



THAILAND

SELECTED ISSUES

May 2017

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May 2, 2017

Approved By
**Asia and Pacific
Department**

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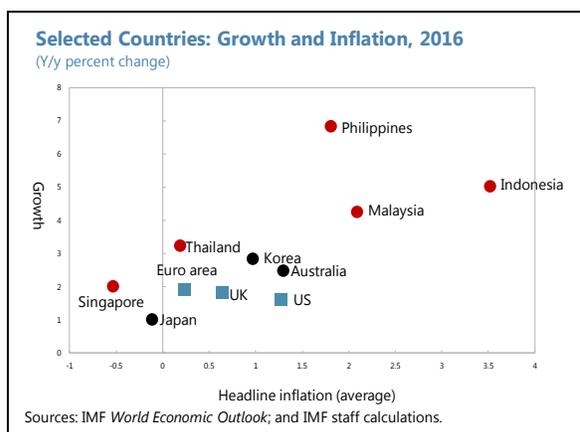
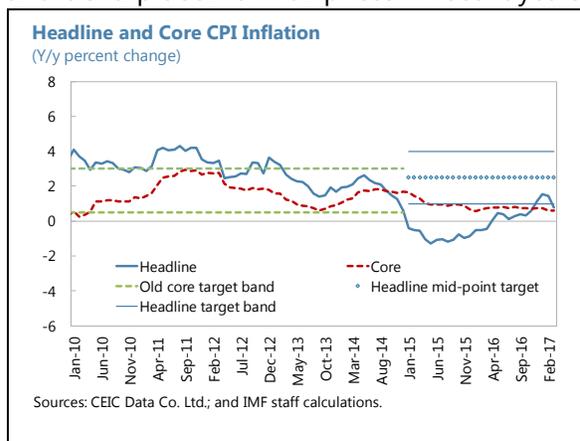
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THAILAND: BRINGING INFLATION BACK TO TARGET¹

A. Context

1. Thailand's headline inflation was below target in 2015–16. The low headline inflation reflected to a large extent external drivers, in particular the sharp decline in oil prices in recent years. Yet, core inflation also declined and is projected to remain subdued.² The causes of weak inflation dynamics warrant closer investigation.

2. Monetary policy rates have been kept on hold since early 2015. In early 2015, the Bank of Thailand (BOT) cut the policy rate by 50 basis points to a near historical low of 1.5 percent, citing the need to foster the recovery and maintain well-anchored inflation expectations.³ The BOT interpreted the cause of negative inflation in 2015 to be largely attributable to supply side factors, which would subside as base effects from oil gradually disappeared. The BOT has kept the policy rate constant since April 2015 to preserve room for maneuver amid volatile global conditions and to safeguard financial stability in a low-interest-rate environment. Several other central banks in the region also facing below-target inflation rates eased monetary policy during 2016, though they still have higher policy rates than Thailand.



Main Drivers of Inflation

3. The optimal policy response to a protracted period of low inflation depends on the causes of disinflation. This paper estimates a hybrid New Keynesian Phillips Curve with time

¹ Prepared by J. A. Garcia (lead), with contributions from G. Dany, D. Laxton, A. Poon, U. Rawat and F. Zhang.

² Energy price inflation declined from 1.7 percent in 2014 to -15 percent in 2015, while core inflation declined from 1.6 percent to 1.1 percent over the same period. Since 2015, energy price inflation has recovered given higher commodity prices, though core inflation remained on a downward trend, reaching 0.6 percent by March 2017. Headline inflation in Thailand is more sensitive to changes in global oil prices than in other countries, as the tax structure on retail petrol prices provides a relatively smaller cushion.

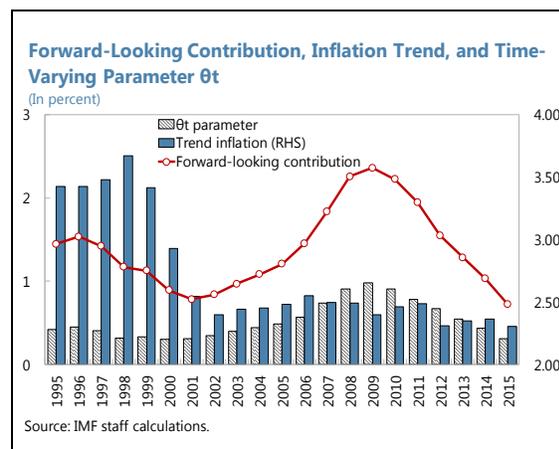
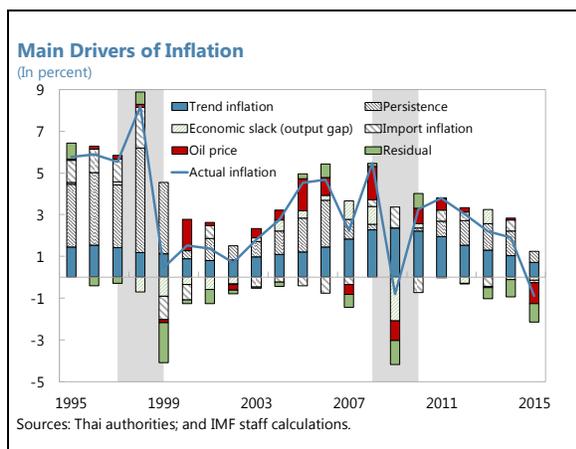
³ After the onset of the Global Financial Crisis (GFC), the policy rate was cut to 1.25 percent between April 2009 and June 2010.

varying parameters to gauge the quantitative role of (long-term) inflation trends, economic slack (output gap) and import price inflation in shaping inflation dynamics:⁴

$$\pi_t = \theta_t \pi_t^e + (1 - \theta_t) \pi_{t-1}^{MA4} + \alpha_t (y_t - y^*) + \mu_t \pi_t^{IM} + \varepsilon_t, \quad (1)$$

where:

- π_t is headline consumer price inflation;
- π_t^e denotes (long-run) inflation expectations, measured by staff's estimates of long-term inflation *trend* (see Box 1);
- π_{t-1}^{MA4} is the moving average of inflation over the previous four quarters;
- $(y_t - y^*)$ captures economic slack, measured as the output gap (relative to potential output y^*);
- π_t^{IM} is imported inflation in goods and services, defined as the year-on-year rate of growth of the imports price index in local currency; and
- ε_t is the measurement error.



