

South Korea

Archetype **Supply-chain chokepoints**

GDP / person **\$36k**

Population **52M**

10-yr trend **2.5%**

Gradual **15.4%** · **#10**

Fast **28.5%** · **#7**

WHERE SOUTH KOREA STARTS

South Korea enters the AGI era as a supply-chain chokepoint: one of the few places that make an input the frontier cannot do without. Here it is memory. Samsung and SK Hynix supply much of the high-bandwidth memory that stacks beside every AI accelerator. The scores show the strengths. AI diffusion capacity is 5, the top score in the atlas, meaning no country spreads AI through its economy faster — though even leaders must keep moving. Physical build speed is 4.8; cyber resilience and geopolitical positioning both 4.5. The constraints are demographic and structural. Demographics scores 2: the population is aging and fertility is the world's lowest. Catch-up headroom is 1.7, because Korea already sits near the frontier. At about \$36,200 per person, this is a high-income economy. Ten-year trend growth of 2.5% a year reflects a mature, slowing giant.

THE THREE PATHS

These are simulations, not forecasts. The Modest path is the baseline; the two AGI scenarios fork from it. Under the **Modest** scenario, AI stays a normal technology. Korea would gain a small lift: 2.9% growth a year, 77th of 157. Its memory and fabrication would stay valuable, but its aging would still bite. Under **Gradual** takeoff, growth would climb for two decades and reach 15.4% a year once AGI matures around 2045. That would place Korea 10th in the world. An economy growing at 15.4% doubles in under five years. The long ramp gives Samsung, SK Hynix and the Yongin cluster time to turn indispensability into scale. Under **Fast** takeoff, growth would reach 28.5% a year from the early 2030s, a doubling every two to three years, and Korea's rank would rise to 7th. A fast world rewards the chokepoints Korea holds and the AI it already deploys well. Regulation and politics could slow or redirect any of these paths. How Koreans and their government respond to transformative AI is a variable the model holds constant.

HOW YOU WOULD KNOW WHICH WORLD YOU ARE IN

The scenarios look almost the same until about 2030, so watch leading indicators, not GDP, and watch them live. Three global signals matter most. First, whether the METR task-horizon curve keeps doubling every four to five months through 2027–28; METR publishes it at metr.org. Second, whether frontier-lab revenue and capital spending keep compounding; Epoch AI tracks both at epoch.ai. Third, whether growth in the ten to twenty most-ready economies — the United States and China above all — breaks above trend in the early 2030s. Double-digit growth there within a couple of years of 2030 would signal a fast world; a point or two above

trend by the mid-2030s a gradual one; a fade back to trend a modest one. Korea's own signals would arrive earlier than GDP data: the HBM order books at Samsung and SK Hynix, capital spending on the Yongin semiconductor mega-cluster, hyperscaler contracts, and new grid connections and power deals for data centers.

IF GROWTH GOES EXPLOSIVE

Explosive is relative. At 15.4% growth a year, Korea would still trail the frontier, where the United States would be compounding at 19.5%. Under Fast, Korea's 28.5% would again run behind a frontier near 39.2%. But both rates would run well ahead of the region, whose median growth is 12.8% under Gradual and 22.5% under Fast. At 28.5%, the economy doubles every two to three years. That pace would help offset a shrinking, aging workforce; AI would substitute for workers Korea will not have. Faster growth raises labor demand and wages, which could draw in the skilled migrants Korea has long struggled to attract. There is a way this leaves Korea worse off. Its chokepoint is also its exposure: memory is a target of every chip strategy, and Korea is a rule-taker inside a US–China regime that could cut its China sales or force a costly realignment. The hedge is to diversify customers and deepen alliance guarantees. Even then, the pace-setter shifts to the state, testing KEPCO's strained finances, transmission-line permitting and the National Assembly's speed.

WHAT SOUTH KOREA CAN DO NOW

Three levers follow from the scores, and two pay off whether or not AGI arrives. The first is demographics, low at 2. An aging society with the world's lowest fertility needs skilled-migration visas, higher participation by women and older workers, and human capital so people complement AI rather than compete with it. This is a no-regret move: the shortage is already here. The second is absorptive capacity, the thin catch-up headroom scored 1.7. Stronger institutions, open trade and technology transfer, and deeper finance and education pay off under every scenario. The third lever is the bet. Compute and energy access, at 3.2, carries the most weight and climbs steeply toward a fast world, where it becomes Korea's single biggest lever. Closing it means fast-tracking grid and generation — nuclear, gas, renewables with storage — and packaging power and land to anchor hyperscale data centers. Korea can adapt a peer's model: Japan is backing Rapidus, a state-supported venture building advanced chips in Hokkaido, to widen its chokepoint. A cautious government can act on the two no-regret levers today and lose nothing. Open the atlas's [policy editor](#) to see how moving these scores reshapes Korea's path under each scenario.

