**Economic Costs of Absenteeism, Presenteeism and Early Retirement Due to Ill Health: A Focus on Jiangsu, China**

**Report to the US Chamber of Commerce**

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## Executive Summary

Jiangsu is a province of China located along the eastern coast. With the Yellow Sea to its east, Jiangsu adjoins Anhui and Shandong provinces in the west and north respectively, with Zhejiang province and the city of Shanghai as its neighbours in the southeast. Its capital city is Nanjing. Jiangsu has a population of 7.9 million in 2015 representing about 6% of China’s population. It accounts for 10.8% of China’s Gross Regional Product of which the Tertiary sector represents 48.6%, Secondary sector 45.7% and Primary sector 5.7% (National Bureau of Statistics China 2016).

This report provides estimates of the economic cost due to productivity losses arising from absenteeism, presenteeism and early retirement due to ill health. For Jiangsu, these losses equate to a total of 5.3% of GDP in 2015, as shown in Table ES 1, increasing to 6.3% of GDP by 2030.

**Table ES1 Total economic impact of absenteeism, presenteeism and early retirement**

|  |  |  |
| --- | --- | --- |
|  | 2015 | 2030 |
|  | **Early retirement due to ill health** | **Absenteeism + presenteeism** | **Total absenteeism + presenteeism + early retirement** | **Early retirement due to ill health** | **Absenteeism + presenteeism** | **Total absenteeism + presenteeism + early retirement** |
| Jiangsu | 2.4% | 2.9% | 5.3% | 3.1% | 3.2% | 6.3% |
| China | 2.1% | 3.3% | 5.4% | 2.8% | 3.7% | 6.5% |
| Brazil | 2.2% | 5.1% | 7.3% | 3.0% | 4.5% | 7.5% |
| India | 2.5% | 4.6% | 7.1% | 2.9% | 4.8% | 7.7% |
| Indonesia | 1.9% | 4.6% | 6.5% | 2.4% | 4.8% | 7.2% |
| Japan | 3.2% | 3.8% | 7.0% | 3.9% | 4.1% | 8.0% |
| Malaysia | 1.7% | 4.5% | 6.2% | 2.0% | 4.9% | 6.9% |
| Philippines | 2.4% | 5.1% | 7.5% | 2.6% | 5.2% | 7.8% |
| Singapore | 2.2% | 3.2% | 5.4% | 2.3% | 3.4% | 5.7% |
| USA | 3.5% | 5.0% | 8.5% | 3.1% | 5.1% | 8.2% |

Source: VISES estimates.

Treated as a separate economy, these estimates put Jiangsu below average for this group of nine countries, that includes some South East Asian and South American peers, as well as some upper income (and demographically mature) developed countries from other parts of the world. This is fractionally lower than for China nationally which is 5.4% for 2015 and 6.5% for 2030. The composition on the other hand is different. The impact of early retirement is higher while absenteeism and presentism is lower. The increase as a percentage of GDP is the one of the largest for this group of countries. Figure ES1 shows that the estimated increase between 2015 and 2030.

**Figure ES1 Change in % GDP total absenteeism + presenteeism + early retirement, 2015-2030**

Source: VISES estimates.

For countries with above average estimates, these figures are driven by the interaction of an ageing workforce and the high burden of chronic disease, now prevalent in developing countries. The significant increase as a percentage of GDP for Jiangsu shown in figure ES1 is largely due to a rapidly ageing population. The disease burden is relatively low.

The proportion of Jiangsu’s work force aged 50-64 is 27%, higher than average for this group of countries, and it is also ageing more quickly than average. As its population ages and they move into age groups with higher levels of chronic disease, the proportion of its workforce aged 50-64 years is projected by VISES to increase to 35.6% by 2030, an increase of 8.3 percentage points compared with increases of 6.3 percentage points and 5.3 percentage points for China and Japan, respectively (see Figure 5).

## Context of the Study

In spite of very different circumstances, most countries face three challenges in common:

* their populations are ageing, in different ways and to different degrees;
* there is an existing high prevalence of non-communicable diseases (NCDs), such as heart and respiratory disease, stroke, cancer and mental illness, particularly for older age groups; and
* many risk factors for the future incidence of NCDs are high, and in some cases continuing to rise.