4. The analysis reveals some important changes in Thailand inflation dynamics. The impact of lower import prices was a major factor behind the decline in headline inflation in 2015, with low oil prices being the largest contributor to inflation dynamics. Yet, the estimation also reveals a weaker role of the forward-looking “expectations channel.” Particularly, the forward-looking parameter θ_t , but also the level of long-term inflation *trend* π_t^e , have been on a declining trend over the last few years.⁵ This led to a lower degree of forward-looking inflation dynamics and

⁴ The model follows a standard specification and is estimated over the period 1995: Q1–2016: Q3. For further model details and a discussion of alternative Phillips curve specifications and robustness checks see Dany and Garcia (forthcoming) and WEO (2016).

⁵ This finding is robust to using survey (long-term) inflation expectations (i.e., Consensus Economics).

made Thai headline inflation more vulnerable to the oil price decline and the weaker cyclical position, contributing to a protracted period of very low inflation rates.

Box 1. Thailand: Monitoring Medium- to Long-Term Inflation Expectations

Long-term inflation expectations are a crucial input in modern monetary policymaking. The consistency of private sector's inflation expectations at medium-to-long horizons with the central bank's target provides a direct assessment of the credibility of monetary policy. Moreover, in an environment of very low inflation, stable long-term inflation expectations are crucial to bring inflation back to target and avoid entrenched low inflation.

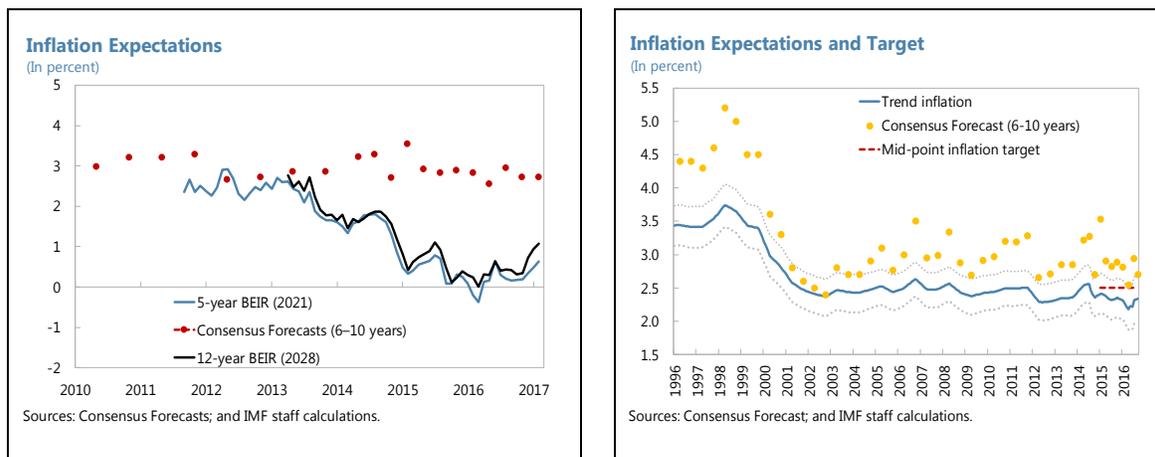
Surveys of inflation expectations and expectations extracted from financial instruments are standard indicators monitored by many central banks. Surveys are a traditional source of information on long-term expectations and are available several times per year for many countries. With the issuance of inflation-linked bonds (ILBs) in many advanced but also emerging economies, the so-called "*break-even inflation rate*" (BEIR)—the yield spread between comparable conventional bonds and ILBs—has also become a key indicator of inflation expectations. BEIRs provide more timely information on investors' expectations than survey-based expectations. Yet, in addition to the expected inflation, BEIRs may incorporate other factors, notably inflation risk and liquidity risk premia. Hence, BEIRs are better interpreted as the overall *inflation compensation* requested by investors to hold nominal assets, rather than a pure measure of expected inflation.

For Thailand, both surveys and BEIRs can be used to monitor inflation expectations. The figure below reports the recent developments in survey measures (6 years to 10 years ahead from Consensus Economics) together with the BEIRs from the two ILBs issued in Thailand (with maturities 2021 and 2028, reflecting average expectations over the next 5 years and 12 years, respectively). As for many other countries experiencing sharp disinflation, the diverging patterns of survey and market-based inflation expectations is striking. Survey measures have barely changed and continue hovering above the mid-point inflation target of 2.5 percent. In contrast, BEIRs have declined significantly since 2013 and remain well below target. Although a higher liquidity premium in ILBs (compared to conventional Thai government bonds), and possibly a lower inflation risk premium, likely played a role in the decline of the BEIRs, they cannot account for the full difference between the two measures, thereby casting some doubts on the level of long-term inflation expectations measured by surveys.

The estimation of long-term inflation trends using econometric models has become increasingly common in major central banks since the GFC. The long-term inflation *trend* can be interpreted as the level of inflation that would prevail once temporary influences unwind. The rationale behind recent research efforts to estimate *trend* inflation is twofold. First, given the forward-looking orientation of modern monetary policymaking, policy decisions should be based on reliable indicators of long-term inflation expectations. While survey and financial indicators provide useful information, both have important shortcomings, which may have rendered them less reliable in periods of persistently low inflation, as low inflation periods have been less frequent than high inflation periods. Second, discrepancies among indicators call for regular assessment of their information content, and the estimation of *trend* inflation can be instrumental in this respect.¹

¹ Trend inflation estimates are from Garcia and Poon (forthcoming), based on the approach in Chan et. al. (2015).

Box 1. Thailand: Monitoring Medium- to Long-Term Inflation Expectations (Concluded)



Empirical estimates show that the (long-term) inflation trend in Thailand has decreased below the mid-point inflation target since early 2015. Moreover, trend estimates are significantly below survey measures of long-term inflation expectations. This evidence suggests there are some risks of de-anchoring of inflation expectations following the protracted period of below-target inflation. Looking ahead, these results warrant close monitoring, also given the increasing dispersion among survey point estimates for long-term expectations. The main section of this paper uses these trend inflation estimates in the econometric analysis.

B. Policy Response

Monetary Policy Stance

5. Nominal policy rates are low by historical standards but real interest rates have risen in recent years. Staff estimates of the natural real interest rate suggest it has been low, between 0.1 percent and 0.2 percent, in 2015–16.⁶ In contrast, various measures of effective real rates have ranged above that level. For instance, one measure of the effective real rate, calculated as the difference between the policy rate and actual inflation over the last two years, was in the range of 2.4 percent to 1.3 percent. Similarly, the policy rate minus expected inflation over 2016 (i.e., expected inflation at the beginning and at the end of 2016) was in the range of 0.3 percent to 1.3 percent. Assuming policy rates on hold, and considering the latest average inflation expectations by the BOT (1.2 percent) or Fund staff (1.0 percent), (ex-ante) real rates would remain above the estimated natural rates in 2017.