The three levers — and which pay off regardless

Catch-up headroom

score 1.7 / 5 · weight 16 under skeptic → 6 under fast takeoff

Counts under the Modest scenario too (16→6). Closing this gap pays off whether or not AGI arrives.

No-regret

Demographics & migration

score 2 / 5 · weight 12 under skeptic → 6 under fast takeoff

Counts under the Modest scenario too (12→6). Closing this gap pays off whether or not AGI arrives.

No-regret

Compute & energy access

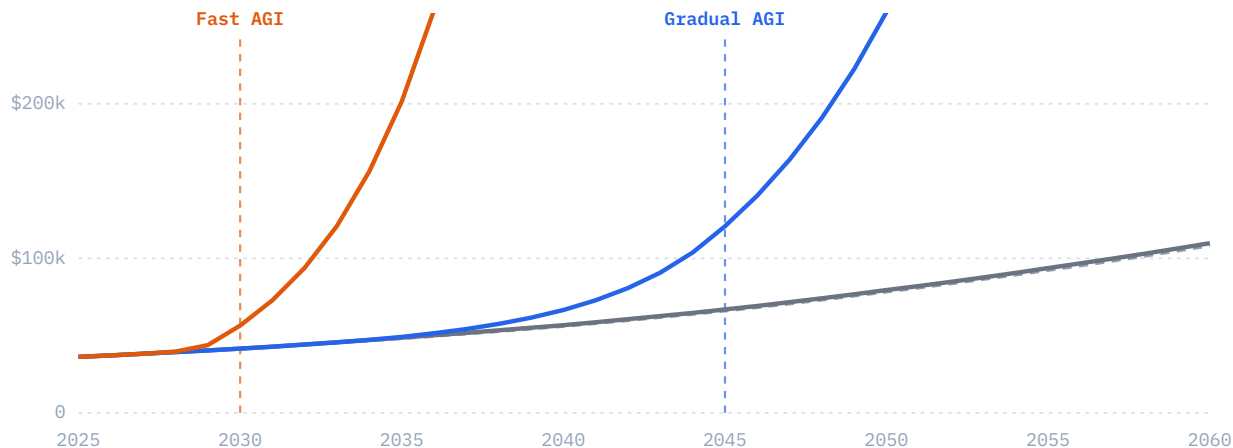
score 3.2 / 5 · weight 8 under skeptic → 24 under fast takeoff

Weight climbs from 8 to 24 as takeoff nears. It barely moves growth if AI stays ordinary — the lever that needs a view on the takeoff.

AGI bet

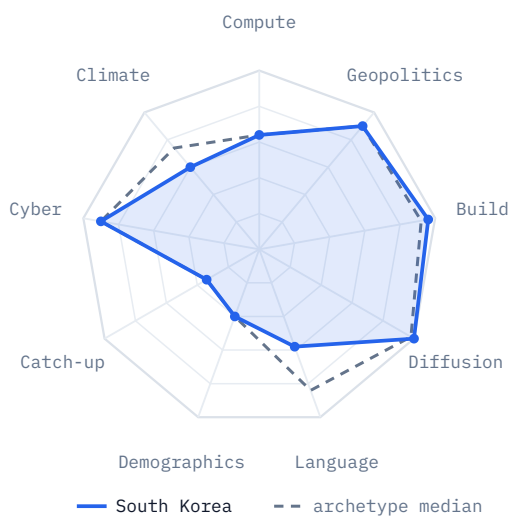
The no-regret levers pay off in every scenario, so a cautious government can act on them today. The AGI bet becomes decisive only if takeoff is real.

GDP per person to 2060, by scenario



Linear scale; solid lines are the three scenarios, dashed grey the no-AI baseline. Growth ramps from 2027 to each scenario's rate at its AGI year (Fast ~2030, Gradual ~2045), then holds. Timing and divergence are the point, not end levels; steep paths exit the top of the capped axis.

The nine factors



Solid: South Korea. Dashed: the median of its archetype. Scores are relative to the other 156 countries (3 ≈ global median, 5 = leading today).

Outcomes under each scenario

SCENARIO	GROWTH / YR	WORLD RANK	INDEX	DOUBLING
Modest	2.9%	77 / 157	71.2	24.2 yrs
Gradual	15.4%	10 / 157	71.4	4.8 yrs
Fast	28.5%	7 / 157	75.1	2.8 yrs

Post-AGI growth rate, rank among 157 countries, AGI Growth Index (0–100, scenario-weighted), and the implied economy doubling time. The Modest path is the baseline the AGI scenarios fork from.

THE THREE SCENARIOS

Modest the Acemoglu view

AI as a normal productivity tool

Intelligence was never the binding constraint on growth, so AI delivers real but ordinary gains. Each country gets a one-time boost of a couple of percent of GDP, phased in through 2035; growth then returns to trend. The mainstream-economics view.

