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The turnaround in Philippine growth: From disappointment to promising success☆

Jesus Felipe[a], Gemma Estrada[b], Matteo Lanzafame[b]

[a] Asian Development Bank and School of Economics, De La Salle University, Philippines
[b] Asian Development Bank, Philippines

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ABSTRACT

Philippine actual growth performance has improved during the last two decades. We obtain potential growth rate estimates for 1959-2019 using Kalman filter estimation of Okun's law. We find that potential growth has been increasing since the mid-1990s. It reached 6.1% in 2017-2019, the highest during the last six decades. As the trend labor force growth displays a downward trend, potential labor productivity growth has accounted for most of the country's potential growth rate recently. A decomposition of labor productivity growth shows that within-sector productivity growth accounted for 79% of overall labor productivity growth during 2009-2019. Most of the within-sector effect is due to manufacturing productivity growth. Analysis of the robust determinants of potential labor productivity growth using Bayesian Model Averaging indicates the relevance of proxy variables of both within-sector and reallocation effects, as well as of policy uncertainty.

1. Introduction

Since the late 1970s, the Philippines has been labeled the "sick man of Asia." While its East and Southeast Asian neighbors achieved very high growth rates and economists referred to their performance as the East Asian Miracle (Birdsall et al., 1993), the Philippines attained much lower growth rates and was trapped in a loop of political crises and policy mistakes (Pritchett, 2003).[1] During the 1980s and 1990s, the country went through boom-bust cycles of growth and recessions, dimming the prospects for sustained growth (Lim and Montes, 2000; Balisacan and Hill, 2003). Past studies of the Philippines found that initial economic conditions, including the stock of human capital and inequality in land distribution, significantly affected its subsequent economic growth. The lack of a competitive political system was also viewed as one of the major contributing factors to the nation's poor economic performance (Balisacan and Fuwa, 2003, 2004; Balisacan et al., 2004).

However, it is difficult not to acknowledge that, before the deep recession caused by COVID-19 in 2020 (when gross domestic product (GDP) growth fell by 9.51%), the recent growth performance of the Philippines had been quite impressive for its own historical standards as well as relative to that of other Asian countries (Clarete et al., 2018). Not only did the Philippines achieve continuous growth for 20 years, but the pace of growth also picked up. Indeed, during 2010–2019, the country posted an average GDP growth rate of 6.4%, up from 4.5% annual growth during 2000–2009, and much higher than the 2.5% average growth posted during 1980–1999 (Fig. 1). This is a clear improvement with respect to the anemic growth rates of the past. Moreover, over 2010-2019, Philippine growth was consistently faster than those of Indonesia, Malaysia and Thailand, and gradually approached – and in some years outpaced – China's.

It is in this context that the Philippines' excellent performance is a very interesting growth case study. In this paper, we analyze

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[1] It should be recalled that three Southeast Asian neighbors were part of the list of high-performing Asian economies by Birdsall et al. (1993), while the Philippines was left out of the group. The eight high-performing Asian economies in the Birdsall et al. (1993) study were Hong Kong, Indonesia, Japan, Republic of Korea, Malaysia, Singapore, Taiwan, and Thailand.

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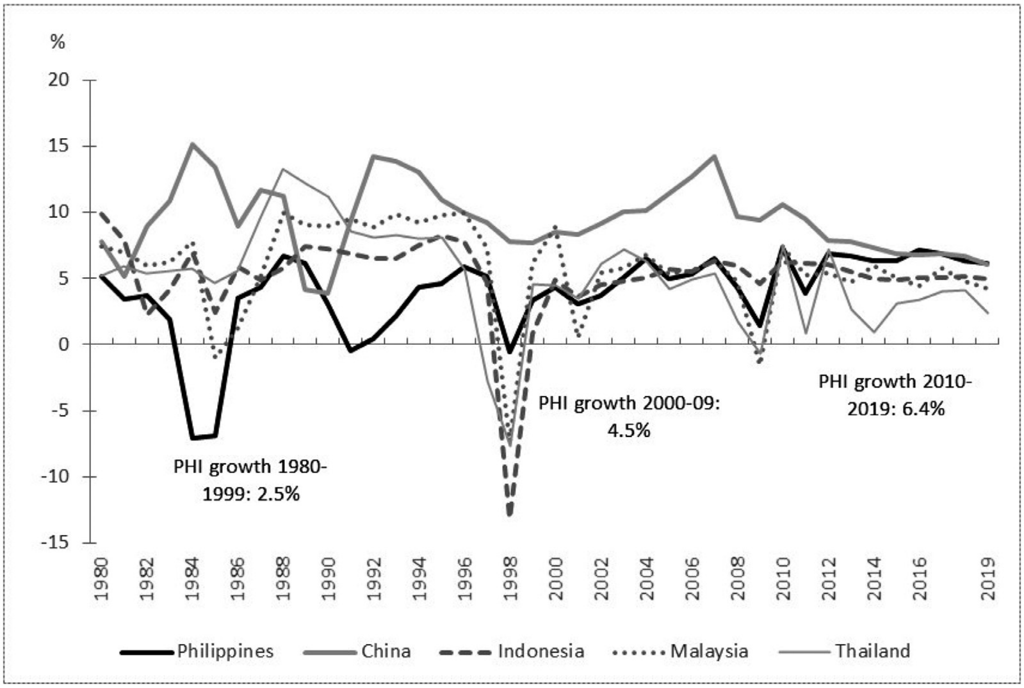

Fig. 1. Gross Domestic Product Growth
PHI = Philippines.
Sources: CEIC Data Company (accessed 20 June 2021); World Bank, World Development Indicators. http://databank.worldbank.org/data/home.aspx (accessed 30 May 2020).

the reasons behind the increase in *actual* growth by estimating and examining the country's *potential* growth rate, that is, the maximum sustainable growth rate that technical conditions allow. Since actual growth cannot persistently deviate from its potential in the long-term, the Philippines' improved growth performance ought to be reflected in higher sustainable growth. Our approach aims at estimating this underlying potential growth rate and investigating its determinants, thus providing a direct appraisal of the Philippines' newfound growth momentum.[2,3]

The rest of the paper is structured as follows. Section 2 provides some background. In Section 3, we review Okun's Law, which we use to estimate potential growth. In Section 4, we provide time-varying estimates of the Philippines' potential growth rate for 1959-2019. This is done combining Harrod's notion of the natural growth rate with Okun's Law and using the Kalman filter estimation procedure and taking into account the possible endogeneity of the change in the unemployment rate. In this section we also test whether actual and potential growth differ and conclude that they do not. We next examine why potential growth has increased using two complementary approaches. First, in Section 5 and following Harrod's (1939) notion of the natural growth rate, we analyze the contributions of labor force growth and productivity growth to potential (or natural) growth. Since we estimate first potential growth and derive trend labor force growth, we refer to the difference between the two as *potential* labor productivity growth (different from actual labor productivity growth). This way we preserve Harrod's definition of the natural (potential) growth rate as the sum of potential labor productivity growth plus trend labor force growth. Given that we find that much of the increase in potential growth in recent years was due to rising potential labor productivity growth, we examine the sources of labor productivity growth through a decomposition into within-sector and reallocation effects. We conclude that the within-sector effect considerably outweighs labor reallocation as a driver of labor productivity growth. Second, in Section 6 we undertake a Bayesian Model Averaging exercise to analyze the determinants of potential labor productivity growth. We find that potential labor productivity growth is significantly associated with the economic complexity index, and with the growth rate of gross fixed capital formation. Likewise, and to the extent that labor reallocation matters, it is when labor moves to manufacturing, as reflected in the positive association between potential labor productivity growth and changes in the manufacturing employment share. There is also evidence that the average gap between actual and potential growth during the past five years, and the mean inflation rate of the last five-years are robust determinants of potential labor productivity growth. Section 7 concludes.

2. Background

What is remarkable about the Philippines' growth performance is that it improved just when, as argued by Rodrik (2012) in a much-debated op-ed, the age of growth miracles – a period of rapid economic growth exceeding expectations – was coming to an end. Likewise, Pritchett and Summers (2014) note that abnormally rapid growth is rarely persistent. The lack of persistence in country growth rates implies that current growth is not a good predictor of future growth. It also means that rapidly growing countries cannot post unusually high growth, or much higher than the world average growth of 2% plus 2% standard deviation, for extended periods.

[2] Pritchett (2003, p.125; italics added) argued that: "…The Philippines is an example of a failed shift in policies and institutions, where at an already quite high level of income, the Marcos regime *failed to keep potential income ahead of actual, and so growth slowed, then stalled*. The democratic governments since have not been able to create a credible alternative set of policies and institutions that would kick off a growth boom to a higher level of income."

[3] Note, however, that, while providing substantial evidence on the evolution of potential growth in the Philippines and its determinants, the approach adopted in this paper does not enable valid causal statements. Our study is not on causality *per se*.

Table 1
Selected Macroeconomic Indicators.

	1970-1979	*1980-1989*	*1990-1999*	*2000-2009*	*2010-2019*
Growth and Investment					
Actual GDP growth, %	5.73	2.11	2.81	4.54	6.41
Gross fixed capital formation growth, %	9.06	1.92	3.45	5.04	11.05
Gross fixed capital formation, % of GDP	21.76	22.31	22.57	18.67	22.83
Macroeconomic Stability					
GDP growth, SD	1. 79	4.97	2.33	1.55	0.98
Consumer price inflation, %	14.55	15.63	9.23	4.65	3.02
Consumer price inflation, SD	8.49	13.71	4.09	1.85	1.40
Infrastructure and Technology					
Mobile cellular subscriptions (per 100 people)	-	-	1.07	41.84	113.30
Electric power consumption (kWh per capita)	308.24	344.03	399.90	557.04	664.96
Human Capital					
Secondary school enrollment, % gross	55.01	65.75	74.67	81.11	86.70
Tertiary school enrollment, % gross	18.35	25.73	27.14	28.87	32.70
Trade and external debt					
FDI, % of GDP	0.51	0.57	1.83	1.35	1.83
Manufacturing exports, % of goods Exports	13.06	25.33	65.16	88.14	76.52
Economic complexity index	-0.36	-0.22	-0.16	0.02	0.31
Short-term external debt to foreign reserves, %	130.03	493.69	94.95	28.12	18.71
Finance and Banking					
Bank assets, % of GDP	28.57	29.22	42.45	46.63	53.13
Financial system deposits, % of GDP	17.07	21.76	39.58	50.91	59.59

FDI = foreign direct investment, GDP = gross domestic product, kWh = kilowatt-hour, SD = standard deviation.
Note: Data for tertiary enrolment and economic complexity index are only until 2017, and electric power consumption until 2014.
Sources: Authors' estimates based on data from CEIC Data Company and World Bank's World Development Indicators (accessed 6 June 2021); Simoes and Hidalgo (2011).