⁶ Based on the TVP-VAR estimation following Lubik and Matthes (2015).

6. Model simulations suggest that in a passive scenario inflation would remain at or below the lower end of the tolerance band. Simulations are based on a quadratic central bank policy reaction function that considers gaps for inflation and for output, as well as interest rate smoothing, within a stylized new Keynesian model calibrated for the Thai economy.⁷ Under a passive scenario (red line in Figure 1 below), without monetary or fiscal stimulus, inflation and inflation expectations would remain subdued, with substantial risks of inflation falling back outside the tolerance band, once base effects from higher oil prices fully unwind. Keeping rates on hold over the forecast period would only partially counteract weak inflationary dynamics. Moreover, the small but negative output gap would persist and the cost of further adverse shocks would be large.

7. Monetary policy easing, within a broader expansionary policy mix, should contribute to bringing inflation back to target. Results suggest that monetary easing, in which the policy rate is gradually cut over several quarters, combined with fiscal stimulus, can steer inflation back to target. In an active scenario (black line in panel chart below) that combines monetary easing and fiscal stimulus, inflation would return to the 2.5 percent mid-point target (with a slight overshooting) and the output gap would close. Furthermore, given the protracted period of below-target inflation, readiness to act and communicate in a decisive manner would be fundamental to prevent a de-anchoring of long-term inflation expectations (Alichi et al., 2015; and WEO, 2016).

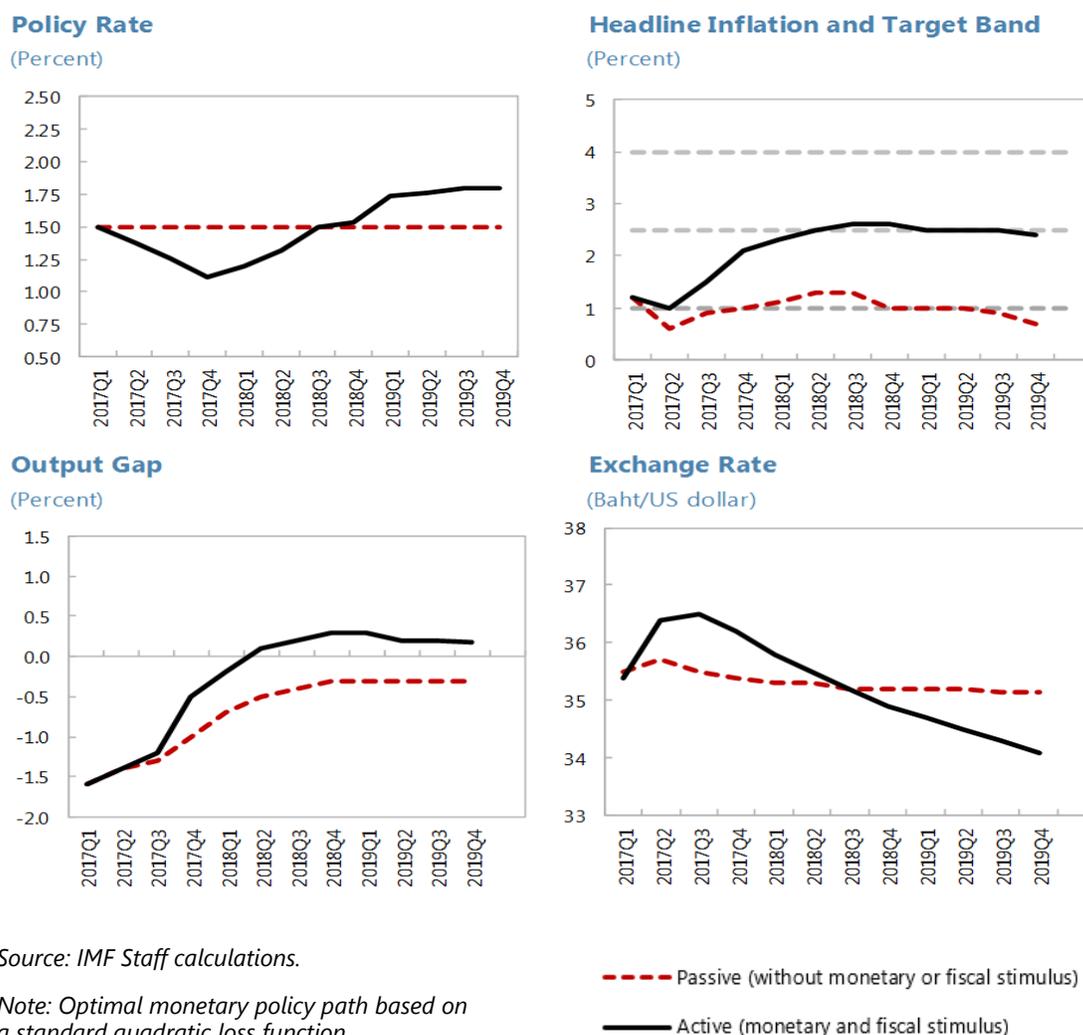
Low Interest Rates and Financial Stability Risks

8. Financial stability concerns do not need to constrain monetary policy in the current environment. Financial stability risks remain contained. Monetary policy actions aimed at increasing inflation from its current low level will also have positive effects on financial stability. First, higher inflation will lower the real burden of highly indebted economic agents, particularly lower-income households. Second, restoring inflation may prevent a de-anchoring of inflation expectations, which, in turn, would lead to higher (long-term) real rates and debt service. Finally, the sooner the inflation rate returns to target, the lower the risk of low inflation becoming entrenched and the faster the exit from the low-interest-rate environment.

9. Further monetary policy stimulus and tighter regulatory and prudential measures can provide a better policy mix. Macroprudential tools designed to target specific pockets of fragility can be used if the temporarily lower interest rates trigger any risk to financial stability. As part of the ongoing strengthening of the financial stability framework, a broadening of the macroprudential toolkit is, in any case, beneficial. For example, loan-to-value ratios can be decreased to tame house price increases and regulations changed to close loopholes for regulatory arbitrage.⁸

⁷ See for example Clinton and others (2015). The model does not incorporate a financial sector module or possible asymmetric monetary policy transmission at low interest rates. At the same time, it also does not consider the reinforcing effect of improved communication advocated by staff.

⁸ See for example Bank of England (2011).

