

# Explanatory Memo on the Transfer-In Process for Staff Members Joining the ECB Pension Scheme

## 1. Introduction

Staff members joining the **European Central Bank (ECB)** may have the option to transfer pension rights accrued in a previous pension scheme into the **ECB Pension Scheme**. This process enables staff to consolidate their pension entitlements within the ECB's **Defined Benefit Scheme (DBS)**, ensuring continuity in retirement benefits.

The ECB ensures **actuarial fairness** when converting transferred pension rights into pensionable service credits. The calculations involved are based on factors such as **discount rates, salary progression, mortality rates, and investment returns**.

This document explains the transfer-in process, key calculations, the concept of **Pension Conversion Factors (PCF)**, the effects of actuarial discount rates, and how spouse benefits are incorporated into the calculations.

## 2. Key Principles of the ECB Pension Transfer-In Process

- The transferred pension amount is converted into **pensionable service credit**, increasing the staff member's future pension entitlement.
- The process is **voluntary**, meaning that staff members can evaluate whether a transfer is beneficial.
- The conversion is based on **actuarial equivalence**, ensuring fairness between the transferred pension rights and the pension entitlements granted by the ECB.
- The ECB pension scheme uses **actuarial factors** that are proposed by the **Scheme Actuary** and approved by the **Pensions Administrator**.
- Spousal benefits are included in pension calculations, reflecting the probability of marriage at retirement and survivor benefits.

## 3. Membership Eligibility & Contributions

### 3.1 Eligibility for Pension Transfer-In

According to **Article 8(a) of the ECB Pension Scheme Rules**:

*"The ECB shall enter into agreements or make appropriate arrangements with such other employee benefit arrangements, organisations and governments as it determines to accept the transfer to the Scheme of amounts of cash in respect of members of staff who have completed their probationary period with the ECB."*

This means that **only staff members who have completed their probationary period** at the ECB are eligible to transfer their pension rights.

### 3.2 Membership in the ECB Pension Scheme

Upon joining the ECB, all staff members automatically become members of the **Defined Benefit Scheme (DBS)**, as stated in **Article 2(a)**:

*"On taking up employment with the ECB, a member of staff shall join the defined benefit scheme."*

Additionally, **Article 8(b)** states:

*"The amounts transferred in shall be allocated to the defined benefit scheme and the member of staff shall be credited pensionable service in accordance with actuarial advice."*

Thus, transferred funds are used to determine **an equivalent service credit** based on actuarial calculations.

## 4. Calculation of the Transfer-In Factor and Credited Pensionable Service

The **pensionable service credit** granted by the ECB is determined by the following formula:

$$\text{Credited Pensionable Service} = \frac{\text{Transfer Value}}{\text{Transfer-In Factor} \times \text{Projected Revalued Earnings}}$$

Where:

- **Transfer Value:** The total pension amount transferred into the ECB scheme.
- **Transfer-In Factor:** A conversion factor that adjusts for retirement age, discount rates, expected pension benefits, and spousal provisions.
- **Projected Revalued Earnings:** The staff member's estimated final salary at retirement, considering salary progression and inflation.

## 5. Calculation of the Transfer-In Factor

The **Transfer-In Factor (TIF)** ensures that the transferred pension value is converted into an equivalent pensionable service period under the ECB scheme. It is based on the **Pension Conversion Factor (PCF)** and the actuarial discount rate assumptions.

The formula for the **Transfer-In Factor** is:

$$\text{TIF} = (1 + r_{\text{pre-retirement}})^{-(\text{years to 65})} \times \text{PCF}_{65} \times 2\%$$

Where:

- $r_{\text{pre-retirement}}$  = **Pre-Retirement Discount Rate**, determined by the ECB actuary and reflecting the expected return on pension investments.
- $PCF_{65}$  = **Pension Conversion Factor at age 65**, reflecting the present value of an actuarial annuity.
- **2%** = The **annual pension accrual rate** under the ECB's Defined Benefit Scheme.

The **PCF** is a key actuarial value used to convert a pension amount into a lifetime annuity, adjusted for both the staff member's and the spouse's life expectancy.

## 6. Calculation of the Pension Conversion Factor (PCF) with Spousal Benefits

### 6.1 PCF for Single Life Annuity<sup>1</sup>

For an individual retiring at age 65, the **Pension Conversion Factor (PCF)** is calculated as follows:

$$PCF_{65} = \sum_{t=0}^{\infty} v^t \times p_{65+t}$$

Where:

- $v = \frac{1}{1+NBV}$  = Discount factor.
- $p_{65+t}$  = Probability of surviving to time  $t$ , based on actuarial mortality tables.