Growth miracles, particularly in Asia, have almost always been driven by labor-intensive, manufacturing, and export-led growth. The conditions to generate such a growth process are harder to meet in the new global economy, due to changes in manufacturing technologies and the global context. Skill-biased technological progress has reduced job creation in manufacturing, resulting in an increasing share of employment in less-productive service activities. Moreover, globalization and the associated rise in competition on world markets (e.g., the rise of China as a manufacturing power) have made industrialization much more difficult for newcomers to achieve fast growth via exports (Felipe and Mehta, 2016; Felipe et al., 2018).

Against this background and after decades of economic underperformance vis-à-vis its regional neighbors, the country's prospects improved significantly since the early 2000s, as the economy entered a phase of sustained high growth, transcending the boom-bust cycle years of the past. Such a performance represents a significant achievement for the Philippines, whose growth rate lagged those of its neighbors for most periods over the past several decades.[4] Though not miraculous, an annual growth rate averaging 6 percent over the 2010s does suggest that the Philippines has entered a new *growth momentum*. What has changed?

In his analysis of the Philippines, Pritchett (2003) argued that the growth stagnation that ran from the mid-1980s to the 1990s could not be attributed to commonly cited causes of growth failures. Specifically, he reasoned that the growth stagnation after the transition to democracy in the second half of the 1980s could not be attributed to either an excessive appreciation of the exchange rate (indicating a decline in price competition and potential macroeconomic disequilibria), or fiscal imbalances – as both were not drastically different from those between the 1960s and early 1980s. Neither was anemic growth due to poor human capital accumulation, as the total years of schooling per-capita increased from 4.7 in 1971 to 7.9 in 2000.

Table 1 shows that the country experienced an improvement in several macroeconomic indicators during the 2000s and 2010s. Indeed, these two decades were marked by higher investment growth, improvement in access to technology and infrastructure, and education. On trade, the country has moved away from traditional agricultural exports toward more manufactured exports, as well as toward more complex and sophisticated goods.

Table 1 also shows that the Philippines has made substantial progress on measures associated with macroeconomic stability. For example, the volatility of actual GDP growth, measured by its standard deviation, declined in the 2000s and 2010s compared to that during previous decades. Likewise, the inflation rate softened from an average of 16% in the 1980s to just around 5% in the 2000s, and further down to 3% in 2010-2019. Along with that was a drop in the volatility of the inflation rate. External vulnerability appears to have declined as well, as the ratio of short-term external debt to foreign reserves dropped from a staggering 500% in the 1980s to just 19% in 2010-2019. Average bank assets and financial system deposits as a proportion of GDP doubled from the 1980s to the 2010s, which suggests a more stable financial system. Some of these variables may be candidates to explain the country's improved performance.

The country has also reformed substantially. Some of the major policy reforms by the past and present Philippine administrations are listed in Table A1 in Appendix A. In the 1950s, economic policies were marked by preference of Filipino businesses over foreign-owned ones, the imposition of high tariffs to protect domestic industries, and an agricultural land reform. The latter part of the decade was characterized by actual growth rates of around 5% on average, which were sustained throughout the 1960s and the 1970s amid continued land reform, lifting of foreign exchange controls, and the provision of incentives to capital-intensive and pioneer industries. However, worsening political crises in the first half of the 1980s took a heavy toll on the economy, with growth remaining tepid despite policy reforms, which consisted of promotion of foreign investments, deregulation of the oil industry, and liberalization of the retail industry, among others.

[4] Our naïve assessment today is that if the Philippines had attained the current growth rates during the late 1980s and early 1990s, and avoided the crises, Birdsall et al. (1993) *may have* included it as part of the high-performing group. Excluding 1981-1985, a period of economic turmoil in the Philippines, economic growth in the country during 1960-1990 averaged 5.1%.

The Philippines has implemented additional policy reforms since 2000. Among the major reforms of this period are the restructuring of the electric power industry, the creation of a competition commission, banking sector regulations, and taxation policies. While growth clearly improved during this period it is hard to ascertain whether this increase can be attributed to the reforms that have been recently put in place, or to the cumulative effects of reforms over the past several decades. Possibly, the increase in growth cannot be ascribed to the impact of a single policy but, if this were the case, to the gradual impact of a series of reforms. [5]

From the standpoint of the more direct determinants of growth, it has been documented that the Philippines' recent good performance has been service-based, and also the result of accelerating manufacturing productivity growth and transition to more skilled-intensive products and exports (Qian et al., 2018).[6] Still, the overall contribution of manufacturing remains much smaller than that of services, whose contribution to GDP growth averaged around 60% during 2010–2019.

3. Okun's law and potential growth: estimation framework

We use Okun's Law to derive estimates of potential growth. While the literature provides different versions of Okun's Law, this paper uses a standard specification because it facilitates the implementation of the time-varying estimation approach adopted in the paper.[7]

In his seminal paper, Okun (1962) was concerned with the question of how much output an economy could produce under conditions of full employment. He addressed it relying on a linear specification for the short-run relationship between the change in the unemployment rate ($\triangle U$) and output growth ($\hat{Y}$):

$$\Delta U = \alpha - \beta \hat{Y} \tag{1}$$

where β is the 'Okun coefficient', which quantifies the impact of growth on unemployment. Since Okun's original paper and application to the United States, many studies have confirmed the robustness of Okun's Law (e.g., Ball et al., 2017; Moosa, 1997; Perman and Tavera, 2005; Li and Mendieta-Muñoz, 2020).

In Okun's original paper, Eq. (1) appeared not as a structural model but as a reduced-form equation. He assumed that shifts in aggregate demand cause movements in output, which in turn drive fluctuations in the labor market: firms hire and fire workers to accommodate output changes, and these actions affect unemployment. This Keynesian view of Okun's relationship posits that, in order to obtain a certain reduction in unemployment to achieve an unemployment target, growth should be above its trend by a certain magnitude. A different interpretation of Okun's Law is based on the concept of the nonaccelerating inflation rate of unemployment, which considers an economy as having a supply capacity limit. If the economy grows significantly above its potential, unemployment will eventually fall below the natural rate, and inflationary pressures will develop.

Ball et al. (2017) derive Okun's law from two relationships: the effect of changes in output on changes in employment, and the effect of changes in employment on changes in unemployment. Likewise, Mendieta-Muñoz and Li (2020) derive Okun's Law from a growth model that combines a production function that incorporates the direct effect of changes in the unemployment rate on output and the indirect effects on output through changes in hours worked and capacity utilization, with a labor market characterized by a wage-setting equation. This formulation allows to calculate the long-run growth rate associated with technical progress by separating the effects derived from movements in the rate of growth of the labor force. [8]

Potential growth is the maximum sustainable growth rate that technical conditions allow. Harrod (1939) is probably the first formal reference in the literature to the idea of an economy's full-employment growth rate. He defined the natural rate of growth ($\widehat{NGR}$) as the rate that is allowed by the growth rate of population and technical progress. Formally, it is the sum of the growth rates of labor force ($\widehat{LF}$) and labor productivity ($\widehat{y}^P$) (i.e., Harrod-neutral technical progress):[9]

$$\widehat{NGR} = \widehat{LF} + \widehat{y}^P \tag{2}$$

The natural growth rate sets the ceiling to explosive growth (turning cyclical booms into slumps) and gives a measure of the growth rate around which the economy will gravitate in the long run. At any particular point in time, actual growth ($\widehat{Y}$) can (and will) diverge from the natural growth rate ($\widehat{NGR}$), as the functioning of the economy is affected by various restrictions, rigidities, and constraints. Nonetheless, actual growth cannot persistently exceed the rate consistent with the full utilization of productive resources, as this would eventually result in unemployment falling below its natural rate and thus growing inflationary pressures. With wages rising relative to the price of capital, the economy would adopt more capital-intensive techniques, unemployment would rise again to the rate consistent with full employment and growth would converge to the natural rate.

On the other hand, if actual growth were consistently below the natural growth rate, the resulting rising unemployment would trigger an opposite price adjustment process—decreasing wages would in due course lead to higher employment through the adoption of more labor-intensive production techniques, until equilibrium in the labor market is achieved, and the actual and natural growth rates are brought into line.

As a result, in the medium to long term, the economy will tend to gravitate around that particular growth rate consistent with the full utilization of productive resources, stable inflation, and full-employment equilibrium in the labor market. This rate is the natural or potential growth rate.

Given this, note that when actual growth is equal to potential growth, employment is growing at the same rate as the labor force. This means that the $\widehat{NGR}$, or potential growth ($\widehat{Y}^P$), *is the growth rate that keeps the unemployment rate constant*, i.e., $\triangle U$=0. Therefore, this implies that one can obtain a measure of potential growth from Eq. (1), Okun's Law, as:

$$\hat{Y}^p = \left(\frac{\alpha}{\beta}\right) \tag{3}$$

The problem with this estimate is that labor hoarding by firms during recessions will lead to a downward-biased estimate of β, and hence an overestimate of the potential growth rate. At the same time, periods of low or negative growth will discourage participation in the labor market, including dropping out from the labor market, thus biasing the estimate of α. Given the likely opposite impacts of the two scenarios on potential growth, it is difficult

[5] Hausmann et al. (2004) found that most instances of economic reform across the world do not produce growth accelerations.

[6] The Philippines did not have the industrial policy programs that its East Asian neighbors implemented, and which likely contributed to the fact that they had much larger manufacturing sectors.

[7] Ball et al. (2017), for example, estimated Okun's Law through the relationship between the employment gap and output growth, as well as between the labor force gap and output growth.