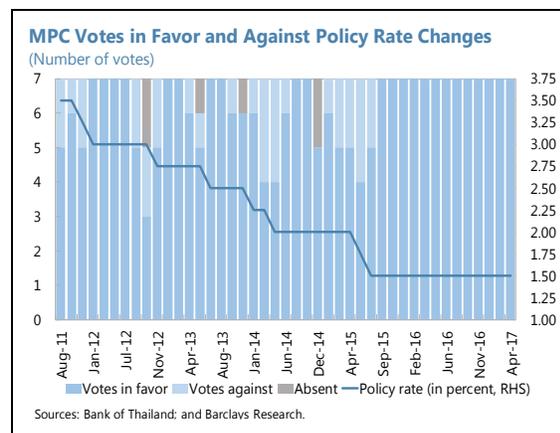
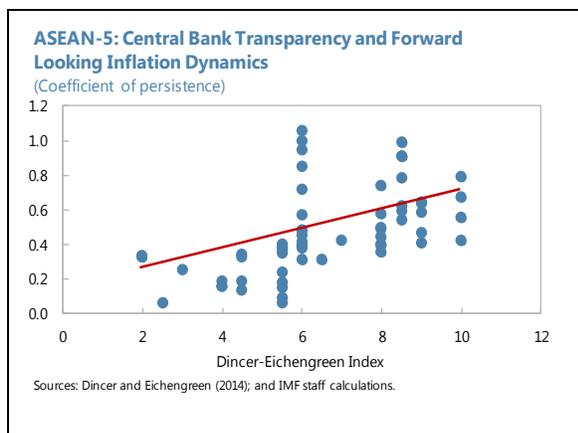
Figure 1. Thailand: Monetary Policy Simulations: Active and Passive Scenarios

The Role of Communication and Enhanced Transparency

10. The BOT has successfully enhanced the transparency of monetary policy over the last decade. For example, Thailand's score in the Dincer-Eichengreen index of central bank transparency rose from 6 in 2000 to 10 by 2014. Yet, by the same metric, there is still some scope for further improvement towards the maximum index score of 15.

11. Higher central bank transparency is associated with strengthened forward-looking inflation dynamics, and therefore helps avoid low-inflation traps. Using estimation results from equation (1) for each ASEAN-5 country,⁹ Dany and Garcia (forthcoming) find a strong and positive relationship between the Dincer-Eichengreen index of central bank transparency and forward-looking inflation dynamics.

⁹ ASEAN-5 covers Indonesia, Malaysia, Philippines, Thailand, and Singapore.



12. The BOT’s communication is crucial to manage inflation expectations and dismiss the perception of constrained monetary policy. Further guidance in terms of envisaged actions to achieve the target over a given time horizon is fundamental to avoid a de-anchoring of long-term inflation expectations after a protracted period of below-target inflation. Assessments of past performance, discussion of the shocks impairing the achievement of the inflation target, and elaboration on the internal debate underlying the policy decisions—reflecting dissenting views and arguments in the Monetary Policy Committee (MPC) minutes—can be instrumental to guide private sector’s expectations and enhance the effectiveness of monetary policy.

13. Lower interest rates will not exhaust the scope for monetary policy actions. Recent measures by other central banks since the beginning of the GFC have expanded the modern monetary policy toolkit near or at the zero lower bound on interest rates (Table 1). Should further adverse shocks materialize, for example, forward guidance regarding envisaged policy actions can be considered by the BOT.

Type of Measure	Formulation
A. Interest Rate Policy	Setting policy rates and signaling future path to influence market expectations.
Negative interest rates	Policy/deposit rates below zero.
Forward guidance on interest rates	Central Bank communication on future policy rates.
Expansion of liquidity-providing facilities	Fixed-tender auctions, expansion of eligible collateral, etc.
B. Balance Sheet Policies	Adjusting the size and/or composition of the central bank’s balance sheet through the purchase of financial assets.
Quantitative easing and forward guidance on the central bank balance sheet	Purchases of government debt and communication.
Credit easing	Changes of the discount window facility. Expansion of collateral/counterparties in liquidity operations.
Bank reserves policy	Purchases of commercial paper, corporate bonds, and other securities. Money market operations to enlarge monetary base.
C. Exchange Rate Policies	Exchange rate floor.

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THAILAND: CURRENT ACCOUNT SURPLUS¹

A. Introduction

1. Thailand has one of the world's largest current account surpluses relative to its GDP.

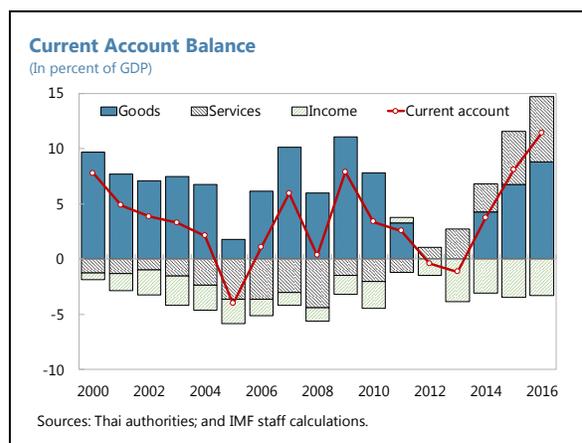
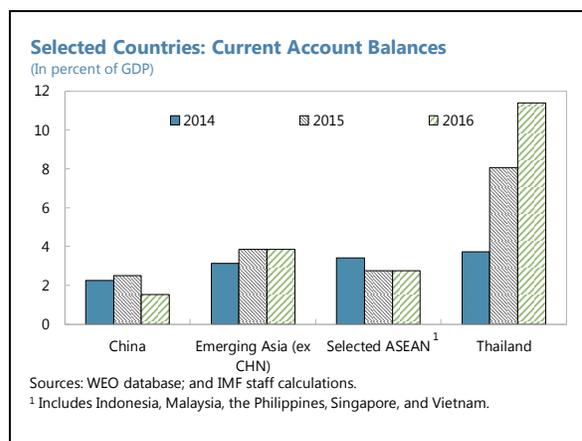
After registering a deficit in 2012–13, the current account surplus rose sharply since 2014 and reached 11.4 percent of GDP in 2016. Compared to previous episodes, noteworthy features in the recent increase include rising services income, declining imports, and stagnant goods exports. Both rising savings and declining investment contributed to external imbalances.

2. This paper provides an overview of Thailand-specific factors that help inform staff's assessment of the external position.

The Fund's External Balance Assessment current account (EBA CA) model estimated the cyclically adjusted current account for Thailand at 11.1 percent of GDP and the current account norm at 1.1 percent of GDP in 2016. After accounting for a policy gap of 2.3 percent of GDP, the unexplained residual remains large at 7.6 percent of GDP. This large unexplained residual is likely due to Thailand-specific factors not captured by the EBA CA model. This paper describes the analytical inputs considered by staff in its judgement for assessing the external position in Thailand, including cyclical and transitory adjustments due to terms of trade shocks, the boom in tourism, and political uncertainty.