Taken together, these factors already impose heavy costs on business, governments and individuals, and threaten much greater costs in the future. The economic costs arise largely because, due to ill health, people aren’t able to work as much as they would like. They may either be sick and absent from work (absenteeism), present at work but not working at full capacity due to illness (presenteeism), or retired prematurely, say from aged 50-64 years due to ill health (early retirement due to ill health). The economic costs on productivity imposed by each of these groups has been modelled and included in this report. There are also others who may not work at any time due to an incapacity and/or health condition which has been present for most of their lives. This group is not explicitly covered in this report.

Following an initial report for the APEC Business Advisory Council (ABAC) and the Life Sciences Innovation Forum (LSIF) in 2014, VISES has prepared four reports, Sheehan et al. (2014), Sweeny et al. (2014) and Rasmussen et al. (2015a, 2015b), now covering eighteen countries on three aspects of these economic costs mentioned above:

* absenteeism;
* presenteeism; and
* early retirement due to ill health.

This summary report draws on these earlier reports with a focus on Jiangsu together with nine other comparator countries chosen as most relevant from the eighteen included in a global study prepared for the US Chamber of Commerce (Rasmussen et al. 2016).

## Population and Labour Force Ageing

### Population ageing

While no single indicator can capture the diversity of ageing patterns, the proportion of the population that is aged 45 years and over provides one summary indicator. Data from the 2010 China Census shows that 37% of the population of Jiangsu is 45 years and over compared with 33% for China as a whole. UN population projections show that China and USA are expected to have 46.8% and 43.6%, respectively, of their populations aged over 45 by 2030. Given that in 2010 Jiangsu had a higher percentage of its population over 45 than China nationally, ageing of its population is a significant issue.

Figure 1 shows that of the total population of Jiangsu between 1995 and 2015, those at the working ages of 15 to 65 years have gradually increased from 67% of the population in 1995 to 73% in 2015, and those aged 65 plus have increased from 7% to 10% over the same period. Conversely, those aged 0 to 4 years have fallen from 27% of the population to 17%.

**Figure 1 Population of Jiangsu by age cohorts, 1995 to 2015**

### Source: National Bureau of Statistics China (2016).

### Implications for labour supply

As discussed, similar to most countries in our sample, Jiangsu has a rapidly aging population. This increases the impact of NCDs. For most countries with ageing populations, the effect of ageing has significant implications for the incidence of NCDs, since they have higher rates of prevalence in older age groups. These higher rates of NCDs contribute to the higher levels of absenteeism, presenteeism and early retirement.

Figure 2 focuses on the pre-retirement workforce aged 50-64. It shows the changes in this age group as a proportion of the total labour force over the period 2000 to 2030 (projected). For Jiangsu, it shows that the proportion of those aged 50-64 years in 2015 was comparable to many other countries in this group, including countries as diverse as Japan, Singapore and the United States. The proportion of the work force in Jiangsu aged 50-64 years will increase from 27% in 2015 to 35% by 2030, the highest amongst the comparator countries.

Figure 2 Proportion of the labour force aged 50-64 years, Jiangsu and nine countries,

 2000, 2015 and 2030 (projected)

Source: ILO (2016), VISES estimates.

Between 2015 and 2030, Jiangsu’s labour force aged 50 to 64 will increase by over 8% (see Figure3), the highest of these countries. Nationally, China is projected to have an increase of over 6% followed by Japan at 5.3%, Indonesia 4.6% and Brazil at 3.8%. In contrast, the United States labour force aged 50-64 will fall by 3.5%.

Figure 3 Increase in the projected proportion of the labour force aged 50-64,
Jiangsu and selected countries, 2015-2030

Source: ILO (2016) and VISES estimates.

### Burden of disease

The WHO Global Burden of Disease study (Murray et al. 2015) estimates both prevalence and severity of disease. It uses the number of years lived with disability (YLD) as an indicator of the impact of morbidity arising from disease. The results are grouped in three broad sequelae: communicable maternal, perinatal and nutritional conditions; non-communicable diseases (NCDs); and injuries.

Figure 4 shows the estimated burden of disease for 2013 for Jiangsu and the other selected countries for those in their pre-retirement years, aged 50-64. The figure shows that the burden of disease, as measured by YLDs, is highest for the United States, Brazil, India and the Philippines. Jiangsu’s total disease burden is 127 per 1000 population and is relatively low due to lower than average YLDs for NCDs and communicable diseases.