[8] Prachowny (1993) and Daly et al. (2012) derive the relationship from a production function in which employment determines output. In this case, the relationship is reversed, i.e., the growth of output appears on the left-hand side of the equation.

[9] Note the notation and concepts we use. Since we will estimate the natural (potential) growth rate and we will use trend labor force growth rate, potential labor productivity growth is derived residually as the difference between these two, to make sure left and right-hand sides of the definition in equation (2) are equal. This means that the derived (potential) labor productivity growth ($\widehat{y}^P$) will not be equal to actual labor productivity growth.

to gauge the net effects (Thirlwall, 1969). Thirlwall (1969) proposed a possible solution to partially overcome these biases, based on estimating the reverse equation, that is:

$$\hat{Y} = \gamma - \delta \Delta U \quad (4)$$

Hence, a non-changing unemployment rate, $\triangle U$=0, implies

$$\hat{Y}^p = \gamma \quad (5)$$

In Mendieta-Muñoz and Li's (2020) model, γ is the sum of the growth rates of the labor force and technical progress; and δ is a function of the actual employment rate, the elasticity of hours worked with respect to the capacity utilization rate, the elasticity of output with respect to labor employment, the elasticity of real wages with respect to the employment rate, and the elasticity of substitution between labor and capital.

In what follows, we obtain time-varying estimates of the Philippines' potential growth rate over 1959-2019, relying on a state-space version of Eq. (4).[10] Our state-space model consists of a signal equation and two state equations. The signal equation is a version of the reverse Okun Eq. (4) with time-varying parameters:

$$\hat{Y}_t = \gamma_t - \delta_t \Delta U_t + \nu_t \text{ with } \nu_t \sim iid\ N\left(0, \sigma_\nu^2\right) \quad (6)$$

where $\widehat{Y}_t$ is the actual GDP growth series, γ_t is the time-varying potential growth rate ($\widehat{Y}_t^p$), $\triangle U_t$ is the change in the unemployment rate, and ν_t is the noise, independent and identically distributed.

In what follows, we use the terms and notation for the potential growth rate ($\widehat{Y}_t^p, \gamma_t$) and natural growth rate ($\widehat{NGR}$) interchangeably.

Following the standard procedure in the literature on state–space modelling (e.g., Harvey, 1989), to capture possible level breaks or trend patterns the state equations are modeled as unit roots:

$$\gamma_t = \gamma_{t-1} + w_t \text{ with } w_t \sim iid\ N\left(0, \sigma_w^2\right) \quad (7)$$

$$\delta_t = \delta_{t-1} + \epsilon_t \text{ with } \epsilon_t \sim iid\ N\left(0, \sigma_\epsilon^2\right) \quad (8)$$

where γ_t and δ_t are unobservable state vectors, while w_t and ϵ_t are i.i.d. noise components.

To pin down the value of the potential growth rate, the model is estimated via the Kalman smoothing procedure. This procedure differs from the Kalman filter in the construction of the state series, as the latter technique uses only the information available up to the beginning of the estimation period. Smoothed series tend to produce more gradual changes than filtered ones and, as discussed by Sims (2001), they provide more precise estimates of the actual time variation in the data.

In addition, Kim (2006) showed that conventional Kalman estimation of a time-varying parameter model leads to invalid inferences in the presence of endogenous regressors. Therefore, we estimate the model taking account of the potential endogeneity of $\triangle U_t$ relying on the two-step instrumental variable (IV) procedure proposed by Kim (2006) and Kim and Nelson (2006). In the first step, the model in Eqs. (6)-(8) is estimated by instrumenting ΔU_t with appropriate instrumental variables.[11] Then we retrieve the standardized one-step-ahead forecast errors ($\nu_t^* = \nu_t/\sigma_\nu^2$). In the second step, ν_t^* is introduced in the model as a correction for the endogeneity bias—a statistically significant coefficient (ρ) on ν_t^* confirms the endogeneity of $\triangle U_t$.

Table 2
Estimation results model (6)-(8).

	Estimate	Std. Error	Prob.
δ	-0.136	0.091	0.133
ρ	1.584	0.109	0.000
σ_ν^2	-1.307	0.283	0.000
σ_w^2	-2.099	0.692	0.002
Log likelihood	-230.472		

Source: Authors.

To ensure correct statistical inference (see, for example, Kim and Nelson, 1999; Li and Mendieta-Muñoz, 2020), we perform specification tests of homoskedasticity, normality and serial correlation on ν_t^*. Results from these tests, as well as estimates of the innovation variances (σ_ν^2, σ_w^2 and σ_ϵ^2), indicate that the most appropriate version of the state-space model (6)-(8) includes impulse dummy variables to take account of the deep recession in 1984-1985, and specifies the inverse Okun coefficient as constant (δ), rather than time-varying (δ_t). As reported in Table B1 in Appendix B, the standardized one-step-ahead forecast errors from this specification are well-behaved.

4. The Philippines' potential growth rate: estimation results

Table 2 reports the results from the second-step estimation of the selected version of the state-space model in (6)-(8), including the innovation variances σ_ν^2 and σ_w^2. It is worth noting that the inverse Okun coefficient δ enters with the expected negative sign and is significant at around 85% confidence level. Moreover, the coefficient on the bias-correction term ρ is strongly significant – indicating that conventional Kalman estimation would return biased estimates due to the endogeneity of $\triangle U_t$.

Fig. 2 displays the time-varying estimates of γ_t with the associated 95% confidence interval. It shows that the time-varying potential growth rate is fairly precisely estimated. It shows that the time-varying potential growth rate is fairly precisely estimated. Potential growth declined for almost 15 years between the late 1970s and the early 1990s (by close to three percentage points), before embarking on a clear upward trend since the early 1990s, reaching a record-high of 6.1% in 2017-2019.

To better assess the path followed by potential growth in the Philippines, Fig. 3 shows the actual growth rate together with the estimated time-varying potential growth rate (γ_t). It shows that actual growth is higher than potential growth in 32 out of the 61 years, with an average gap of 1.3 percentage points. During the 29 years of lower actual than potential growth, the average gap is 2.0 percentage points (the largest gap was in 1984, 11.6 percentage points). It is worth noting that during 2012-2019, the economy operated close to or above potential growth. Actual growth in 2017-2019 was close to half a percentage point above potential growth.

Examining the components of the time-varying potential growth rate allows us to identify what is driving the recent increase in potential growth. Recall that, as specified in Eq. (2), the potential or natural growth rate is the sum of labor productivity

[10] Data on the unemployment rate in the Philippines are collected from labor force surveys, which have undergone two major revisions in the period of analysis. One was the change in coverage, from persons 10 years old and above for 1956–1975, to persons 15 years old and above afterwards. A second revision in 2005 affected the definition of unemployment. In the new definition, the unemployed include persons 15 years old and above who are: (i) without work; (ii) currently available for work, i.e., were available and willing to take up work during the reference period, and/or would be available and willing to take up work; and (iii) seeking work. The additional definition is item (ii).

[11] Following Li and Mendieta-Muñoz (2020), we considered various combinations of lags of ΔU_t, $\widehat{LF}$ and ($\hat{Y}_t - \widehat{LF}$) as possible instruments. These lags reflect relevant characteristics of the labor market and can be considered as exogenous with respect to the current existent relationships. Based on the outcome of tests for the joint significance of the instruments, the first step estimation was performed using the first lag of $\widehat{LF}$ as instrument for ΔU_t. Note that, since we are dealing with a single possible endogenous regressor, the weak instruments test was performed relying on the first-stage F-statistic—corresponding to the Cragg and Donald (1993) F-statistic—and the relevant critical values in Stock and Yogo (2005).

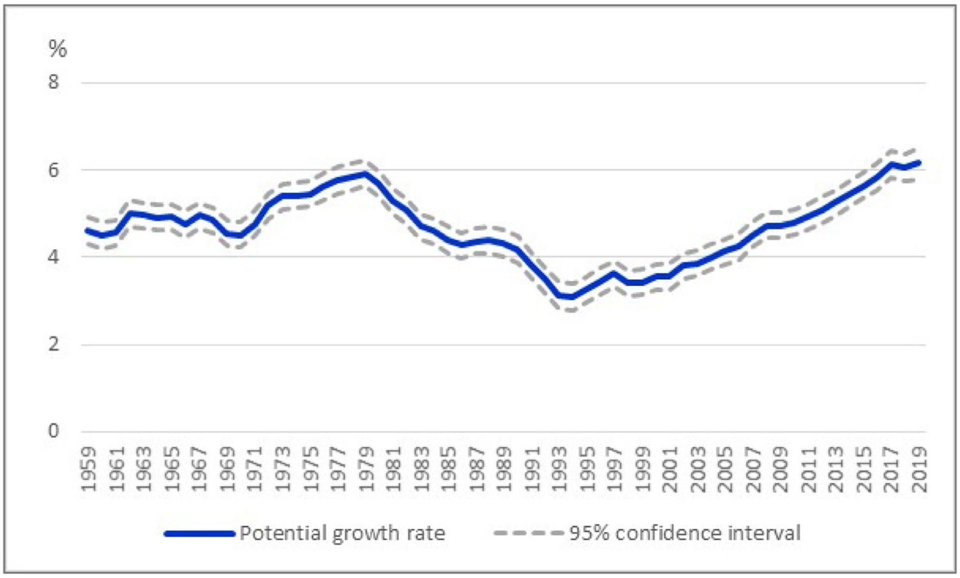

Fig. 2. Estimate of the time-varying potential growth rate γ_t (%).
Source: Authors' estimates.