3. The paper is structured as follows.

Section B presents an overview of the current account in Thailand from a savings-investment perspective. Section C summarizes staff's judgement of the Thailand-specific factors that inform the assessment of the current account. Section D concludes with policy priorities. The appendix reviews demographic trends in Thailand and their impact on the economy and the current account.

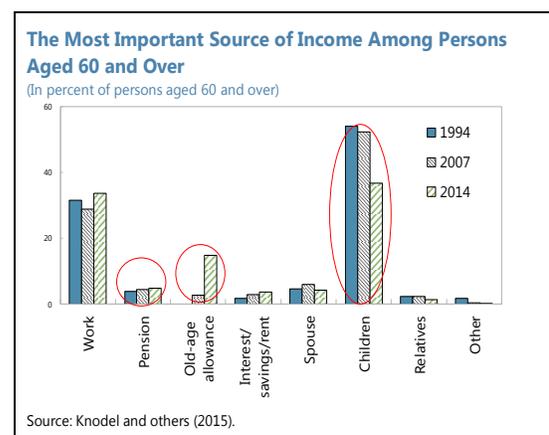
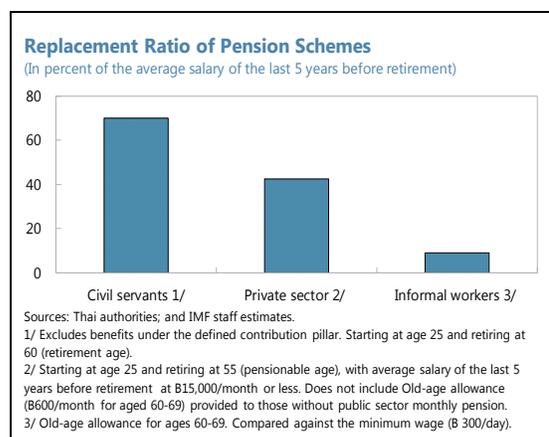
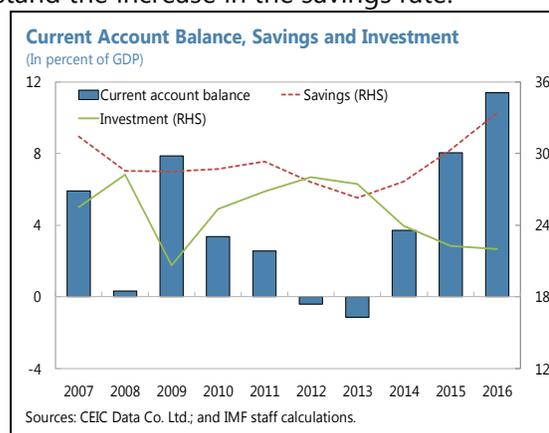


¹ Prepared by Yiqun Wu.

B. The Current Account from a Saving-Investment Perspective

4. **Over the last few years, there has been a significant increase in national savings in Thailand.** National savings rose from 26.3 percent of GDP in 2013 to an estimated 33.5 percent of GDP in 2016, mostly driven by higher corporate savings. The following considerations, ordered, from cyclical/transitory to structural, are important to understand the increase in the savings rate:

- Positive income shocks during uncertain times.* In recent years, the Thai economy benefited from sizable positive gains in terms of trade, driven by lower oil prices. Staff estimates that lower oil prices accounted for 5.8 percent of GDP (about half) of the turnaround in the current account since 2013. Another factor has been the surge in services income (mainly tourism receipts), accounting for 3 percent of GDP in the turnaround in the CA surplus since 2013. A subdued economic outlook and the ongoing political transition may explain a cautious response of domestic demand to these positive income shocks, leading to savings of a significant portion of the income windfall. Another consideration is that, while terms of trade improved for the overall economy, the rural sector was affected by adverse shocks—notably low export food and rubber prices and a severe drought.²
- An inadequate pension system.* The public pension system in Thailand is highly fragmented, with replacement ratios (the proportion of a worker's pension relative to pre-retirement income) that vary significantly across types of workers, and that are particularly low for informal workers. With the fertility rate dropping rapidly, senior people will be less likely to rely on their children for income support, and this increases their incentive for precautionary savings. Indeed, data shows that elderly Thai informal workers are



² Cash-constrained rural households, with higher marginal propensity to consume, are more likely to be affected by negative shocks.

relying more on their savings than before, though savings has yet to become a major source of their income.

- *Sharp demographic transition.* Demographic factors are also a critical driver of saving rates and the current account. The key turning point in Thailand's demographic transition is estimated to have taken place around 2014–15, with the past demographic dividend turning into drag. As shown in Appendix 1, Thailand is one of the fastest-aging countries in Asia. The working-age population is projected to decline sharply and the old-dependency ratio to increase fast in coming years. Underdeveloped social safety nets, coupled with this major demographic transition, may also explain an increase in precautionary savings. Demographic factors are expected to be a key factor driving up Thailand's current account norm in coming years.

5. There has also been a noticeable drop in the investment rate. Gross domestic investment (including changes in stocks) declined from 27.5 percent of GDP in 2013 to 22 percent of GDP in 2016, despite an increase of 2 percent of GDP in public investment during the same period. Reasons underlying the decline of over 7 percent of GDP in private investment, ordered from cyclical/transitory to structural, may include:

- *Weak external demand.* Private investment in machinery and equipment is estimated to account for 80 percent of total private investment in Thailand, while construction accounts for the remainder of 20 percent. Studies have found that private investment in machinery and equipment in Thailand closely follows external demand growth, while private investment in construction generally follows public sector construction dynamics (NESDB, 2016). Therefore, the sluggish private investment in recent years could have been associated with weak external demand. Significant delays in the implementation of public investment projects, after political changes in 2014, also impacted private investment.
- *Political uncertainty.* Weak investment likely reflects investors' downbeat assessment of the economic outlook and investment opportunities, which in turn are partly due to political uncertainty and the ongoing political transition in Thailand. The academic literature suggests political uncertainty is indeed a driver of private investment. For example, Svensson (1998), using a sample of 101 developing countries during 1960–1985, finds that government instability and political polarization lead to lower levels of public infrastructure and private investment. Gyimah-Brempong and Traynor (1999) find that the political instability in Sub-Saharan Africa had a negative effect on demand by indirectly reducing economic growth via declining capital accumulation in the long run. Studying a sample of 48 countries between 1980 and 2005, Julio and Yook (2012) find firms tend to become more cautious around elections and hold back on investment expenditures until the electoral uncertainty is resolved.
- *Structural transformation.* Weak investment can be also explained by the country's ongoing structural changes. As Thai firms move up in the global value chain, they could face bottlenecks to further investment, including inadequate supply of complementary factors such as infrastructure and skilled labor. Moreover, firms need to go through a learning process to build capabilities. Since this learning process could incur negative private returns due to high sunk

costs or even substantial financial losses at least in initial stages, risk-averse firms may not be willing to invest, even if such investments may eventually have positive social returns (Sen, 2014). The divergence of private and social returns would thus create coordination problems and therefore to underinvestment when the economy is undergoing structural transformation.