Figure 4 Burden of disease by cause (YLDs per 1000) of those aged 50-64,

 Jiangsu and selected countries, 2013

Source: IHME (2016); Healthgrove (2017); VISES estimates.

As we have no published detailed data for YLDs for Jiangsu, we will use age-standardised death rates (per 100,000 people) for leading causes in China’s provinces as published in *The Lancet* (Maigeng Zhou, et al. 2016). As Zhejiang borders Jiangsu and has a similar economy (49.6% Tertiary, 46% Secondary and 4.3% Primary) to Jiangsu, we will use it as a comparator, as well as China.

Table 1A Age-standardised death rates for men (100,000 per people) leading causes, China and provinces, 2013

|  |  |  |  |
| --- | --- | --- | --- |
| Cause of death | Jiangsu | Zhejiang | China |
| Cerebrovascular disease | 151.8 | 113.4 | 188.9 |
| Ischaemic heart disease | 89.5 | 50.2 | 13.6 |
| COPD | 80.9 | 86.9 | 99.6 |
| Lung cancer | 54.2 | 60.7 | 60.1 |
| Liver cancer | 37.1 | 31.5 | 36.5 |
| Road injuries | 26.7 | 26.7 | 30.9 |
| Stomach cancer | 46.0 | 26.6 | 34.3 |
| Oesophageal cancer | 42.5 | 14.6 | 22.8 |
| Hypertensive heart disease | 16.2 | 11.2 | 22.0 |
| Alzheimer's disease | 23.2 | 30.8 | 24.2 |
| Lower respiratory infections | 12.2 | 21.3 | 22.0 |
| Chronic kidney disease | 9.3 | 9.2 | 14.0 |
| Colon & rectum cancer | 11.6 | 16.1 | 13.3 |
| Self-harm | 7.2 | 8.5 | 10.6 |

Source: Maigeng Zhou et al. (2016).

Cancers account for one third of the leading causes of death for men in Jiangsu. Lung cancer is the largest at 54.2 per 100,000 men, stomach cancer (46.0), oesophageal (42.5), liver (37.1), and colon and rectum cancer (11.6) (see Table 1A). Cerebrovascular disease is the leading cause of death for men in Jiangsu, this is followed by ischaemic heart disease, COPD, lung cancer, stomach cancer and oesophageal cancer. Jiangsu death rate is considerably lower than China’s for cerebrovascular disease, ischaemic heart disease, COPD and lung cancer, but significantly higher for stomach and oesophageal cancers. Zhejiang is considerably lower than Jiangsu for cerebrovascular disease, ischaemic heart disease, liver cancer and stomach cancer, but higher for COPD, lung cancer, Alzheimer’s disease and lower respiratory infections.

Table 1B Age-standardised death rates for women (100,000 per people) leading causes, China and provinces, 2013

|  |  |  |  |
| --- | --- | --- | --- |
| Cause of death | Jiangsu | Zhejiang | China |
| Cerebrovascular disease | 112.7 | 84.2 | 127.5 |
| Ischaemic heart disease | 62.9 | 38.7 | 95.1 |
| COPD | 48.7 | 55.5 | 61.9 |
| Lung cancer | 19.1 | 18.2 | 21.9 |
| Hypertensive heart disease | 14.6 | 11.8 | 18.9 |
| Alzheimer's disease | 17.9 | 19.0 | 18.3 |
| Lower respiratory infections | 9.0 | 18.0 | 16.4 |
| Stomach cancer | 18.6 | 9.9 | 13.3 |
| Liver cancer | 13.3 | 11.4 | 12.8 |
| Road injuries | 10.7 | 12.7 | 10.8 |
| Chronic kidney disease | 6.8 | 7.3 | 10.4 |
| Diabetes | 10.2 | 8.0 | 10.0 |
| Colon & rectum cancer | 7.9 | 11.0 | 9.0 |

Source: Maigeng Zhou et al. (2016).

Cancers also account for one third of the leading causes of death for women in Jiangsu. Lung cancer is the largest at 19.1 per 100,000 women, stomach cancer (18.6), liver (13.3), colon and rectum cancer (7.9) and breast cancer (5.6) (see Table 1B). Cerebrovascular disease is the leading cause of death for woman in Jiangsu, this is followed by ischaemic heart disease, COPD, lung cancer, Alzheimer’s disease and stomach cancer. The death rates for women are considerably less than those for men for similar diseases. For example, the death rate per 100,000 for men for cerebrovascular disease is 151.8, whereas for women it is 112.7; and similarly for ischaemic heart disease where for men it is 89.5, but only 62.9 for women. Deaths from cancer for women are also considerably lower for women than men. Generally, the death rates in Jiangsu for women are lower than for China, but higher than Zhejiang.