### 6.2 PCF with Spousal Benefits

Additionally, for staff members assumed to have a **spouse at retirement (via an expected probability)**, the Total PCF (staff + spouse) must include the conditional probability of:

1. **The staff member dying first.**
2. **The spouse surviving.**
3. **A survivor pension being paid (typically 60% of the main pension).**

The adjusted PCF formula is:

$$PCF_{65} = \sum_{t=0}^{\infty} v^t \times p_{65+t} + q_{65+t} \times p_{\text{spouse}} \times 0.6 \times \sum_{s=0}^{\infty} v^s \times p_{\text{spouse}}$$

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<sup>1</sup> PCF calculations address technical considerations, including the fact that pensions are paid monthly on the day 15th. Additionally, these adjustments also account for the misalignment between the pension start date and the natural calendar year, ensuring accurate actuarial computations that reflect these timing effects.

Where:

- $q_{65+t}$  = Probability of staff member dying at time  $t$ .
- $p_{spouse}$  = Probability of the spouse surviving at time  $s$ .
- 0.6 = **Survivor pension percentage (60%)**.
- $v^s$  = Discount factor for spouse's pension.

## 7. Effects of Changes in Net Bond Yield (NBY) and Pre-Retirement Discount Rates

### 7.1 Why is the Net Bond Yield (NBY) Used?

For the purpose of calculating the PCF, Pension cash flows are projected without considering their annual revaluation (i.e. the GSA). Instead, the discount rate (NBY) is adjusted to reflect a real rate **after removing expected inflation**.

This means that:

- Instead of projecting future pension payments **with inflation/GSA adjustments**, the **NBY is used net of inflation** to discount them back to present value.
- This ensures the PCF represents the **real value of the annuity** in today's terms, making it a fair measure of pension entitlements.

### 7.1 Impact of Higher NBY

If the **NBY increases**, the PCF **decreases** because the discounting effect on future pension payments is stronger. This means:

- **More pensionable service credit is granted** for the same transfer amount.
- The present value of annuities decreases, making the purchase of pensions rights cheaper.

### 7.2 Impact of Lower NBY

If the **NBY decreases**, the PCF **increases**, meaning:

- **Less pensionable service credit is granted** for the same transfer amount.
- The present value of annuities increases, making the purchase of pensions rights more expensive.

### 7.3 Pre-Retirement Discount Rate (Impact on Transfer-In Value)

The **pre-retirement discount rate** affects how the transfer-in amount grows until retirement.

- A **higher pre retirement discount rate** increases the **service credit** received.

Article 21 states that:

*"The administrator shall, on advice of the Scheme actuary and the ECB organisational unit responsible for risk management, adopt and revise actuarial tables and assumptions to be used in the administration of the Scheme."*

## 7. Revalued Earnings Calculation

Revalued earnings at retirement age are computed by adjusting historical and projected salaries using **compounded revaluation factors**, incorporating **inflation and extra age-based increases**.

### 7.1 Define the Relevant Salary Period

The calculation considers the last **30 years of salary history** up to the retirement age  $R$ :

$$\text{Relevant Period} = [R - 30, R]$$

Each salary within this period is adjusted using revaluation factors.

### 7.2 Revaluation Factor Calculation

Each salary  $\text{Salary}_t$  earned at age  $t$  is revalued to the retirement year:

$$\text{Revalued Salary}_t = \text{Salary}_t \times \text{Revaluation Factor}_t$$

where the **Revaluation Factor** is:

$$\text{Revaluation Factor}_t = \prod_{y=t+1}^R (1 + i_y + s_y)$$

with:

- $i_y = \text{Inflation rate}$  for year  $y$ .
- $s_y = \text{Extra salary increase}$  (applies only before age 55).

For **historical salaries**, only actual recorded revaluation factors apply. For **future salaries**, extra increases apply until 55, after which only inflation is considered.

### 7.3 Compute Average Revalued Earnings

The **average revalued earnings** over 30 years are:

$$\text{Average Revalued Earnings} = \frac{\sum_{t=(R-30)}^R (\text{Revalued Salary}_t \times \text{Employment Factor}_t)}{\sum_{t=(R-30)}^R \text{Employment Factor}_t}$$

where:

- Employment Factor<sub>t</sub> represents the proportion of the year worked. It equals **1** for a full working year, but is adjusted for periods of **part-time work or unpaid leave**.

## 7.4 Discounting to Present Value

Revalued earnings are discounted to the **report date**:

$$\text{Discounted Revalued Earnings} = \frac{\text{Average Revalued Earnings}}{(1 + i)^{\text{Years to Discount}}}$$

where:

$$\text{Years to Discount} = \frac{\text{Retirement Date} - \text{Report Date}}{365.25}$$

This ensures consistency in pension calculations by reflecting the present value of projected earnings.