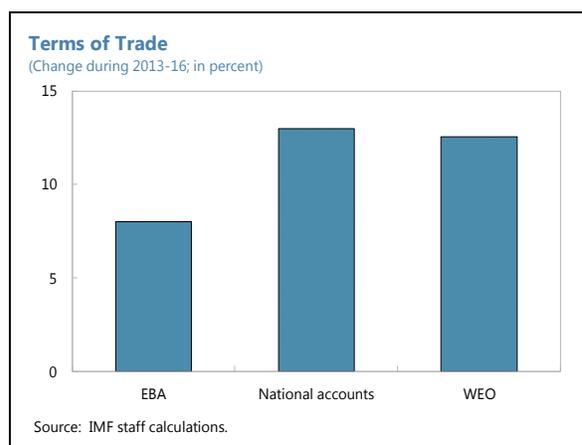
C. Inputs in Staff Judgement for the Assessment of the External Position

6. The Fund’s EBA CA model incorporates a rich set of cyclical and structural determinants of the current account in a multilaterally consistent manner. The EBA framework also emphasizes the distinction between positive empirical analysis and normative assessment, highlighting the role of policies and policy distortions. For 2016, the EBA CA model estimated the cyclically adjusted current account for Thailand at 11.1 percent of GDP and the current account norm at 1.1 percent of GDP.

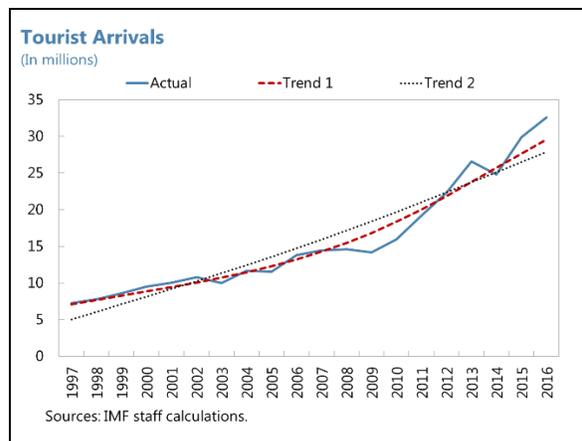
7. However, there is a large unexplained residual for Thailand. After accounting for a policy gap, there is an unexplained residual of 7.6 percent of GDP. This large (and rising since 2013) unexplained residual is likely due to Thailand-specific factors not captured by the model. Informed by the overview of the main drivers of saving and investment, staff used additional analytical inputs to partly interpret the residual. These cyclical/transitory adjustments aim to capture the weak response of domestic demand despite sizable, positive income shocks.

8. Staff’s adjustments of cyclical/transitory factors aimed to improve the measurement of terms of trade shocks, the boom in tourism, and political uncertainty.

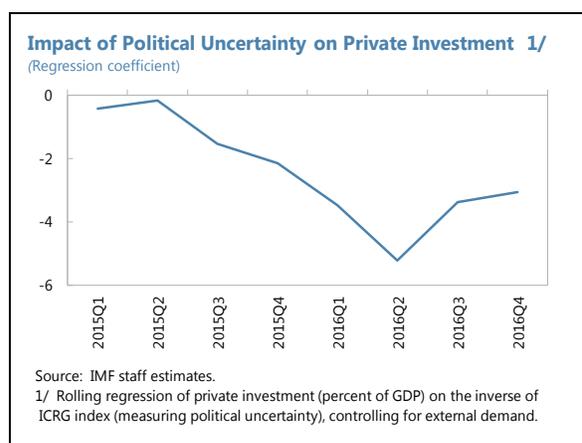
- *Terms of trade shocks.* After multilateral consistency adjustments, the EBA model estimated a small (0.3 percent of GDP) cyclical adjustment due to commodities terms of trade for Thailand. Such small cyclical adjustment is at odds with the sizable improvement in the current account due to the positive terms of trade shocks of recent years. Alternative terms of trade indices, for instance based on the national accounts and the *World Economic Outlook* database, suggest that Thailand’s terms of trade improved by close to 13 percent over 2013-16, while the EBA terms of trade index shows an 8 percent improvement. Using alternative terms of trade commodity indices in the EBA model, which incorporate more up-to-date weights and better capture Thailand’s high oil intensity, staff finds an increase in the cyclical contribution of terms of trade ranging from 1 percent of GDP to 1.5 percent of GDP for 2016. This adjustment may still underestimate the distributional implications of the negative terms of trade shock for rural households.



- *Boom in tourism.* The service balance accounted for around 3 percent of GDP of the increase in the CA since 2013. In particular, tourist arrivals increased by 25 percent and tourism receipts increased by nearly 18 percent. The tourism boom would take time to trickle down, especially during a period of political uncertainty. Using Hodrick-Prescott filters with different smoothing parameters for tourist arrivals, staff estimates the transitory contribution from the boom in tourism in the range of 1 to 1.5 percent of GDP for 2016.



- *Political uncertainty.* The EBA model incorporates a proxy for the political environment based on ICRG survey data. However, risks associated with the political environment and their impact on savings/investment are difficult to measure precisely in any one country. The EBA model assumes a constant coefficient for the ICRG index across countries and time, and hence cannot capture a possible change in the contribution of political uncertainty during a political transition. In the case of Thailand, staff's analysis suggests a substantial deterioration in private investment owing to political uncertainty in recent years, based on a rolling regression of private investment on the ICRG index, controlling for external demand.³ This suggests that political uncertainty may have contributed to weak domestic demand in Thailand, over and above what the EBA model captures for the average country. Incorporating this change into the analysis can help explain about 1 to 4 percent of GDP of the residual for Thailand.



9. These staff adjustments help to interpret part of the unexplained residual. After considering the country-specific factors, the total gap for Thailand's current account in 2016 is assessed to be in the range of 3 to 7 percent of GDP higher than warranted by medium-term fundamentals and desirable policy settings. The wide assessment range reflects large EBA CA regression residuals and uncertainty surrounding the estimates for Thailand.

³ The rolling regression uses the inverse of the ICRG index, which measures higher risk/weaker environment. The rolling coefficient suggests that higher risk translated to weaker private investment (and a higher current account) in the most recent years. The change in the coefficient is large and statistically significant.

