13/202, International Monetary Fund, Washington.

Aoyagi, C. & Ganelli, G. & Murayama, K., 2015. How Inclusive is Abenomics? IMF Working Paper 15/54, International Monetary Fund, Washington.

Arpaia, A., Pérez, E. & Pichelmann, K. 2009. Understanding labour income share dynamics in Europe. European Economy. *Economic Papers* 379.

Asadullah, M.N., Mansor, N. & Savoia, A. 2021. Understanding a "development miracle": poverty reduction and human development in Malaysia since the 1970s. *Journal of Human Development and Capabilities* 22(4): 551-576.

Asadullah, M.N., Savoia, A. & Sen, K. 2020. Will South Asia achieve the sustainable development goals by 2030? Learning from the MDGs experience. *Soc Indic Res* 152: 165–189 2020.

Asadullah, M.N. & Savoia, A. 2018. Poverty reduction during 1990-2013: did MDGs adoption and state capacity matter? *World Development* 105: 70-82.

Ashenfelter, O. & Krueger, A. 1994. Estimates of the economic return to schooling from a new sample of twins. *American Economic Review* 84(5): 1157-1173.

Atkinson, A.B. 2009. Factor shares: the principal problem of political economy? *Oxford Review of Economic Policy* 25: 3-16.

Aum, S. & Shin, Y. 2020. Why is the labour share declining? Available at SSRN: https://ssrn.Com /abstract=3736264.

Baranwal, G. 2019. Links between foreign direct investment and human capital formation: Evidence from the manufacturing sector in India. *The Journal of International Trade & Economic Development* 28 (2): 137–160.

Barro, R.J. & Lee, J.W. 2010. A New Data Set of Educational Attainment in the World, 1950-2010. NBER Working Paper No. 15902.

Barro, R.J. & Sala-i-Martin, X. 2004. *Economic Growth*. Cambridge MA: MIT Press.

Barro, R.J. 1991. Economic growth in a cross section of countries. *The Quarterly Journal of Economics* 106: 407-443.

Becker, G.S. & B.R. Chiswick. 1966. Education and the distribution of earnings. *American Economic Review* 56(2): 358−369.

Bentolila, S. & Saint-Paul, G. 2003. Explaining Movements in the Labour Share. The B.E. *Journal of Macroeconomics De Gruyter* 3(1): 1-33.

Bond, S. & Harding, R. 2011. $740bn pay gap threat to US recovery. In Financial Times (Vol. 15 Dec 2011, pp. 1).

Brown, R. & E. Jimenez. 2007. Estimating the Net Effects of Migration and Remittances on Poverty and Inequality: Comparison of Fiji and Tonga. WIDER Research Paper 2007/23. United Nations University and World Institute for Development Economics Research, Finland. Available: http://www.wider.unu.edu/stc/repec/pdfs/rp2007/rp2007-23.pdf

Card, D. 2001. Estimating the return to schooling: Progress on some persistent econometric problems." *Econometrica* 69(5): 1127−1160.

Chortareas, G. & Noikokyris, E. 2021. Investment and labor income shares. *Economic Change and Restructuring 54:* 807-820.

Choyleva, D. 2018. Chinese workers' share of GDP reaching US levels. Opinion. NIKKEI Asia. https://asia.nikkei.com/Opinion/Chinese-workers-share-of-GDP-reaching-US-levels2

Dao, M., Furceri, D., Hwang, J., Kim, M. & Kim, T., 2014. Strategies for Reforming Korea's Labour Market to Foster Growth. IMF Working Paper 14/137, International Monetary Fund, Washington.

Dao, M., Das, M., Koczan, Z. & Lian, W. 2017. "Why is Labour Receiving a Smaller Share of Global Income? Theory and Empirical Evidence". IMF Working Paper. Washington, DC.

Das, M. 2019. Does the Exposure to Routinization Explain the Evolution of the Labour Share of Income? Evidence from Asia. Chapter 2 in G. Fields & S. Paul (eds.), Labour Income Share in Asia, ADB Institute Series on Development Economics

Das, S.P. 2005. Gradual globalisation and inequality between and within countries. *Canadian Journal of Economics* 38(3):852-69.

Daudey, E. &Garcia-Penalosa, C. 2007. The personal and the factor distributions of income in a cross-section of countries. *Journal of Development Studies* 43: 812-829.