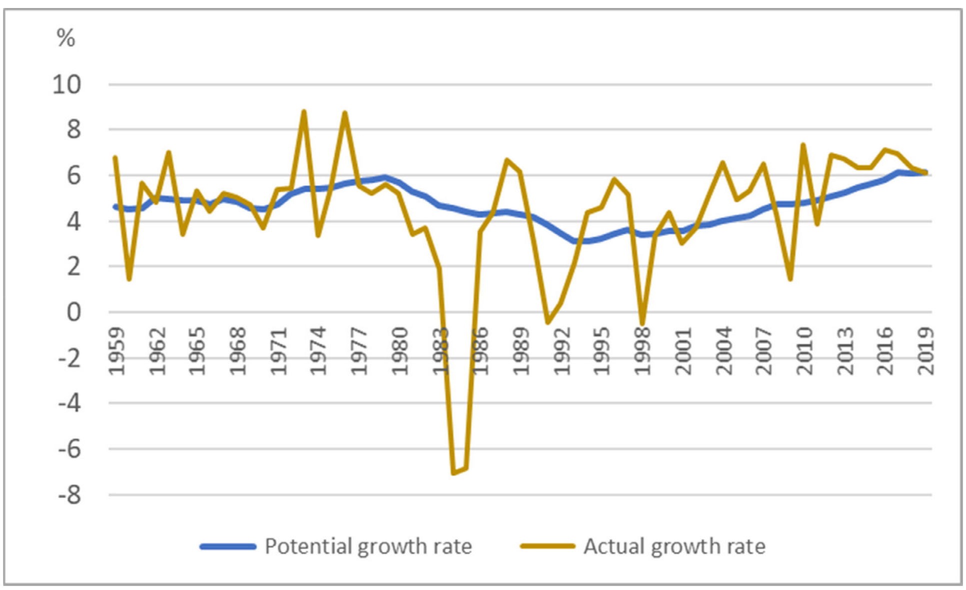

Fig. 3. Actual versus Potential Growth.
Source: Authors' estimates.

growth and labor force growth. To smooth out short-term variation, the impact of labor force growth is measured via the trend labor force growth rate obtained also from the Kalman filter.[12] Consequently, the contribution of labor productivity growth, i.e., the implied potential labor productivity growth rate ($\hat{y}^P$), is derived as the difference between the time-varying potential (or natural) growth rate and trend labor force growth (i.e., $\hat{y}^P = \widehat{NGR} - \widehat{LF}$). This is shown in Fig. 4.

Estimates of the components of Eq. (2) are shown in Fig. 5. Trend labor force growth has declined from about 3.0% per annum during 1959-1980 to about 2.2% per annum during 2010-2019. Implied labor productivity growth peaked at 3.0% in 1979 and then started declining. This is the period of high institutional uncertainty that Pritchett (2003) refers to (a precise definition of this concept is provided in Section 6). Potential labor productivity growth has gradually increased since the mid-1990s, and since 2008 it has consistently outpaced trend labor force growth. As a result, most of the increase in potential growth in recent years is due to labor productivity growth which, for instance, accounted for about 60% of potential growth during 2010–2019.

Finally, Fig. 6 shows both actual and potential (implied) labor productivity growth. Given how the latter has been derived, it is a much smoother series than actual labor productivity growth.

4.1. Does actual growth systematically differ from potential growth?

We test now the null hypothesis that the Philippines' actual growth rate does not diverge from its potential growth rate, or that the difference between the actual and potential growth rates (Gap_t) is not significantly different from zero: $\hat{Y}_t - \hat{Y}_t^P = Gap_t = 0$. In addition to the actual gap, we also examine whether the cumulative gaps ($CGap_t$) tend to zero. Since theory indicates that actual growth cannot diverge from potential growth in the long run, the

[12] See Rummel (2015).

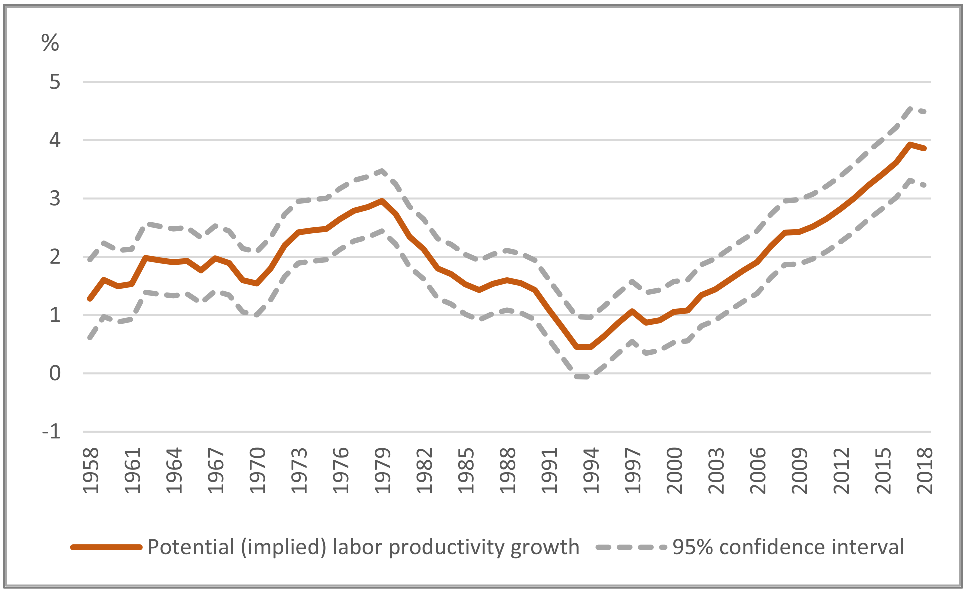

Fig. 4. Potential Labor Productivity Growth.
Source: Authors' estimates.

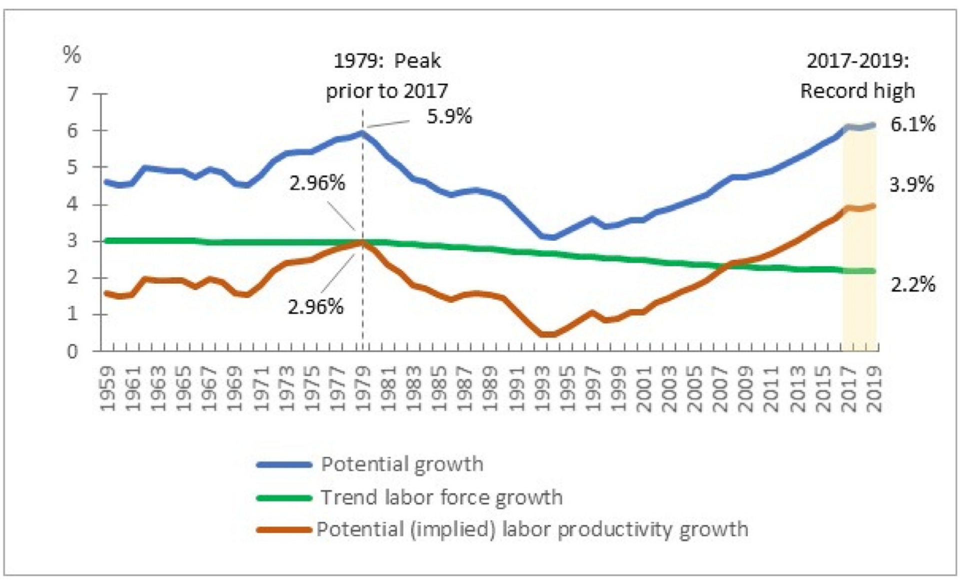

Fig. 5. Potential Growth Rate and its Components.
Source: Authors' estimates.

sum of the deviations $CGap_t = \sum_{t=0}^{\infty}(\hat{Y}_t - \hat{Y}_t^p)$ can be expected to be a zero-mean process. Cumulative gaps are constructed as recursive sums of the difference between both growth rates, starting with the gap in 1959 and ending up with the sum of the gaps from 1959–2019.

More robust evidence that the Philippines' actual growth does not diverge from potential growth in the long run, can be obtained via standard empirical analysis. Specifically, we carry out formal tests of two hypotheses, focusing on both the actual and cumulated gap series—the results are reported in Table 3.

The first hypothesis is that Gap_t is a stationary, mean-reverting, process. This is a necessary, but not a sufficient condition for the long-run equivalence between $\hat{Y}_t$ and $\hat{Y}_t^p$. Three standard unit root tests are used to test this hypothesis. The modified Dickey-Fuller test based on generalized least-squares (DFGLS) test proposed by Elliott et al. (1996) indicates that Gap_t is a stationarity series (Table 3, Panel A). The test rejects the null of a unit root, independently of whether the lag-length selection is performed using the Ng-Perron method, the Schwarz Information Criterion (SIC), or the Modified Akaike Information Criterion (MAIC).[13] This is confirmed by the Kwiatkowski et al. (1992) (KPSS) test, which does not reject the null of stationarity. We also take account of the Zivot and Andews (1992) (ZA) test, which allows for an endogenously-selected structural break in both intercept and trend. We find evidence of a significant break in 1986. Once this is accounted for, the ZA test strongly rejects the null of a unit root for the both the gap and cumulative gap series. Therefore, we can conclude the series are stationary. This lends support to the view that there are no system-

[13] We checked for stationarity at a maximum lag of 4 and found that the null hypothesis of a unit root is rejected from lags 1 to 4.

Fig. 6. Actual and Potential Labor Productivity Growth.
Source: Authors' estimates.

Table 3
Do Actual and Potential Growth Rates Differ?.