Thailand: EBA Estimates and Staff Adjustments	
Actual current account (CA)	11.4
EBA CA estimates	
Cyclical adjustment	0.3
Cyclically adjusted CA	11.1
CA norm	1.1
CA gap	10.0
Policy gap	2.3
Unexplained residual	7.6
Staff-adjusted estimates	
Cyclical and transitory adjustments	[3.0, 7.0]
Terms of trade	[1.0, 1.5]
Tourism	[1.0, 1.5]
Political uncertainty	[1.0, 4.0]
CA gap	[3.0, 7.0]
Source: IMF staff estimates.	

D. Policy Implications

10. An expansionary policy mix and structural reforms should help reduce the excessive current account surplus over time through a growth-driven process, accompanied by real appreciation. A mutually reinforcing expansionary mix of fiscal and structural reforms should aim to strengthen domestic demand and bring inflation back to target. Efforts to scale up public investment in infrastructure, facilitate human capital accumulation, and improve productivity should help stimulate private investment and support external rebalancing over the medium term. This would ensure that the needed real exchange rate appreciation, facilitated by a flexible exchange rate, takes place through a growth-driven process, boosting real incomes.

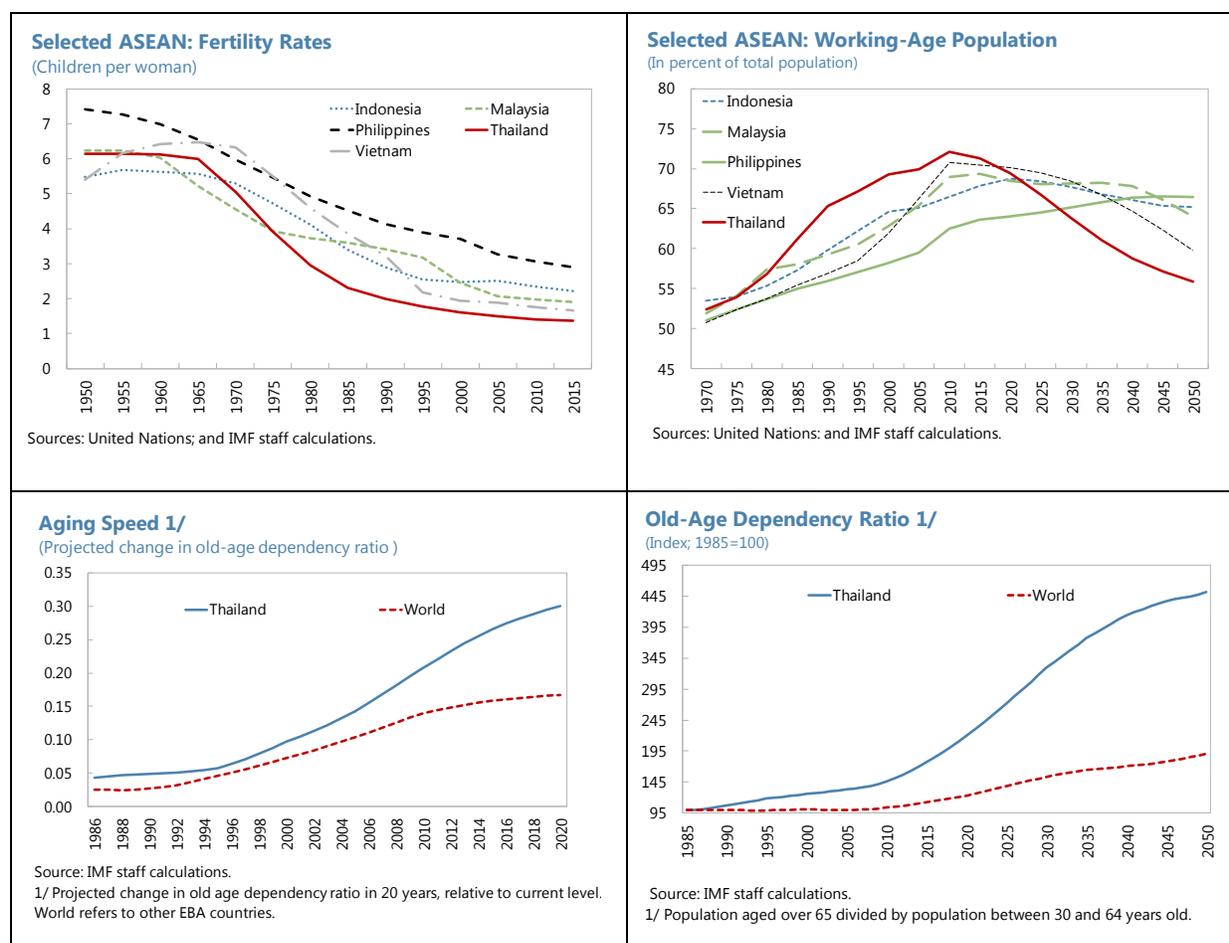
11. Policies to support private investment will encourage Thailand's continuing transformation from an agrarian to an industrial economy. Manufacturing and service industries should move from the lower end of the global value chain to the higher end. The government should encourage research and development and international technology transfers, provide better finance to small- and medium-sized enterprises, and create an environment that is conducive to new businesses and investments. A stable economic and political environment is also crucial to restoring private investor confidence.

12. The impact of population aging could be mitigated by reforming pensions. Thailand faces the double challenge of further expanding the pension system, particularly for informal workers, while ensuring long-term fiscal sustainability. The government needs to undertake a comprehensive review of the fragmented pension schemes based on long-term projections of each scheme. The pensionable/retirement age could be extended while reviewing the pension benefit levels. Furthermore, alternative revenue sources should be considered to finance spending pressures. These reforms would help lower households' precautionary savings.