Decreuse, B. & Maarek, P. 2015. FDI and the labour share in developing countries: a theory and some evidence. *Annals of Economics and Statistics* (119/120): 289-319.

Diwan, I. 2001. Debt as Sweat: Labour, financial crises, and the globalization of capital. In. Washington DC: The World Bank.

Dorn, F., Fuest, C. & Potrafke, N. 2018. Globalization and Income Inequality Revisited. CESifo Working Paper Series No. 6859, Available at SSRN: https://ssrn.com/abstract=3143398.

Dünhaupt, P. 2013. Determinants of functional income distribution: Theory and empirical evidence, Global Labour University Working Paper, No. 18, International Labour Organization (ILO), Geneva

Durongkaveroj, W. 2022. Employment effects of joining global production networks: Does domestic value added matter? *Review of Development Economics 26*(3): 1269-1285.

EC. 2007. The Labour Income Share in the European Union. Employment in Europe 2007, Directorate-General for Employment Social Affairs and Equal Opportunities, Brussels.

Ellis, L. & Smith, K. 2007. The global upward trend in the profit share. BIS Working Papers, n. 231.

Elveren, Y.A. 2012. Military spending and income inequality: Evidence on cointegration and causality for Turkey, 1963–2007. *Defence and Peace Economics* 23: 289–301.

Erauskin, I. 2020. The labour share and income inequality: some empirical evidence for the period 1990-2015. Applied Economic Analysis, Vol. 28 No. 84, pp. 173-195.

ESCAP 2018. Inequality in Asia and the Pacific in the era of the 2030 Agenda for Sustainable Development", https://www.unescap.org/sites/default/d8files/knowledge-products/ThemeStudyOnInequality.pdf

Gollin, D. 2002. Getting income shares right. *The Journal of Political Economy* 110: 458- 474.

Greene, W.H. 2008. Econometric Analysis. Upper Saddle River, NJ: Prentice--Hall.

Guerriero, M. 2019. Democracy and the Labour Share of Income: A Cross-Country Analysis. Chapter 6 in G. Fields & S. Paul (eds.), Labour Income Share in Asia, ADB Institute Series on Development Economics,

Guerriero, M. & Sen, K. 2012. What Determines the Share of Labour in National Income? A Cross-Country Analysis. IZA DP No. 6643

Guscina, A. 2006. Effects of Globalization on Labour's Share in National Income. In IMF Working Paper (Vol. 06/294): IMF.

Harrison, A., McLaren, J. & McMillan, M. 2011. Recent perspectives on trade and inequality. *Annual Review of Economics* 3: 261-289.

Harrison, A. 2002. Has Globalization Eroded Labour's Share? Some Cross-Country Evidence. In UC Berkeley and NBER.

Hartmann, D.M.R. Guevara, C. Jara-Figueroa, M. Aristarán, & C.A. Hidalgo. 2017. linking economic complexity, institutions, and income inequality. *World Development* 93: 75–93.

Haseeb, M., Suryanto, T., Hartani, N.H. 2020. Nexus between globalization, income inequality and human development in indonesian economy: evidence from application of partial and multiple wavelet coherence. *Soc Indic Res* 147: 723–745.

Hirnissa, M.T., Habibullah, M.Z. & Baharom, A.H. 2009. Defense spending and income inequality: Evidence from selected Asian countries. *Modern Applied Science* 3(5): 96–111.

Hu, X., Wan, Guanghua & Wang, J. 2020. The impacts of globalization on the labor share: Evidence from Asia. *Singapore Economic Review 65*: 57-73.

Huang, Z. & Lardy, N.R. 2016. China's Rebalance Reflected in Rising Wage Share of GDP, China Economic Watch, Peterson Institute for International Economics. https://www.piie.com/blogs/china-economic-watch/chinas-rebalance-reflected-rising-wage-share-gdp

ILO. 2008. Income Inequalities in the Age of Financial Globalization. In World of Work Report 2008. Geneva: International Institute for Labour Studies.

ILO. 2015. Income inequality and labour income share in G20 countries: Trends, Impacts and Causes. ILO, IMF, OECD and World Bank. https://www.oecd.org/g20/topics/employment-and-social-policy/Income-inequality-labour-income-share.pdf

ILO. 2018. Women and Men in the Informal Economy: A Statistical Picture. Third Edition. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/publication/wcms_626831.pdf

ILO. 2019. The Global Labour Income Share and Distribution: Key Findings", Data Production and Analysis Unit, ILO Department of Statistics, https://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/publication/wcms_712232.pdf

IMF. 2001. World Economic Outlook. The Information Technology Revolution. World Economic and Financial Surveys.