A. Hypothesis Test I: Unit root tests

(i) DFGLS: $\Delta Gap_t^d = \alpha + \beta Gap_{t-1}^d + \delta t + \sum_{i=1}^{k} \gamma_i \Delta Gap_{t-i}^d + \varepsilon_t$, $H_o: \beta = 0$

(ii) KPSS: $Gap_t = \alpha + \delta t + \mu_t + \varepsilon_t$, $H_o: \sigma_u^2 = 0$

(iii) Zivot and Andrews: $\Delta Gap_t = \alpha + \beta Gap_{t-1} + \delta t + \theta DU_t + \gamma DT_t + \sum_{i=1}^{k} \gamma_i \Delta Gap_{t-i} + \varepsilon_t$, $H_o: \beta = 0$

	Gap (Actual - Potential)		Cumulative Gaps	
	Test statistic	Lag order	Test statistic	Lag order
DF-GLS (Ho: Nonstationarity)	-4.681***	0 (Ng-Perron)	-1.689	1 (Ng-Perron)
	-4.121***	1 (SIC)	-1.689	1 (SIC)
	-3.482***	2 (MAIC)	-1.689	1 (MAIC)
KPSS (Ho: Stationarity)	0.125	0 (Schwert)	0.236***	3 (Schwert)
Zivot and Andrews (Ho: Nonstationarity)	-5.717***	0 (t-test)	-7.145***	1(t-test)

B. Hypothesis Test II: (i) $Gap_t = \theta + \sum_{i=1}^{k} \gamma_i Gap_{t-i} + \varepsilon_t$,

(ii) $CGap_t = \theta + \sum_{i=1}^{k} \gamma_i CGap_{t-i} + \varepsilon_t$, $H_o: \theta = 0$

	Gap (Actual - Potential)			Cumulative Gaps		
	(a)	(b)	(c)	(d)	(e)	(f)
	0.421***	0.479***	0.410***	0.968***	1.418***	1.479***
Gap_{t-1}	(3.561)	(3.681)	(3.804)	(36.355)	(12.019)	(11.092)
		-0.086	-0.098		-0.451***	-0.609**
Gap_{t-2}		(-0.664)	(-0.676)		(-3.864)	(-2.733)
			-0.042			0.094
Gap_{t-3}			(-0.325)			(0.720)
Constant	0.181	0.121	0.180	0.691	0.537	0.627
(t-stat: $Ho: \theta = 0$)	(0.569)	(0.381)	(0.557)	(1.432)	(1.213)	(1.396)
Observations	60	59	58	60	59	58
R-squared	0.179	0.206	0.226	0.958	0.967	0.967
Half-life	0.801	0.742	0.697	21.312	20.656	18.905

Note: $CGap_t$ = cumulative gaps between actual and potential growth; Gap_t = difference between actual and potential growth; ΔGap_t^d = first difference of *Gap* (detrended); DF-GLS – Dickey-Fuller generalized least-squares; μ_t is a random walk $\mu_t = \mu_{t-1} + u_t$ with $u_t \sim i.i.d.(0, \sigma_u^2)$; DT_t = trend shift variable; DU_t = indicator dummy variable for a mean shift at each possible break-date; k = maximum number of lags; KPSS – Kwiatkowski Phillips Schmidt and Shin; MAIC = Modified Akaike Information criterion; SIC=Schwarz information criterion; t = number of years. *** p<0.01, ** p<0.05, * p<0.10 t-statistics in parentheses. Half-life is calculated as: $Ln(0.5)/Ln(\sum_{i=1}^{l} \gamma_i)$ and expressed in years.
Source: Authors' estimates.

atic differences between actual and potential growth in the Philippines.[14]

The second hypothesis tested is that Gap_t and $CGap_t$ are zero-mean processes. This is investigated through the following autoregressive (AR) models, estimated with a maximum lag order of 3:

$$Gap_t = \theta + \sum_{i=1}^{k} \gamma_i Gap_{t-i} + \varepsilon_t \tag{9}$$

$$CGap_t = \theta + \sum_{i=1}^{k} \gamma_i CGap_{t-i} + \varepsilon_t \tag{10}$$

where the null H_o: θ=0 should not be rejected if Gap_t or $CGap_t$ is indeed a zero-mean process. Regardless of the lag order, all three AR specifications for Eq. (9) in Table 3, Panel B support the equivalence between actual and potential growth, as the constant is not significantly different from zero. Therefore, taken together, the results from tests of the two hypotheses are consistent with G_{apt} being a zero-mean stationary process – that is, the difference between actual and potential growth tends to zero on average, and deviations from this value are only transitory. Indeed, the calculated half-lives range between 0.697 and 0.801 years (less than one year), indicating that departures from the long-run equilibrium are also fairly short lived. The tests for the cumulative gap series CG_{apt} confirm that this series too tends to zero on average even though, with half-lives of 19 to 21 years, indicating that deviations are more persistent.

Summing up, results from the tests of the two hypotheses are consistent with the view that the Philippines' actual growth rate tends to the potential growth rate in the long run. The important implication is that the country's improved growth momentum reflects an increasing potential growth rate, to which actual growth has adapted.

5. Understanding labor productivity growth

Since potential labor productivity growth was shown to be the most important component of potential growth in recent years (Fig. 5), we take a closer look at it in this section. We start by documenting the sectoral contributions to the level of actual labor productivity. Second, we conduct a standard decomposition of labor productivity growth into within-sector and reallocation effects.

5.1. Employment and labor productivity

In the Philippines, agriculture is still the single largest employer, although its share of total employment – currently around 25% – is declining and dropped by about 10 percentage points over 2010-2019.

A standard mechanism to achieve higher aggregate productivity is the transfer of workers from low-productivity sectors into sectors of higher-productivity. In the Philippines, workers are shifting from agriculture toward services. Manufacturing labor productivity has increased while the sector's employment share has fallen. The manufacturing employment share peaked in 1973 at 11.1%, lower than the peaks achieved by the People's Republic of China, Indonesia, Malaysia, and Thailand (Felipe et al. 2018).

Despite the decline in the employment share of the manufacturing sector, the total number of manufacturing workers is increasing (and stood at around 3.6 million in 2019). This suggests that the share of manufacturing employment has fallen because the number of workers in services has increased at a quicker pace. Employment is shifting more toward service subsectors – such as wholesale and retail trade and transport, storage, and communications – than to manufacturing.[15]

Panels (a) and (b) in Fig. 7 show sectoral employment shares and actual labor productivity levels. It shows that, as well as the largest single employer, agriculture is the least productive sector. The employment shares in the services sectors are increasing, whereas the manufacturing employment share is declining as productivity in the sector is increasing. Panel (c) provides the contributions of each subsector to the total actual labor productivity level of the country, calculated as the employment share of the sector times the level of labor productivity. Manufacturing contributes substantially to aggregate actual labor productivity, although its contribution has fallen as a result of the declining employment share. The contribution of agriculture has declined also due to a decreasing employment share. Within services, subsectors that contribute the most to overall productivity level are (i) financial, real estate, and business activities; and (ii) wholesale and retail trade. Despite having a low employment share, the financial, real estate, and business activities subsector also contributes substantially to overall productivity because it has a high level of productivity. Wholesale and retail trade also contributes significantly to the overall productivity because it has a large employment share.

5.2. A decomposition of labor productivity growth

Actual labor productivity growth can be decomposed into the contributions of intrasectoral productivity growth (*within* effect) and that of the shift in employment across sectors (*reallocation* effect). This can be expressed algebraically as follows (with each term ordered in the sum):

$$\hat{y} = (y_t - y_0)/y_0 = \left(\sum_{j=1}^{N} \left(y_{j,t} - y_{j,0}\right) s_{j,0} + \sum_{j=1}^{N} y_{j,t} \left(s_{j,t} - s_{j,0}\right) \right) / y_0 \tag{11}$$

where the superscript ^ denotes a growth rate, y indicates the actual labor productivity level, 0 is the initial year, t is the final year, N is the number of subsectors, j corresponds to each subsector, and s is each sector's weight in employment.

The first component in expression (11) is the within effect ($\hat{W}$), the sum of the sectoral growth rates of labor productivity, weighted by the initial share of each sector's employment in overall employment. The second summation is the reallocation effect ($\hat{R}$), the sum of the changes in sectoral employment shares weighted by each sector's final productivity level. As such, $\hat{R}$ reflects the effect of structural change on productivity growth. A sector whose share increases will have a positive contribution while a sector whose share declines will have a negative contribution to the reallocation effect.

We now briefly analyze the contribution of each subsector to the within and reallocation effects. Table 4 shows that in 1989–1999, the contribution from productivity growth within each sector, i.e., the within effect, was zero due to declining productivity in construction; transport, storage, and communication; and financial, real estate, and business activities. During this subperiod, sectoral shifts in employment across sectors, i.e., the reallocation effect,

[14] However, the unit root test results for the cumulative gap series $CGap_t$ do not show strong evidence of stationarity; only the ZA test rejects the null of a unit root.

[15] The recent growth projections for the next decade of the Harvard Center for International Development (http://atlas.cid.harvard.edu/rankings/growth-projections), based on countries' diversification into more complex sectors, put the Philippines as an excellent performer, 5.75% annual growth. The reason, the authors argue, is that the Philippines has successfully added productive capabilities to enter new sectors that will drive growth over the coming decade.

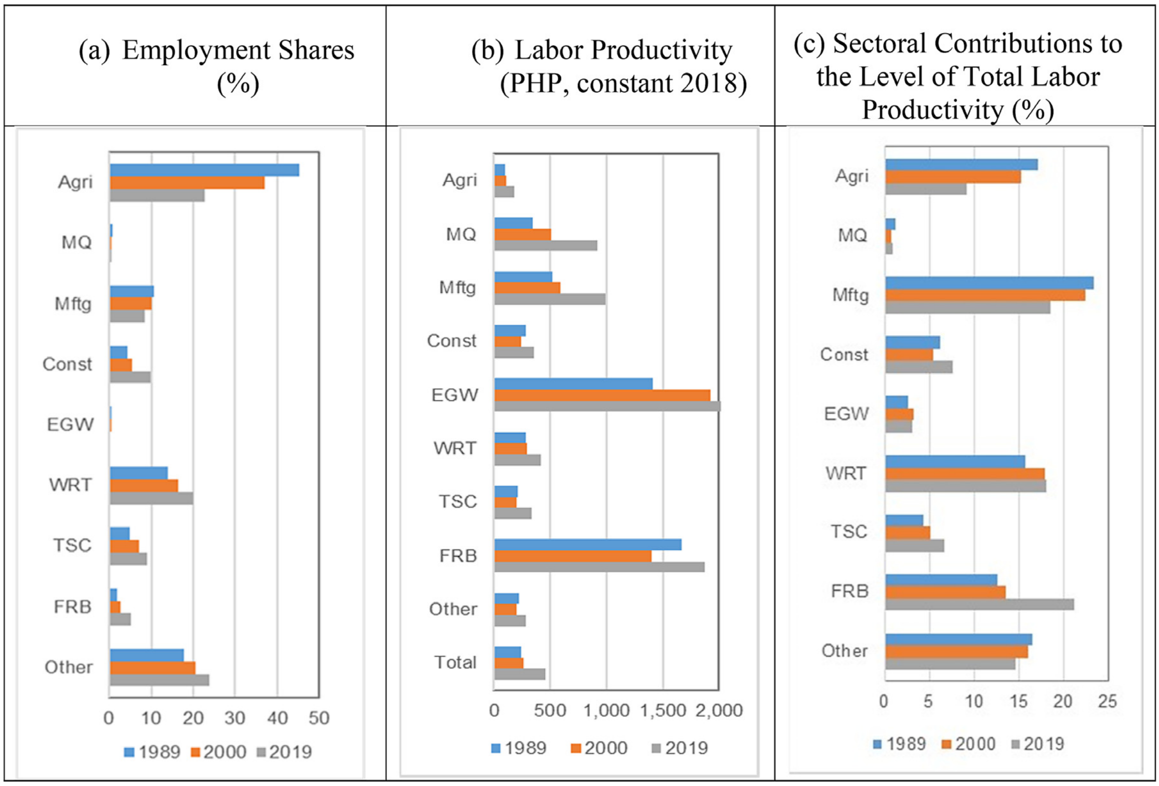

Fig. 7. Employment Shares, Labor Productivity and Contributions to Total Productivity.
Agri = agriculture; MQ = mining and quarrying; Mftg = manufacturing; Const = construction; EGW = electricity, gas, and water; WRT = wholesale and retail trade; TSC = transportation, storage, and communication; FRB = finance, real estate, and business.
Notes: (i) Employment shares are calculated as the ratio of the sector's employment over total employment; (ii) Each sector's contribution to the level of total labor productivity is given by the product of the sector's employment share times its productivity level, and then dividing the product by total labor productivity.
Source: Authors' calculations.

