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Economics: Steady-State Level of Capital per Worker

Given Data and Introduction:

To find the steady-state level of capital per worker for Country Z, consider the provided information:
- Population growth rate (n) = 0 (since there's no population growth)
- Technological progress rate (g) = 0 (since there's no technological progress)
- Depreciation rate (δ) = 0.2 (20% depreciation)
- Savings rate (s) = 0.3 (30% savings)

Step 1: Setting up the Solow Model Equation

The standard Solow model equation is given by:
$s \cdot f(k) = (\delta + n + g) \cdot k$
Since $n = 0$ and $g = 0$, the equation simplifies to:
$s \cdot f(k) = \delta \cdot k$

Explanation:
The equation equates the savings rate times the production function $f(k)$ with the depreciation rate times capital.

Supporting Statement:
Setting up the Solow model equation in this simplified form helps in finding the steady-state level of capital per worker.

Step 2: Specifying the Production Function

Assume a standard Cobb-Douglas production function for $f(k)$:
$f(k) = k^{\alpha}$
Assume $\alpha = 1/3$ for simplicity (common in Solow model problems).

Explanation:
The Cobb-Douglas production function is commonly used in growth models due to its constant returns to scale properties.

Supporting Statement:
Using the Cobb-Douglas function helps in solving for k^* with known parameters α.

Step 3: Solve for Steady-State Capital k^*

Insert the Cobb-Douglas production function into the equation:
$s \cdot k^{1/3} = \delta \cdot k$
Rearrange the equation to isolate k:
$s = \delta \cdot k^{2/3}$
Solve for k:
$k = (s/\delta)^{3/2}$
Insert the given values $s = 0.3$ and $\delta = 0.2$:
$k = (0.3/0.2)^{3/2}$

Explanation:
Rearranging the formula to isolate k and include the savings rate and depreciation rate helps in solving for the steady-state capital per worker.

Supporting Statement:
Solving for k by substituting the known values allows the calculation of the steady-state level of capital per worker.

Step 4: Calculation

Calculate the fraction inside the parentheses first:
$(0.3/0.2) = 1.5$
Next, raise 1.5 to the power of 3/2:
$1.5^{3/2} = (1.5^{1/2})^3 = (\text{sqrt}(1.5))^3$
Calculate sqrt(1.5):
$\text{sqrt}(1.5) \approx 1.2247$

Then cube this value:
`(1.2247)^3 ≈ 1.84`
Thus:
`k ≈ 1.84`

Explanation:
The calculations are a step-by-step evaluation of the fraction and raising it to the required power.

Supporting Statement:
Properly carrying out mathematical operations leads to the accurate steady-state capital per worker value.

Final Solution:

The steady-state level of capital per worker for Country Z is approximately **1.84.**
Thus, the correct answer among the provided options:
`boxed{1.84}`