

Ethiopia Capital Market Data Platform

API Requirements Document

Date: May 25, 2025

Version: 1.0

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1. General API Requirements

- **Protocol:** RESTful API, using **GET** for data retrieval and **POST** for searches and user actions.
 - **Response Format:** JSON, structured as:
 - **Arrays** for lists (e.g., stocks for Chart.js)
 - **Objects** for single record or summary data (e.g., company profile)
 - **Error Handling:**
 - **400 Bad Request:** Invalid inputs (e.g., malformed dates)
 - **404 Not Found:** Missing resources (e.g., invalid company ID)
 - **500 Internal Server Error:** Database or server failures
 - **Performance:** Optimized for small dataset (50 stock rows, 15 financial rows, 12 macro rows), targeting < 1s response time
 - **Localization:** English responses by default; Amharic optional if future data includes localized fields
 - **Security:** HTTPS in deployment per [ECMA Laws](#)
 - **Scalability:** Endpoints designed for future ESX API integration using flexible query patterns
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2. Feature-Specific Requirements

Organized by platform feature (as per prototype scope)

Core Features

2.1 Real-Time Stock Prices

- **Purpose:** Display latest stock price for each company
- **Source:** **Stock** and **Company** tables
- **Requirements:**
 - Return: **company_id**, **ticker**, **name**, **close**, **date**, **volume**
 - Optional: Include percentage change from prior day's close

Example

```
{
  "company_id": 1,
  "ticker": "WGB",
  "name": "Wegagen Bank",
```

```
"close": 53.00,  
"date": "2025-04-10",  
"volume": 5200  
}
```

2.2 Historical Price Data

Purpose: Show 10+ day stock price history for Chart.js

Source: Stock table

Requirements:

Fetch by company_id

Optional date_from / date_to query params

Default: 10 latest records if no dates provided

Validate YYYY-MM-DD format

Example

```
[  
  {  
    "id": 1,  
    "company_id": 1,  
    "date": "2025-04-01",  
    "open": 50.0,  
    "close": 51.5,  
    "high": 52.0,  
    "low": 49.0,  
    "volume": 5000  
  }  
]
```

2.3 Company Profiles

Purpose: Show company details for company pages and search

Source: Company table

Requirements:

Fetch all or by id

Return: id, name, ticker, industry, description

Example

```
{  
  "id": 1,  
  "name": "Wegagen Bank",  
  "ticker": "WGB",  
  "industry": "Banking",  
  "description": "Leading commercial bank in Ethiopia."  
}
```

2.4 Market Overview

Purpose: Show dashboard summary

Source: Company and Stock tables

Requirements:

Return: total_companies, market_cap, last_updated

Market cap = latest close price × assumed shares

Example

```
{
```

```
"total_companies": 5,  
"market_cap": 1500000,  
"last_updated": "2025-04-10"  
}
```

2.5 Search Functionality

Purpose: Support autocomplete for company names/tickers

Source: Company table

Requirements:

POST /search with JSON body { "query": "Weg" }

Return: Array of matching id, name, ticker, industry

Validate: non-empty query

Example

```
[  
  {  
    "id": 1,  
    "name": "Wegagen Bank",  
    "ticker": "WGB",  
    "industry": "Banking"  
  }  
]
```

◆ Additional Tabs

2.6 Key Financial Data

Purpose: Show yearly financial metrics for 3 years

Source: Financials table

Requirements:

Fetch by company_id

Optional year filter (e.g., 2024)

Default: All 3 years if no year provided

Example

```
[  
  {  
    "year": 2023,  
    "revenue": 600000000,  
    "net_profit": 50000000,  
    "debt_to_equity": 2.0  
  }  
]
```

2.7 Macroeconomic Indicators

Purpose: Show macro trends over 12 months

Source: MacroIndicators table

Requirements:

Optional date_from / date_to query params

Return: gdp_growth, inflation_rate, interest_rate, etb_usd, etb_eur, etc.

Example

```
[  
  {  
    "date": "2024-05-01",  
    "gdp_growth": 6.5,  
    "inflation_rate": 3.2,  
    "interest_rate": 5.0,  
    "etb_usd": 1.08,  
    "etb_eur": 0.92
```

```

        "inflation_rate": 20.0,
        "interest_rate": 7.0
    }
]

```

◆ Optional: User Authentication

2.8 Register

POST /users/register

Request

```

{
  "username": "newuser",
  "email": "test@email.com",
  "password": "plaintext"
}

```

Response

```

{
  "message": "User registered",
  "user_id": 1
}

```

2.9 Login

POST /users/login

Request

```

{
  "username": "newuser",
  "password": "plaintext"
}

```

Response

```

{
  "message": "Login successful",
  "token": "jwt_token_here"
}

```

📌 3. Proposed Endpoints Summary

Method	Endpoint	Purpose
GET	/companies	Get all companies
GET	/companies/<int:id>	Get single company
GET	/stocks/<int:company_id>	Get stock data with optional dates
GET	/financials/<int:company_id>	Get financial data with optional year
GET	/macro_indicators	Get macro data with optional dates
POST	/search	Search by company name/ticker
GET	/market	Get market summary
POST	/users/register (optional)	User registration
POST	/users/login (optional)	User login

📌 4. Technical Specifications

Framework: Flask-RESTful, Flask-SQLAlchemy

Validation: Use reqparse for query parameters and request body validation

Data Types:

Integers: id, company_id, year, volume

Floats: Stock prices, financial metrics, macro indicators

Strings: name, ticker, industry, description, username, email

Dates: YYYY-MM-DD

Error Messages: Specific and clear (e.g., "Company ID 999 not found.")

Testing: All endpoints tested via Postman