Table 4
Decompositions of Actual Annual Labor Productivity Growth by Sector.

Sector	1989-1999		1999-2009		2009-2019		1989-2019	
	Within effect	Reallocation effect	Within effect	Reallocation effect	Within effect	Reallocation effect	Within effect	Reallocation effect
Agriculture	0.05	-0.16	0.55	-0.35	0.71	-0.71	0.63	-0.60
Mining and quarrying	0.07	-0.11	0.03	0.03	0.03	-0.01	0.07	-0.05
Manufacturing	0.14	-0.16	0.70	-0.49	0.79	0.09	0.74	-0.30
Construction	-0.20	0.12	0.15	-0.02	0.12	0.53	0.01	0.28
Electricity, gas and water	0.02	0.06	0.17	-0.10	0.21	-0.05	0.15	-0.03
Wholesale and retail trade	0.02	0.23	0.11	0.36	0.87	0.10	0.32	0.35
Transportation, storage and communication	-0.07	0.16	0.22	0.07	0.23	0.16	0.09	0.20
Finance, real estate, and business	-0.24	0.44	-0.05	0.78	0.85	0.68	0.07	0.91
Other services	0.21	-0.10	-0.16	0.30	0.42	0.34	0.17	0.24
Total	0.00	0.47	1.71	0.58	4.23	1.13	2.24	1.01

Source: Authors' calculations.

contributed significantly due to employment growth in construction; wholesale and retail trade; transport, storage, and communication; and finance, real estate, and business. In the other subperiods, the positive and large within effect was driven by rising manufacturing productivity.[16] The reallocation effect was smaller than the within effect due to the fact that workers moved to services subsectors instead of manufacturing, and productivity is lower in the former. At the same time, the decline in the share of manufacturing employment dampened the impact of the reallocation effect.

[16] A regression of non-manufacturing value added growth on manufacturing value added growth, for 1989-2019, yields a coefficient of 0.526, statistically significant. This implies that a one percentage point growth in manufacturing output is associated with a 0.526 percentage-point growth in non-manufacturing output.

Martins' (2019, p.10) extensive decompositions of GDP per capita show that, in Asia, employment has shifted toward construction, commerce, and other services. Our analysis of the Philippines shows that this has been too the type of structural transformation the country has experienced. The exception to this norm has been East Asia's fast-growing economies (Korea, Singapore, Taiwan) between the 1970s and early 1990s (Japan started earlier). These economies created a large number of jobs in the manufacturing sector, and the share of this sector's employment in total employment was much higher than in the rest of Asia, including the Philippines (Felipe et al., 2018). Likewise, Martins (2019, p.11) shows that within sector productivity improvements were the main driver of Asia's strong performance comparing 1991-2002 and 2002-2013, and that manufacturing provided a strong boost to within sector productivity growth. Both results are consistent with our findings for the Philippines. This reinforces the view of manufacturing as the economy's engine of growth.

We conclude that the most significant source of labor productivity growth is the within effect. The contribution to overall productivity growth resulting from the transfer of workers from sectors of low productivity into those of high productivity, has been much smaller. In the next section, we undertake a formal analysis of the determinants of potential labor productivity growth that includes variables that proxy both within and reallocation effects, as well as other measures.

6. Analysis of the determinants of potential labor productivity growth

In this section, we use regression analysis to investigate the determinants of the time-varying estimate of Philippine potential labor productivity growth ($\hat{y}_t^p$), calculated above as the difference between the Kalman-filer-estimated potential growth and labor force growth. Taking into account the findings in the previous section, the analysis considers a number of possible determinants that proxy the structural change component (i.e., reallocation effect) and within-sector productivity growth.

Additionally, we test the impact of variables that proxy institutional uncertainty. Pritchett (2003) conjectured that the growth stagnation that affected the Philippines from the mid-1980s to the 1990s may have been the result of an increase in institutional uncertainty, defined as "the reliability with which economic actors can anticipate the rules of the game (no matter how good or bad those rules might be)" (Pritchett 2003, p.148). This also means that the improvement of the Philippines during the decade ending in 2019 (before the pandemic) must have been due, among other things, to a decline in institutional uncertainty.[17] As noted in the introduction, a number of reforms introduced in the last two decades are likely to have boosted institutional stability in the Philippines.

Data from the World Governance Indicators of the World Bank (Kaufmann and Kraay, 2008) support this view and show that the country's scores on voice and accountability, political stability, regulatory quality, and control of corruption, deteriorated between the latter part of the 1990s and the first half of 2000s, and then gradually improved afterwards (Fig. 8).

Also, given uncertainty regarding the correct specification of the regression, we use the Bayesian Model Averaging (BMA) approach, in particular the method developed by Magnus et al. (2010) for the estimation of linear regression models given uncertainty about the choice of the explanatory variables. The BMA implements a systematic method of inference on the regression parameters of interest, by taking explicitly into account the uncertainty due to both the estimation and the model selection steps. We consider all variables in the BMA analysis as auxiliary regressors, i.e., explanatory variables whose inclusion in the model is uncertain.

Regarding the set of factors that might explain the reallocation effect, we include changes in the employment shares in manufacturing and services. To proxy the second set of factors, those that relate to the within-sector effect, we consider the proportion of manufacturing exports in total merchandise exports, an economic complexity index (ECI), the growth rate of gross fixed capital formation, and gross secondary enrolment. Except for ECI, all data were taken from the World Bank's World Development Indicators (WDI). ECI data are from the Economic Complexity Observatory (Simoes and Hidalgo, 2011) and refer to the knowledge intensity of an economy, determined through its export sophistication.

We follow Brunetti and Weder (1998) and consider two types of institutional uncertainty: (i) policy uncertainty, and (ii) regulatory uncertainty. Policy uncertainty arises from changes in policies and is reflected in the volatility of the institutional framework or through instability of outcomes. Regulatory uncertainty emanates from the relationship between the private sector and the state, in particular, from the degree of confidence the private sector has with regard to the enforcement of contract and property rights. These two are very important for the Philippines, as for a long time the country appeared to suffer from institutional deficiency (Pritchett 2003). Both are difficult to measure in practice, hence the variables we use are rough proxies.

For purposes of the econometric analysis, we use various indicators of policy and regulatory uncertainty. We test the effect of eight proxies or indicators of policy uncertainty. These are: (i) standard deviation of the past five-year GDP growth rates; (ii) average gap between actual GDP growth rate and the time-varying potential growth rate during the past five years; (iii) standard deviation of the gap between actual GDP growth rate and the time-varying potential growth rate during the past five years. These three indicators capture the possible effects of business cycle features on potential productivity growth. While (i) and (iii) are expected to be negatively associated to potential growth, the same is not necessarily true for (ii). Large deviations of actual from potential growth are typically associated with active demand-side policies, which increase macro uncertainty and can be expected to affect growth negatively. At the same time, however, cyclical expansions can endogenously impact productivity growth positively, so that faster actual growth can increase potential growth to some extent. Thus, whether the relation with (ii) is positive or negative is ultimately an empirical question; (iv) average inflation rate during the past five years; (v) standard deviation of past five-year inflation rates; (vi) foreign direct investment; (vii) financial system deposits; and (viii) short-term external debt.

The indicator of regulatory uncertainty used here is the index of political rights, developed by the Freedom House. Political rights involve conditions relating to electoral processes, political pluralism and participation, and functioning of government. We can associate lower values of the index of political rights with less institutional (enforcement) uncertainty. [18]

[17] Pritchett et al. (2018), (pp. 16-17) show that while institutions do a good job of explaining the level of income; they do a poor job of explaining the growth in income tomorrow from today's quality of institutions. Also, they do a terrible job of predicting the growth in income based on the improvement in institutions.

[18] We also tried using the governance measures of the World Bank. The results show that the coefficients are statistically insignificant. Data on these variables start only in 1996, and hence fail to cover the earlier years when institutional uncertainty was presumed to be more apparent. Another well-known measure of institutional uncertainty that has a long series is the variable *Polity2* (political regime, whether it is authoritarian or democratic), constructed by the Center for Systemic Peace. The problem in using this variable is that it shows limited variation, with an index value that is constant during 1987-2017 for the Philippines.