Figure 5, nonetheless, illustrates the twin problems of ageing and rising disease burden for Jiangsu. The disease burden rises sharply with age. For Jiangsu, the age adjusted burden at age 65 is about 178% higher than at age 45 for men and 114% higher for women at age 65.

Figure 5 disease burden by age and sex (YLLs per 100,000), Jiangsu, 2013

Source: Healthgrove (2017).

## Estimating Worker Attendance Costs of NCDs

### Modelling methodology

The modelling methodology is based on estimating the reduction in productive capacity due to the impact of ill health on the workforce as a result of asenteeism, presenteeism and early retirement.

The modelling of the impact of NCDs is undertaken for 13 NCDs listed in Table 1 that were identified as most relevant to reductions in labour force participation and productivity using the disease descriptions from the 2010 Global Burden of Disease study (Murray et al. 2012). The disabilty weight indicates the severity of each disease.

Table 2 Disability weights and absenteeism and presenteeism assumptions, twelve countries

|  |  |  |  |
| --- | --- | --- | --- |
| Disease | Disability weight | Per cent productivity loss due to absenteeism per employee per year | Per cent productivity loss due to presenteeism per employee per year |
| Ischemic heart disease | 0.13013 | 2.8 | 6.8 |
| Ischemic stroke | 0.30300 | 2.8 | 6.8 |
| Haemorrhagic and other non-ischemic stroke | 0.30300 | 2.8 | 6.8 |
| Diabetes mellitus | 0.09463 | 0.8 | 11.4 |
| Chronic obstructive pulmonary disease | 0.19667 | 6.1 | 17.2 |
| Asthma | 0.05600 | 5.0 | 11.0 |
| Migraine | 0.43300 | 4.5 | 20.5 |
| Tension-type headache | 0.04000 | 4.5 | 20.5 |
| Major depressive disorder | 0.23000 | 10.7 | 15.3 |
| Dysthymia | 0.11000 | 10.7 | 15.3 |
| Osteoarthritis | 0.09100 | 2.5 | 11.2 |
| Rheumatoid arthritis | 0.33733 | 2.5 | 11.2 |
| Neoplasm | 0.32150 | 7.0 | 8.5 |

Sources: Murray et al. (2012); Salomon et al. (2012); Goetzel et al. (2004).

To calculate the economic loss due to morbidity suffered by people in the labour force, one of the key aspects of the model is to quantify the impact of disease on labour force participation and on productivity at work. For this, we use estimates by Goetzel et al. (2004) on productivity loss due to absenteeism and presenteeism by disease fitted to the disease categories used in the modelling (Table 2). An extensive review of the literature in the various countries on these issues has been conducted for this project, but no better source of such estimates has yet been identified.

Multiplying the GDP per person in the labour force estimates by the loss in productivity from a disease, gives the estimated reduction in GDP per person attributable to a particluar disease. Multiplying this by the prevalence in the labour force of that disease, gives an estimate of the annual loss in GDP from that disease.

### Interpreting the estimates

The overall estimates of the GDP losses arising from deaths (from 2015 onwards) and from absenteeism and presenteeism from the prevalence of NCDs in the actual and potential workforce are summarised in Table 3.

In interpreting these estimates, it is important to note that they primarily reflect the pattern of ageing of the population of labour force age in the various countries, and the level of age standardised NCD mortality and non-fatal prevalence rates. In countries such as the United States, where ageing is well advanced, the cost by 2015 is already relatively high (5% of GDP) and the future growth in cost more limited. This in part reflects the fact that many of the costs of the interaction of ageing and NCDs are felt beyond the years of labour force age.

The economic cost to Jiangsu of these factors is also quite high, rising from 2.9% to 3.2% of GDP over the period 2015-2030. Its workforce is ageing at one of the highest rates (Figure 2).