IMF. 2007. The Globalization of Labour (Chapter 5). In World Economic Outlook: Spillovers and Cycles in the Global Economy Washington.

Jain-Chandra, S., Kinda, T., Kochhar, K., Piao, S & Schauer, J. 2016. Sharing the Growth Dividend: Analysis of Inequality in Asia. IMF Working Paper WP/16/48. https://www.imf.org/external/pubs/ft/wp/2016/wp1648.pdf

Jayadev, A. 2007. Capital account openness and the labour share of income. *Cambridge Journal of Economics* 31: 423-443.

Karabarbounis, L., Neiman, B. & Adams, J. 2014. Labour Shares and Income Inequality. Meeting Papers 539, Society for Economic Dynamics.

Kravis, I. B. 1959. Relative income shares in fact and theory. *The American Economic Review* 49: 917-949.

Krueger, A.B. 1999. Measuring Labour's Share. *The American Economic Review* 89: 45-51.

Kuznets, S. 1955. Economic growth and income inequality. *The American Economic Review* 45: 1-28.

Lawless, M. & Whelan, K. 2011. Understanding the dynamics of labour shares and inflation. *Journal of Macroeconomics* 33: 121-136.

Lee, C.C., Lee, C.C. & Lien, D. 2020. Income inequality, globalization, and country risk: a cross-country analysis. *Technological and Economic Development of Economy* 26(2): 379-404.

Lee, J.W. & Lee, H. 2018. "Human Capital and Income Inequality". ADBI Working Paper 810. Tokyo: Asian Development Bank Institute. Available: https://www.adb.org/publications/human-capital-and-income-inequality

Lee, W.C., Cheong, T.S., Wu, Y. & Wu, J 2019. The Impacts of Financial Development, Urbanization, and Globalization on Income Inequality: A Regression-based Decomposition Approach. *Asian Economic Papers* 2019 18 (2): 126–141.

Lewis, W.A. 1955. Theory of Economic Growth. Published by Routledge, Taylor & Francis Group in 2003.

Liang, W. & Mai, C. 2003. Capital flows, vertical multinationals, wage inequality, and welfare. *Review of Development Economics* 2003 7(4): 599-608.

Luo, C. & Zhang, J. 2010. Declining labour share: is China's case different? *China & World Economy* 18: 1-18.

Maarek, P. 2010. Labour share, Informal sector and Development. GREQAM Working Paper.

Maiti, D. 2019. Trade, Labour Share, and Productivity in India's Industries. ADBI Working Paper 926. Tokyo: Asian Development Bank Institute. Available: https://www.adb.org/publications/trade-labour-share-and-productivity-india-industries

Marjit, S., Beladi, H. & Chakrabarti. A. 2004. Trade and wage inequality in developing countries. *Economic Inquiry* 42(2):295-303.

Milanovich, B. 2018. Global Inequality: A New Approach for the Age of Globalization. Harvard University Press.

Ng, A., Tan, T.T. & Tan, Z.G. 2018. What Explains the Increase in the Labour Income Share in Malaysia? ADBI Working Paper 894. Tokyo: Asian Development Bank Institute. Available: https://www.adb.org/publications/what-explains-increase-labour-income-sharemalaysia

O'Mahony, M., Vecchi, M. & Venturini, Francesco 2019. Technology, Market Regulations, and Labour Share Dynamics. Chapter 4 in G. Fields & S. Paul (eds.), Labour Income Share in Asia, ADB Institute Series on Development Economics.

Park, C. 2012. Taxes, Social Transfers, and Inequality in Asia. IMF-Japan High-Level Tax Conference "Emerging Tax Issues in Asian Countries" (January 31-February 3, 2012, Tokyo). https://www.imf.org/external/np/seminars/eng/2012/asiatax/pdf/park.pdf

Peluffo, A. 2013. Foreign direct investment, productivity, demand for skilled labour and wage inequality: an analysis for Uruguay. Documentos de Trabajo (working papers) 13-02, Instituto de Economia - IECON.

Piketty, T. 2014. Capital in the twenty-first century (A. Goldhammer, Trans). Cambridge, MA and London: Belknap Press.