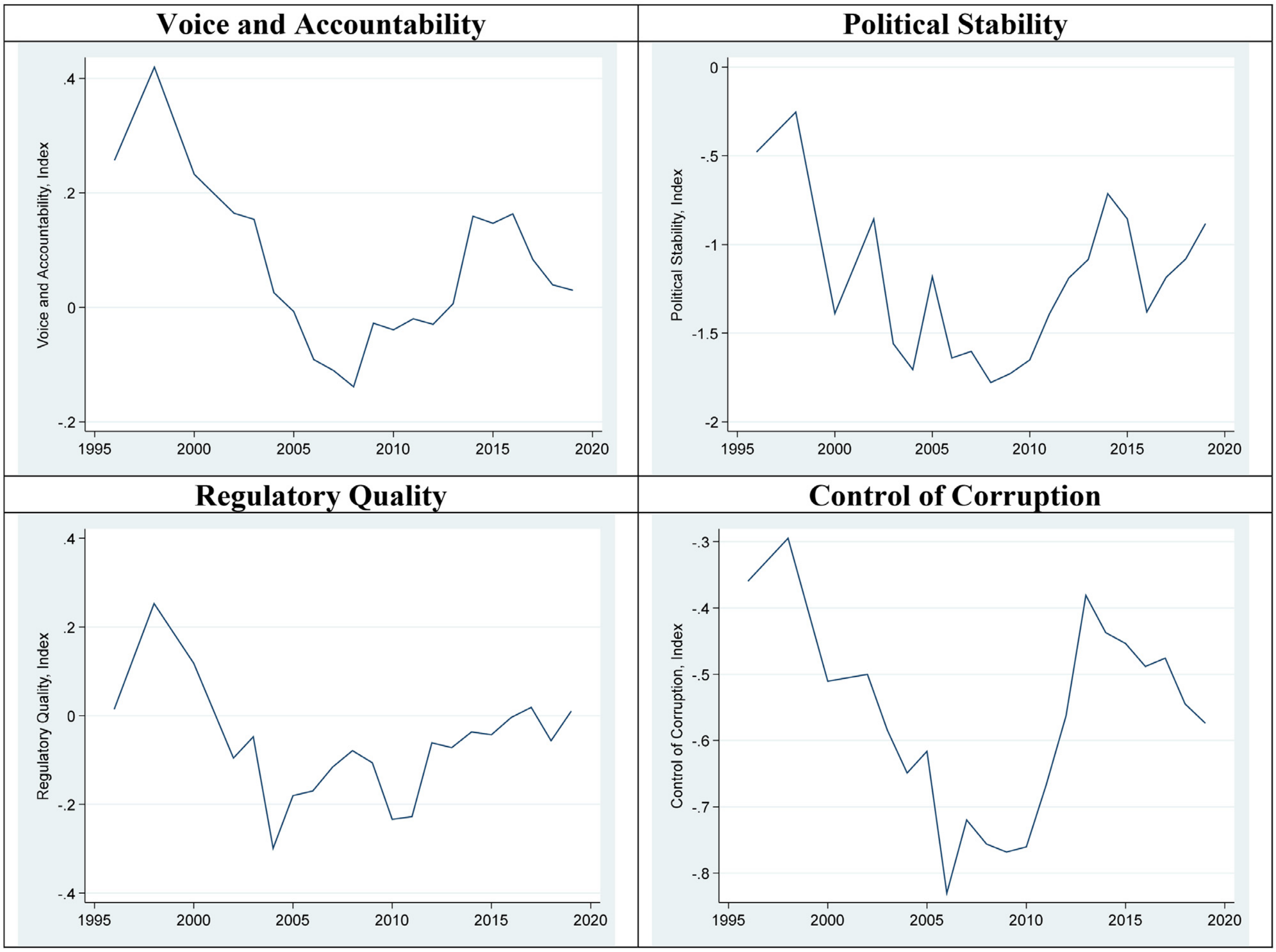

Fig. 8. Institutional Uncertainty in the Philippines.
Note: A higher score means an improvement.
Source: World Bank's World Governance Indicators. http://info.worldbank.org/governance/wgi/ (accessed 20 June 2021).

We conduct regressions covering data from 1974-2018. In our case, since we have 15 auxiliary regressors, the analysis is the result of $2^{15} = 32{,}768$ regressions. Estimation results are shown in Table 5. In BMA estimations, a variable is considered to be a robust regressor if the *t*-ratio on its coefficient is greater than 1 in absolute value or, equivalently, the corresponding one-standard error band does not include zero. Alternatively, the value of a variable's posterior inclusion probability should be at least 0.5, which corresponds approximately to a *t*-ratio of 1 in absolute value (Masanjala and Papageorgiou, 2008). Coefficients are shown in the first column.

Results indicate that the change in the manufacturing employment share is a robust determinant of potential labor productivity growth, while the change in the employment share of services is not. Thus, unlike for services, structural change which reallocates employment toward manufacturing appears to play an important role in raising potential labor productivity growth in the Philippines – a significant finding for policymakers in the country, in the light of the sector's declining employment share. Further policy-relevant evidence is uncovered for within-sector productivity growth, as results indicate only the economic complexity (ECI) index and the growth rate of gross fixed capital formation as robust regressors. This outcome suggests that capital accumulation is important for productivity growth in the long run – e.g., in line with hypotheses of embodied technological progress – and also that what the country produces matters, as climbing up the economic complexity ladder will ultimately boost potential labor productivity growth.

Regarding our measures of institutional uncertainty, Table 5 shows that only three out of the eight proxies for policy uncertainty are selected by the BMA as robust determinants of potential labor productivity growth (i.e., a posterior inclusion probability of greater than 0.5). These are: (i) average gap between actual GDP growth rate and potential growth rate during the past five years, (ii) average inflation rate during the past five years, and (iii) standard deviation of past five-year inflation rates. As expected, higher inflation rates are found to hurt potential growth, and results also indicate that a larger gap between the actual and potential growth rates is associated with faster potential labor productivity growth in the Philippines. This outcome is consistent with the view that potential growth is, to some extent, endogenous with respect to actual growth (e.g., León-Ledesma and Thirlwall, 2002), and this channel outweighs the possible negative effects of increasing policy uncertainty due to a larger gap between the two growth rates. The puzzling result is the positive coefficient of the standard deviation of inflation over the previous 5 years, which suggests that a more volatile inflation rate is associated to faster potential labor productivity growth. Finally, our indicator of regulatory uncertainty – political rights – is not robustly associated with potential labor productivity growth.

Table 5
Bayesian Mode Averaging: Determinants of Potential Labor Productivity Growth, 1974-2018.

	Coef.	SE	t	pip	1-SD Band	
Reallocation effect						
Mftg emp. share (change)	0.434	0.382	1.130	**0.650**	0.051	0.817
Services emp. share (change)	-0.003	0.031	-0.110	0.070	-0.034	0.027
Within effect						
Mftg exports (lagged)	-0.000	0.002	-0.180	0.110	-0.002	0.001
ECI, standardized (lagged)	0.634	0.167	3.800	**0.990**	0.467	0.801
Growth in gross fixed capital (lagged)	0.078	0.025	3.170	**1.000**	0.054	0.103
Gross secondary enrolment (lagged change)	-0.002	0.018	-0.100	0.070	-0.019	0.016
Institutional Uncertainty						
Actual GDP growth (Past 5 years), SD	-0.008	0.091	-0.090	0.100	-0.100	0.083
Actual-Potential growth gap (Past 5 years), Mean	0.383	0.108	3.540	**0.990**	0.274	0.491
Actual-Potential growth gap (Past 5 years), SD	-0.016	0.095	-0.170	0.100	-0.110	0.078
Inflation rate (Past 5 years), Mean	-0.066	0.072	-0.920	**0.550**	-0.138	0.006
Inflation rate (Past 5 years), SD	0.211	0.055	3.860	**1.000**	0.156	0.265
FDI, % of GDP (lagged change)	0.007	0.047	0.140	0.080	-0.041	0.054
Financial system deposits, % of GDP (lagged change)	-0.002	0.012	-0.170	0.080	-0.014	0.010
Short-term debt, % of reserves (lagged change)	-0.000	0.000	-0.040	0.080	-0.000	0.000
Political rights (standardized, lagged change)	0.162	0.273	0.590	0.330	-0.111	0.436

Note: Coef = coefficient, Mftg = manufacturing, ECI = economic complexity index, emp = employment, FDI = foreign direct investment, GDP = gross domestic product, GNI = gross national income, pip = posterior inclusion probability, SD = standard deviation, SE = standard error.
Source: Authors' estimates.

Summing up, our decomposition exercise and the BMA analysis highlight the importance of both within-sector and reallocation effects in raising potential labor productivity growth. More specifically, the evidence indicates that, for structural change to boost productivity, the reallocation effect must favor manufacturing rather than services. Meanwhile, economic complexity and the accumulation of physical capital turn out to be the two main drivers of within-sector productivity. Our findings also suggest that policy uncertainty – at least when reflected in higher average inflation – harms potential labor productivity growth, while a larger actual-potential growth gap has positive effects. On the contrary, we find no evidence that regulatory uncertainty (political rights) is a robust determinant.

7. Conclusions

After decades of lackluster performance and being considered a basket case in Asia, the Philippines' average growth performance has significantly improved and – before the deep recession induced by the COVID-19 pandemic in 2020 – the country was enjoying a healthy growth momentum, that started resembling that of the successful East and Southeast Asian economies several decades ago. This paper investigates what is behind this profound change in the country's economic fortunes, which have turned from continuing disappointment to a promising success. In particular, we study the hypothesis that the improving economic performance reflects an increasing potential growth rate – to which actual growth has adjusted – and that this process has been driven, at least partly, by a decline in policy uncertainty.

The paper provides estimates of the Philippines' potential growth rate–defined as the rate of growth that is consistent with an unchanging unemployment rate–for 1959–2019. We find that potential growth in 2010–2019 averaged 5.5%, over 1 percentage point higher than the average potential growth in 2000–2009. In 2017-2019, the country achieved a record-high potential growth of 6.1%, vis-à-vis average actual growth rate of 6.5%. Our analysis also shows that the Philippines' actual growth rate is not statistically different from its potential growth rate, confirming that the country's actual growth performance reflects the dynamics of its potential growth rate. This supports the view that average actual growth has been increasing because it is adjusting to an increasing potential growth rate. As such, the question of what is behind the Philippines' improved average growth performance is equivalent to asking what factors drove the rise in its potential growth rate.

We address this question and find that potential labor productivity growth accounted for most of the country's potential growth in recent years, with within-sector productivity growth playing a larger role than productivity-enhancing structural change. Our productivity-growth decomposition exercise suggests that manufacturing growth explains much of the within effect, even as the share of manufacturing employment in the country is on the decline. This pattern is similar to that other Asian countries in recent times, but significantly different from the experience of the East Asia's high-performing economies prior to the 1997-98 financial crisis.