Table 3 Estimates of percentage lost GDP from absenteeism and presenteeism, Jiangsu and selected countries, 2015 to 2030

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Country | Year | Absenteeism | Presenteeism | Total | Country | Year | Absenteeism | Presenteeism | Total |
| **Jiangsu** | 2015 | 0.80 | 2.06 | 2.86 | **Japan** | 2015 | 1.02 | 2.80 | 3.82 |
|  | 2020 | 0.83 | 2.15 | 2.98 |   | 2020 | 1.04 | 2.88 | 3.92 |
|  | 2025 | 0.85 | 2.25 | 3.10 |  | 2025 | 1.06 | 2.96 | 4.02 |
|  | 2030 | 0.88 | 2.36 | 3.23 |  | 2030 | 1.07 | 3.03 | 4.10 |
| **Brazil** | 2015 | 1.54 | 3.54 | 5.08 | **Malaysia** | 2015 | 1.39 | 3.14 | 4.53 |
|  | 2020 | 1.56 | 3.62 | 5.18 |  | 2020 | 1.41 | 3.21 | 4.62 |
|  | 2025 | 1.58 | 3.69 | 5.27 |  | 2025 | 1.44 | 3.30 | 4.74 |
|  | 2030 | 1.60 | 3.78 | 5.38 |  | 2030 | 1.47 | 3.41 | 4.88 |
| **China** | 2015 | 0.92 | 2.35 | 3.27 | **Philippines** | 2015 | 1.50 | 3.55 | 5.05 |
|  | 2020 | 0.95 | 2.45 | 3.40 |  | 2020 | 1.51 | 3.59 | 5.10 |
|  | 2025 | 0.97 | 2.55 | 3.53 |  | 2025 | 1.52 | 3.63 | 5.15 |
|  | 2030 | 1.00 | 2.66 | 3.66 |   | 2030 | 1.54 | 3.68 | 5.22 |
| **India** | 2015 | 1.33 | 3.29 | 4.62 | **Singapore** | 2015 | 0.95 | 2.25 | 3.20 |
|   | 2020 | 1.34 | 3.33 | 4.67 |   | 2020 | 0.96 | 2.33 | 3.29 |
|  | 2025 | 1.35 | 3.39 | 4.74 |   | 2025 | 0.97 | 2.37 | 3.34 |
|  | 2030 | 1.37 | 3.44 | 4.81 |   | 2030 | 0.97 | 2.42 | 3.39 |
| **Indonesia** | 2015 | 1.37 | 3.18 | 4.55 | **USA**  | 2015 | 1.46 | 3.52 | 4.98 |
|   | 2020 | 1.38 | 3.25 | 4.63 |   | 2020 | 1.46 | 3.55 | 5.01 |
|   | 2025 | 1.40 | 3.31 | 4.71 |   | 2025 | 1.47 | 3.58 | 5.05 |
|   | 2030 | 1.41 | 3.37 | 4.78 |   | 2030 | 1.48 | 3.60 | 5.08 |

Source: VISES estimates.

## Impact of Ill Health on the Ability to Work

Ill health prevents some people from working, and others are restricted in the amount of work they can undertake. In developed countries, such as the US and Australia, there are well developed systems for both recognising the impact of ill health on the ability to work and providing income support commensurate with the level of disability. Most developing countries also have systems and processes for identifying and supporting those in need arising from ill health, but they are more restrictive than those available in the developing countries.

Rasmussen et al. (2015a, 2015b) provide a discussion of the different definitions of disability adopted by different countries and their impact on the estimated size of the disabled populations. Overall, the implications of these different definitions have been to underreport the size of disabled populations in many developing countries. The methodology adjusts for these differences using the results of the Global Burden of Disease study referred to earlier in this report.

## The Economic Loss Due to Early Retirement

The best data we have about the behaviour of early retirees is from two surveys conducted in Australia, the Survey of Disability, Ageing and Carers (SDAC) and the Retirement and Retirement Intentions Survey. The SDAC provides details about those with disability by age, their sources of income and extent of disability. From this, we gain a lot of information about the prevalence of disability by degree of impairment by age. The Retirement and Retirement Intentions Survey provides data by age about the reasons for retirement, including due to ill health. To the extent that we have been able to cross reference this against US data, the key parameters seem to be similar. In addition, we have obtained unpublished data about Australian disability pension recipients.

Our modelling assumes that the decision to retire due to ill health is based on the impact of the relative morbidity of the 50-64 age group, measured in DALYs, in each of the selected countries.