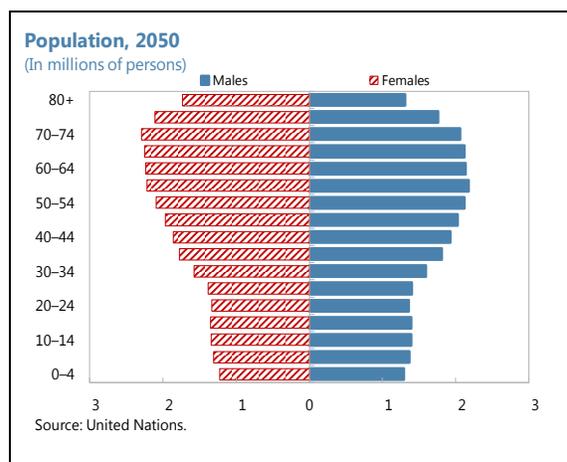
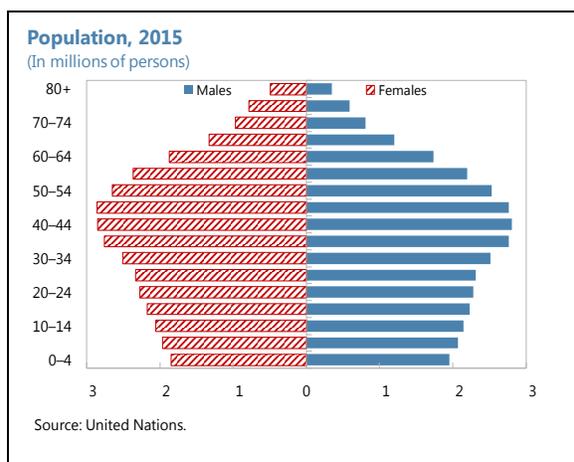
Appendix I. Demographic Transition and the Current Account

1. Thailand is undergoing a major demographic transition. Key factors include:

- Sharply declining fertility rate and increasing longevity.** The total fertility rate dropped from 6.4 children per woman in the 1950s to 1.5 in 2015, and is projected further to decline during the next 20 years. Life expectancy at birth increased from 54 years in 1960 to 74½ years in 2015. It is projected to increase further to 77 years by 2025 and 79 years by 2050.
- Rapidly aging population and increasing old-aged dependency ratio.** The speed of aging in Thailand is remarkable. For instance, it took 26 years in Europe and more than 50 years in the United States for the old-age dependency ratio to increase from 15 percent to 20 percent. However, the same transition will take only six years in Thailand (IMF, 2017), highlighting the urgency to address the implications of population aging. In fact, Thailand is already the second-most-aged country in southeast Asia, after Singapore, with elderly people constituting over 10 percent of the population. The old-age dependency ratio is projected to continue increasing to 48 percent by 2050, much above the average dependency ratios of Asian countries.



- *Declining working-age population.* The overall population is expected to start declining after 2023. The fraction of the population that is of working age already peaked in 2015 and is projected to decline rapidly in coming years. The trend of an aging population is also visible from the population pyramid that illustrates the age and sex structure of the population.
- *Getting old before achieving high-income status.* Thailand's per capita income (in purchasing power parity relative to the United States) stands at a significantly lower level than those reached by matured, advanced economies at the same stage of the aging cycle (IMF, 2017). Thailand is facing the challenges of high fiscal costs of aging and demographic headwinds to growth at relatively low per capita income level.



2. Demographic factors have important implications for the economy. A decline in the share of a country's working population in the total population reduces potential economic growth.¹ With declining working-age population, the "demographic dividend" that Thailand reaped in the past decades will turn into a "demographic drag" on its real GDP growth, in the order of 0.5-1 percentage point per year in the coming two decades, per staff's projections. Population aging is also putting increasing pressure on public finances. Staff projects that public spending in pensions and health would increase at least 3 percent of GDP in Thailand in the coming two decades, given demographic trends. Improving replacement ratios to more adequate levels would entail even higher fiscal costs.

3. Demographic factors are also a key determinant of the current account. Economic theory expects a lower current account for countries with a higher share of economically inactive dependent population. The life-cycle theory (Modigliani, 1970) of consumption and saving predicts that young households borrow, middle-age households save for retirement, and households in

¹ Bloom and Finlay (2009) suggest that demographic factors contributed significantly to economic growth in East Asian countries from 1965 to 2005. The working-age population is generally more productive and saves more, increasing domestic resources for investment. There is also evidence that population aging may have a negative impact on total factor productivity growth.

retirement dissave. Therefore, countries with a relatively young or old population are more likely to consume more than what they produce, resulting in a current account deficit.

4. Interactions among demographic variables are important. This can be illustrated in a simple OLG model (Diamond, 1965). Two effects are at work. The first is the composition effect—a higher dependency ratio lowers savings. However, this effect is counteracted by the life-cycle effect; that is, higher survival risk and lower income in the old age increase saving. Therefore, for a given aging speed, a higher dependency ratio implies higher survival risk, attenuating composition effect and leading to a higher current account. For a given dependency ratio, a higher aging speed also implies higher survival risk, reinforcing the life-cycle effect and increasing the current account.

5. Empirical evidence indicates large, economically significant effects of demographic factors on aggregate savings. For East Asian economies, most macro data analysis, including Kelley and Schmidt (1995) and Higgins and Williamson (1996 and 1997), confirmed the Coale and Hoover (1958) hypothesis that the impressive rise in Asian savings rates can be explained by the equally impressive change in dependency burdens (Williamson, 2001). For example, Higgins and Williamson (1996 and 1997) found the increase in East Asia's saving rates due to the demographic transition from early 1970s to early 1990s was 13.6 percentage points of GDP, fully accounting for the rise in the savings rate in the region.

6. Within the EBA framework, demographic factors are expected to increase the current account norm for Thailand in coming years. The EBA model incorporates several demographic factors (Box 1). Reflecting a major demographic transition, demographic factors are expected to increase Thailand's current account norm by 0.8 percent of GDP over 2020–30, compared with the Asian average of 0.2 percent of GDP. This is the third largest contribution of demographic factors to the norm among Asian countries, after Japan and Korea (IMF, 2017). Addressing the macroeconomic and social implications of rapid population aging is thus an urgent priority.

Box 1. Demographic Variables in the EBA CA Model

The EBA CA model incorporates several demographic variables.¹ Population growth (capturing shares of young population), old-age dependency ratio (capturing shares of old population), and aging speed (a proxy for future old-age dependency ratio) are used in the regression. In theory, countries with higher shares of dependent population generally have lower savings and current account balances. Therefore, both higher population growth and higher dependency ratios are linked with lower current account balances. Aging speed also affects national savings through interactions with the current dependency ratio.

Two interaction terms are included. These are the interaction of the dependency ratio with the aging speed ratio (relative to its world average), and the interaction of aging speed with the dependency ratio (relative to its world average). First, a positive coefficient on the interaction of the dependency ratio with the aging speed ratio (relative to its world average) would suggest that, given the same dependency ratio, a country with a faster aging speed is expected to have longer life expectancy and higher savings. Second, a positive coefficient on the interaction of aging speed with dependency ratio (relative to its world average) would indicate that, given the increase in aging speed, a higher dependency ratio would further increase national savings.

	Expected sign in current account regression
Rel. dependency ratio*aging speed	+
Rel. aging speed*dependency ratio	+

¹ The relevant metric is demographic factors in Thailand against the world average, as the assessment of the current account is multilaterally consistent.

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