Delving deeper into the analysis of the determinants of potential labor productivity growth via a Bayesian Moving Averaging approach, we find evidence that policy uncertainty – as proxied by mean inflation over a 5-year horizon – is a robust determinant of the country's potential growth rate, and so are the growth rate of gross fixed capital formation and economic complexity, via their impact on within-sector productivity growth. As showed in Table 1, the average inflation rate has fallen substantially from the very high levels in the 1980s, while the average growth rate of gross fixed capital formation increased – from just less than 2% in 1980-1989 to 11% in 2010-2019 – and so did export complexity. The upward trend in the country's potential labor productivity growth and potential GDP growth since the early 2000s is significantly associated to improvements in these areas.

Finally, our results also indicate that the 5-year mean gap between the actual and potential growth rates is robustly and positively correlated with potential labor productivity growth. This is in line with the hypothesis that potential growth is, to some extent, endogenous with respect to actual growth – e.g., as a result of hysteresis (e.g., Cerra and Saxena, 2020). While it is too early to investigate this issue within our empirical framework, and such an analysis is beyond the scope of this paper, this finding does suggest that the COVID-19 crisis could leave persistent scars on potential growth in the Philippines. To the extent that in 2020 actual growth declined significantly more than potential growth, and that this situation remains for some time (i.e., actual below potential - recall the decline in potential growth between the late 1970s and the early 1990s discussed in Fig. 2), the endogenous channels via which a positive actual-potential growth gap lifted the potential labor productivity growth rate in the Philippines for most of the 2000s, are bound to work in reverse. Policymakers in the Philippines should take account of the resulting damage to the country's long-run growth prospects, which, as the analysis in this paper shows, rest on the evolution of its potential growth rate.

Author statement

The three authors contributed equally to this research paper

Appendix A

Table A1

Appendix B

Appropriate statistical inference based on the state-space model in Eqs. (6)-(8) requires that the standardized one-period-ahead-forecast errors (v_t^*) satisfy the specification tests. We check these for the two estimation steps of the two-step instrumental variable (IV) procedure proposed by Kim (2006) and Kim and Nelson (2006).

To test for normality, we rely on the standard Jarque–Bera test. The absence of serial correlation is ascertained by ensuring that the autocorrelations and partial autocorrelations at lags up to 10

Table A1
Policy Reforms in the Philippines.

President	Actual GDP Growth (%)	Programs and Policy Reforms
Magsaysay, Ramon (1953-1957)	**-**	- Accelerated allotment of agricultural lands to landless citizens (RA No. 1160, 1954) - Created the Social Security System (RA 1161, 1954)
Garcia, Carlos (1957-1961)	**4.6**	- Promoted the Filipino First Policy to protect Filipino businessmen/products over foreign-owned ones - Established the Tariff and Customs Code of the Philippines (RA No. 1937, 1957). This Code supports high tariff to protect domestic industries.
Macapagal, Diosdado (1961-1965)	**5.3**	- Implemented the Act against graft and corrupt practices in public office (RA No. 3019, 1960) - Created the National Cottage Industries Development Authority to revive and further promote the cottage industries, through assistance in production, financing and marketing (RA No. 3470, 1962) - Instituted land reforms in the Philippines, abolished agricultural share tenancy, and diverted landlord capital in agriculture to industrial development (RA No. 3844, 1963) - Lifted foreign exchange controls
Marcos, Ferdinand (1965-1986)	**3.9**	- Provided basic rights, incentives and guarantees to Filipino and foreign investors in agriculture, mining and manufacturing industries, and encouraged Filipino and foreign capital in capital-intensive and pioneer industries which use domestic raw materials (RA No. 5186, 1967) - Proclaimed the Martial Law throughout the country (Proclamation No. 1081, s. 1972); - Enacted the exploration and development of the country's petroleum resources, acknowledging the need of foreign capital, investment and technology and allowing partnerships or joint ventures with the government or private sector (PD No. 8, s. 1972) - Prescribed the total electrification, especially in the rural areas (PD No. 40, s. 1972); and created the National Electrification Administration to organize electric cooperatives (PD No. 269, s. 1973) - Supported the iron and steel industry to expand its markets from domestic to export markets (PD No. 272, s. 1973) - Established the Philippine National Oil Company to ensure the stability of crude oil supply (PD No. 334, s. 1973) - Created the Philippine Export Council to develop national export strategy (PD No. 941, s. 1976) - Promoted the exploration and utilization of the country's oil resources (PD No. 972, s. 1976) - Established small-scale mining of mineral deposits to generate employment and to increase foreign exchange earnings (PD No. 1899, s. 1984)
Aquino, Corazon (1986-1992)	**3.4**	- Created the Presidential Commission on Good Government to recover the ill-gotten wealth and to investigate the graft and corruption practices of former President Ferdinand E. Marcos (EO No. 1, s. 1986); - Created the Presidential Committee on Human Rights to foster civil liberties and human rights in accordance with the United Nations General Assembly Resolution (EO No. 8, s. 1986) - Introduced electoral reforms (RA No. 6646, 1988) - Implemented the Comprehensive Agrarian Reform Program (RA No. 6657, 1988) - Promoted foreign investments up to 100% equity, and no restrictions on ownership of export enterprises (RA No. 7042, 1991)
Ramos, Fidel (1992-1998)	**3.2**	- Replaced quantitative import restrictions on agricultural products (except rice) with tariffs (RA No. 8178, 1996) - Liberalized (deregulated) downstream oil industry, and imposed tariff on imported crude oil at 3 percent and imported petroleum products at 7 percent, except LPG and fuel oil (RA No. 8180, 1996) - Supported the modernization of the agriculture and fisheries sectors through credit, irrigation, and marketing (RA No. 8435, 1997) - Deregulated downstream oil industry, and imposed uniform tariff duty on imported crude oil and petroleum products at 3% (RA No. 8479, 1998)
Ejercito, Joseph (1998-2001)	**2.6**	- Liberalized retail industry (RA No. 8762, 2000) - Regulated the organization and operations of banks, quasi-banks and trust entities (RA No. 8791, 2000) - Established the Securities Regulation Code (RA No. 8799, 2000) that is administered by the Security and Exchange Commission
Macapagal-Arroyo, Gloria (2001-2010)	**4.8**	- Provided a framework in restructuring the Philippine electric power industry, privatization of National Power Corporation, and promotion of competitive structure in the market (RA No. 9136, 2001) - Promoted the development, utilization and commercialization of renewable energy sources (RA No. 9513, 2008) - Extended the Comprehensive Agrarian Reform Program (RA No. 9700, 2009)
Aquino, Benigno Jr. (2010-2016)	**6.4**	- Adopted Basel III that strengthened the regulatory capital and introduced the capital buffers (BSP Memorandum No. M-2013-008) - Enhanced the basic education system by strengthening its curriculum and increasing the number of years of basic education (RA No. 10533, 2013) - Promoted market competition by prohibiting anti-competitive agreements, abuse of dominant position and anti-competitive mergers and acquisitions through the Philippine Competition Commission (RA No. 10667, 2014)
Duterte, Rodrigo (2016-2022)	**6.6** (2016-2019)	- Instituted the Tax Reform for Acceleration and Inclusion (TRAIN) Law (RA No. 10963, 2017) - Adopted simplified requirements/procedures that will expedite business- and nonbusiness-related transactions in government (RA No. 11032 otherwise known as Ease of Doing Business and Efficient Government Service Delivery Act, 2017)

RA = Republic Act.
Source: Authors' compilation.

Table B1
Specification tests on the standardized one-period-ahead-forecast errors (v_t^*).

	Step 1				Step 2			
	Test for serial correlation							
Lag	AC	PAC	Q-Stat	Prob.	AC	PAC	Q-Stat	Prob.
1	0.073	0.073	0.3469	0.556	0.009	0.009	0.0055	0.941
2	0.007	0.002	0.3503	0.839	-0.071	-0.071	0.3409	0.843
3	-0.114	-0.115	1.2251	0.747	0.142	0.144	1.7009	0.637
4	-0.113	-0.098	2.099	0.718	-0.206	-0.221	4.5913	0.332
5	-0.214	-0.203	5.2852	0.382	0.211	0.267	7.6919	0.174
6	-0.009	0.003	5.2905	0.507	0.072	-0.025	8.0564	0.234
7	0.109	0.093	6.1443	0.523	-0.145	-0.041	9.5634	0.215
8	0.146	0.089	7.7021	0.463	0.091	-0.006	10.166	0.254
9	0.047	-0.004	7.8699	0.547	0.04	0.12	10.284	0.328
10	0.165	0.151	9.9576	0.444	0.025	0.007	10.334	0.412
	Test for normality							
Jarque–Bera	1.811				0.365			
Prob.	0.404				0.833			
	Test for homoskedasticity							
H(20)	0.94				0.41			
1/H(20)	1.06				2.43			
F(20, 20; 0.025)	2.46				2.46			

Notes: Instrumental variable employed in Step 1 is $\widehat{LF_{t-1}}$; AC = Autocorrelation; PAC = Partial Autocorrelation.
Source: Authors' estimates.

are close to zero, and all Ljung-Box Q-statistics are not statistically significant.

Analogously to the Goldfeld-Quandt test, the assumption of homoskedasticity is tested by comparing the variance of the standardized one-step-ahead forecast errors in the first third of the series with their variance in the last third of the series, relying on the following statistic:

$$\mathrm{H}(h) = \frac{\sum_{t=T-h+1}^{T} v_t^{*2}}{\sum_{t=d+1}^{d+h} v_t^{*2}}$$

where d is the number of diffuse initial state values and h is the nearest integer to $(T-d)/3$. This value is then compared to an F-distribution with $(h,\ h)$ degrees of freedom. For a 5% level of significance, the critical values for a two-tailed test correspond to the upper and lower 2.5% of the F-distribution. Once the value of $\mathrm{H}(h)$ has been obtained, the null hypothesis of equal variances is tested as follows:

- When $\mathrm{H}(h) > 1$, the null is not rejected if $\mathrm{H}(h) < F(h,\ h; 0.025)$.
- When $\mathrm{H}(h) < 1$, the null is not rejected if $1/\mathrm{H}(h) < F(h,\ h; 0.025)$.

Results from these tests for the selected model specification are reported in Table B1 and confirm that the standardized one-period-ahead-forecast errors (v_t^*) satisfy all specification tests.

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