There is very little data from the relevant countries with the necessary detail to model economic loss, so we used parameters drawn from the Australian data, which we adjusted where we could to the circumstances of the particular selected country. For instance, in arriving at the proportion of the population aged 50-64 who were disabled according to the international WHO/World Bank definition, we used the Australian proportion (the US proportion was very similar) adjusted for country-specific disease burden sourced from the Global Burden of Disease study. A proportion based on Australian experience of these was estimated to have retired.

In essence, the economic loss is equal to those in early retirement multiplied by the average GDP per worker for each of the selected countries. This is projected to 2030 using the UN population projections for each country for those aged 50-64. The results are shown for 2015 through to 2030 in Figure 6. Given the complexity of the trends in risk factors, the age adjusted disease burden rate is assumed to be constant over the projection period.

Figure 6 Economic cost of early retirement, Jiangsu and selected countries, 2015 to 2030

Source: VISES estimates.

The projections are largely driven by the ageing process, in particular the proportion for each country in the 50-64 age group and by the size of the burden of NCDs. This places Jiangsu in the top-end range of the comparator countries, and with a loss increasing more quickly compared with Japan, Indonesia and Malaysia and China. Clearly, the mature economies of Japan and United States have significant losses also due to early retirement due to ill health; it is the relatively high rate of increase for Jiangsu, China and Japan shown in Figure 7 that is a cause for concern.

Figure 7 Change in economic cost of early retirement, Jiangsu and selected countries, 2015 and 2030

Source: VISES estimates.

## Conclusions from the Analysis

Although Jiangsu currently has a low level of disease burden due to NCDs, the rapid aging of its population, especially the substantial increase in the proportion of its workforce age 50-64, is expected to result in a significant increase in the economic impact of absenteeism, presenteeism and illness-related early retirement from 5.3 per cent of GDP in 2015 to 6.3 per cent by 2030.

It is clear that with time, most of the developing and middle income countries will have an increasing proportion of their workforce entering the older age groups where the burden of NCDs is much higher. Of the countries included in this study, Jiangsu can expect to have a rapidly ageing work force. Without greater attention to improved health behaviours, its work force will become less healthy and more subject to absenteeism, presenteeism and early retirement.

Overall, modelling undertaken for this study (summarised in Table 3 above) has indicated that the economic costs of absenteeism and presenteeism range from 3-5% of GDP by 2030 and 2-3% of GDP for early retirement due to ill health, taking productivity impact to 6-8 % of GDP. Jiangsu, at 6.3% in 2030, will be among those countries to have increased most rapidly with an increase of about 1.0 percentage points (see Figure 8). This is largely due to the relatively higher proportion of its work force in older age and increasing levels of chronic disease with age.

**Table 4 Total economic impact of absenteeism, presenteeism and early retirement**

|  |  |  |
| --- | --- | --- |
|  | 2015 | 2030 |
|  | Early retirement due to ill health | Absenteeism + presenteeism | Total absenteeism + presenteeism + early retirement | Early retirement due to ill health | Absenteeism + presenteeism | Total absenteeism + presenteeism + early retirement |
| Jiangsu | 2.4% | 2.9% | 5.3% | 3.1% | 3.2% | 6.3% |
| China | 2.1% | 3.3% | 5.4% | 2.8% | 3.7% | 6.5% |
| Brazil | 2.2% | 5.1% | 7.3% | 3.0% | 4.5% | 7.5% |
| India | 2.5% | 4.6% | 7.1% | 2.9% | 4.8% | 7.7% |
| Indonesia | 1.9% | 4.6% | 6.5% | 2.4% | 4.8% | 7.2% |
| Japan | 3.2% | 3.8% | 7.0% | 3.9% | 4.1% | 8.0% |
| Malaysia | 1.7% | 4.5% | 6.2% | 2.0% | 4.9% | 6.9% |
| Philippines | 2.4% | 5.1% | 7.5% | 2.6% | 5.2% | 7.8% |
| Singapore | 2.2% | 3.2% | 5.4% | 2.3% | 3.4% | 5.7% |
| USA | 3.5% | 5.0% | 8.5% | 3.1% | 5.1% | 8.2% |

Source: VISES estimates.

**Figure 8 Change in % GDP total absenteeism + presenteeism + early retirement, 2015-30**

Source: VISES estimates.

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