Psacharopoulos, G. & Patrinos, H.A. 2018. Returns to Investment in Education: A Decennial Review of the Global Literature. World Bank Policy Research Working Paper 8402. https://openknowledge.worldbank.org/bitstream/handle/10986/29672/WPS8402.pdf

Psacharopoulos, G. 1993. Returns to investment in education: a global update. World Bank Policy Research Working Paper Series 1067.

Qi, H. 2019. Power relations and the labour share of income in China. *Cambridge Journal of Economics* 2020 44: 607–628.

Raihan, S. 2020. Informal institutions, the RMG sector, and the present challenge of export diversification in Bangladesh. Bangladesh Institutional Diagnostic WP20/BDID[05]. https://edi.opml.co.uk/resource/bangladesh-institutional-diagnostic-chapter-5/

Rama, M. 2003. Globalization and Workers in Developing Countries. Policy Research Working Paper Series 2958, The World Bank.

Ruiz, I. & Vargas-Silva, C. 2009. To send or not to send. that is the question. A review of the literature on remittances. *Journal of Business Strategies* 26(1): 65–90

Sachs, J.D. & Warner, A. 1995. Economic reform and the process of global integration. *Brookings Papers on Economic Activity* 1: 1-118.

Sawada & Estudillo. 2006. Trade, Migration and Poverty Reduction in a Globalizing Economy. UN-Wider Research Paper No. 2006/58. United Nations University and World Institute for Development Economics Research, Finland. Available: http://www.wider.unu.edu/publications/working-papers/research-papers/2006/en_GB/rp2006-58/

Smeeding, T.M. & Thompson, J. 2010. Inequality in the Distribution of Income from Labour and Income from Capital over the Recession. 31st General Conference of the International Association for Research in Income and Wealth, St. Gallen, Switzerland, August 22-28, 2010.

Stanford 2018. The declining labour share in Australia: Definition, measurement and international comparisons. *Journal of Australian Political Economy* 81: 11-32.

Steenbergen, V.S. Hebous, M.M. Wihardja & A.T. Pradana 2020. The effect of FDI on Indonesia's jobs, wages, and structural transformation. World Bank, Washington, DC. World Bank. https://openknowledge.worldbank.org/handle/10986/36188

Strain, M.R. 2019. The Link Between Wages and Productivity Is Strong, Part III: Promoting Private Sector Wage Growth and Job Creation. https://www.aspeninstitute.org/wp-content/uploads/2019/01/3.2-Pgs.-168-179-The-Link-Between-Wages-and-Productivity-is Strong.pdf

Suzuki, K., Oishi, Y. & Paul, S. 2019. Globalization, Structural Transformation, and the Labour Income Share. Chapter 5

in G. Fields & S. Paul (eds.), Labour Income Share in Asia, ADB Institute Series on Development Economics.

Triggs, A. & Urata, S. 2020. Achieving Inclusive Growth in the Asia Pacific. ANU Press, The Australian National University. https://press-files.anu.edu.au/downloads/press/n6674/pdf/book.pdf

UNICEF 2021. Most countries in Asia-Pacific off-track to achieve SDG4 targets despite increasing numbers of children going to school. https://www.unicef.org/rosa/press-releases/most-countries-asia-pacific-track-achieve-sdg4-targets-despite-increasing-numbers

White, H. 1980. A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica* 48: 817-838.

Wood, A. & Ridao-Cano, C. 1999. Skill, Trade and International Inequality. *Oxford Economic Papers* 51: 89-119.

Zhana, Q., Zenga, X., Wangc, Z. & Mua, X. 2020. The influence of minimum wage regulation on labour income share and overwork: evidence from China. *Economic Research* 2020 33(1): 1729–1749

Zhang, J.G. Wang & B. He 2021. Does foreign direct investment affect wage inequality in Chinese manufacturing sector? *Applied Economics L*etters 0(0): 1–4.

Zhou, M. 2016. *Labour's Share of Income another Key to Understand China's Income Inequality*. Springer, Singapore 2016

Zhuang, J. 2018. The Recent Trend of Income Inequality in Asia and How Policy Should Respond. Working Paper commissioned by the Group of 24 and Friedrich-Ebert-Stiftung New York. https://www.g24.org/wp-content/uploads/2018/10/Rising_income_inequality_in_Asia.pdf

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