≤0.66% TFP over a decade – a one-time gain

South Korea: 2.9% growth a year · #77 of 157

Gradual Erdil & Besiroglu, base case

Broad automation, on a long timeline

Broad automation of remote work arrives around 2045, with gains building slowly from the late 2020s. Growth then reaches up to ~20% a year for the best-positioned countries — ten times today's frontier trend. A slow arrival gives countries time to adapt, so the gains are wide but uneven.

up to ~20%/yr after 2045 – 10× the frontier trend

South Korea: 15.4% growth a year · #10 of 157

Fast Erdil & Besiroglu, fast takeoff

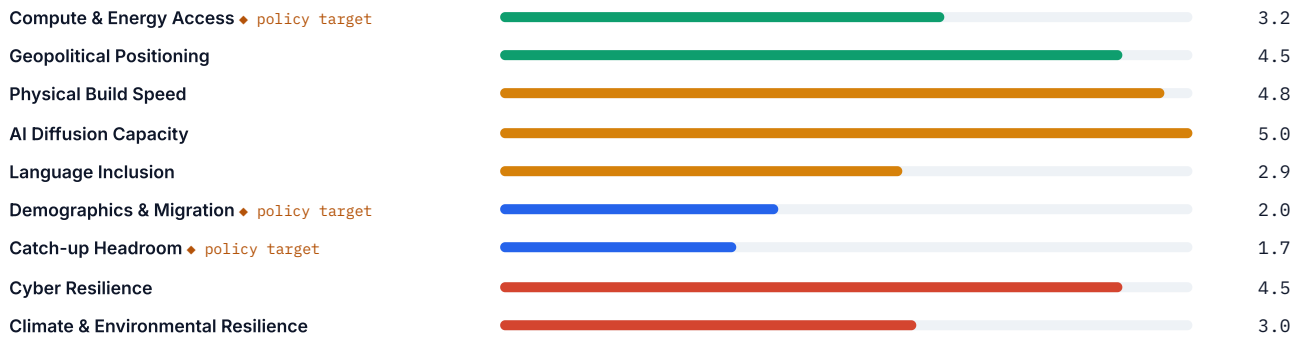
Fast takeoff — today's infrastructure decides

Transformation lands around 2030, before countries can adjust. Whoever already owns compute, capital and the ability to build wins; the gap between countries widens dramatically — and some are left growing slower than they would have without AGI.

up to ~40%/yr from 2030

South Korea: 28.5% growth a year · #7 of 157

Factor scores — and where policy bites



♦ marks this country's highest-leverage policy targets: the weakest factors carrying the most weight under the AGI scenarios. The atlas's interactive policy editor (agigrowth.org/#editor) simulates how raising any score changes growth under each scenario.

Archetype: Supply-chain chokepoints

Irreplaceable inputs to the frontier: fabrication, memory, equipment and materials, lithography.

Wins: As long as the chokepoints hold — indispensability is their power and their exposure.

Watch: Targeted by every strategy; Taiwan is the single largest concentration of risk; all four age fast.

Japan **15.1%** · #11

Netherlands **15.1%** · #13

Taiwan **12.8%** · #31

The regional picture — The supply chain lives here.

China is the only country running a frontier AI stack outside the United States — about 7% of tracked training compute (almost certainly an undercount), its own model labs, and the world's fastest build-out of power and data centers. Export controls cap its chip supply; its answer so far has been efficiency and open-weight releases that stay close to the frontier — which also makes China the second source of models for much of the world. Japan, South Korea and Taiwan hold the chokepoints: equipment and materials, memory, and fabrication. That makes them indispensable — and makes Taiwan the single greatest concentration of economic risk on the planet. All three are aging fast; Japan's population falls from 123 to about 100 million by 2060 in the projections used here, so AI arrives as a substitute for workers they will not have. The region's next twenty years turn on two questions: whether the chokepoints stay open, and whether China's constrained path converges with the US frontier or falls behind it.

Method, in brief

Each country is scored 1–5 on nine factors from public data (World Bank, Epoch AI, ITU, IMF and national sources). A scenario-weighted average forms the AGI Growth Index (0–100), which maps to a post-AGI growth rate inside ceilings derived from Erdil & Besiroglu (2023): ~20% growth a year for the best-positioned country under Gradual takeoff (AGI ~2045), ~40% under Fast (AGI ~2030); growth ramps convexly from 2027. The scenario sets the growth rates on offer; the index only decides where each country sits within them. The Modest scenario is the skeptics' baseline — a small uplift on each country's own ten-year trend. These are simulations for structured thinking, not forecasts; no probabilities are attached to any scenario.

Watch the global signals live: the METR task-horizon curve at metr.org/time-horizons · frontier-lab revenue at epoch.ai/ai-companies · AI-chip spending at epoch.ai/ai-chip-sales.

Explore further: full methodology agigrowth.org/#methodology · map & rankings agigrowth.org/#explore · country profiles agigrowth.org/#countries · policy editor agigrowth.org/#editor