

## I. SCENARIO A – Production Run

Step 0 — Start container interactively

```
[alizeearchereau@Alizes-MacBook-Air patek_project % docker compose run --rm --service-ports app bash
Container patek_project-app-run-f724170dd9c8 Creating
Container patek_project-app-run-f724170dd9c8 Created
root@0e3840eed095:/app# ]
```

Step 1 — Data extraction

```
[root@f00587f5ac25:/app# python -m patek_analysis.data
✖ Connecting to BigQuery...
✓ Data loaded! Shape: (39652, 16)
🧹 Cleaned Data: Removed 5511 rows with empty prices.
   uid      brand          url  ...  price_percent_change  price_changed  is_new
0  68338  Patek Philippe  https://www.patek.com/en/collection/twenty4/49...  ...          0.0          0.0    NaN
1  3406239  Patek Philippe  https://www.patek.com/en/collection/twenty4/49...  ...          0.0          0.0    NaN
2   68179  Patek Philippe  https://www.patek.com/en/collection/twenty4/49...  ...          0.0          0.0    NaN
3  1301874  Patek Philippe  https://www.patek.com/en/collection/twenty4/49...  ...          0.0          0.0    NaN
4  3369296  Patek Philippe  https://www.patek.com/en/collection/twenty4/49...  ...          0.0          0.0    NaN

[5 rows x 16 columns]
✓ Success! Data saved to data/patek_philippe_data_cleaned.csv
[root@f00587f5ac25:/app# ]
```

Step 2 — FX enrichment

```
[root@f00587f5ac25:/app# python -m patek_analysis.fx_rates
Project: projectbdm-487109
Pairs to process: 256
✓ Loaded 228 rates to projectbdm-487109.patek_data.fx_rates
✓ Saved fx_rates.csv for PowerBI
💡 Enriching Patek table with EUR prices (CTAS Strategy)...
✓ Success! Recreated 'projectbdm-487109.patek_data.patek' with 'price_EUR' column.
root@f00587f5ac25:/app# ]
```

Step 3 (optional) — ML / Model

```
[root@f00587f5ac25:/app# python -m patek_analysis.model
✖ Loading data for training...
✖ Connecting to BigQuery...
✓ Data loaded! Shape: (39652, 16)
🧹 Cleaned Data: Removed 5511 rows with empty prices.
   uid      brand          url  ...  price_percent_change  price_changed  is_new
0  68338  Patek Philippe  https://www.patek.com/en/collection/twenty4/49...  ...          0.0          0.0    NaN
1  3406239  Patek Philippe  https://www.patek.com/en/collection/twenty4/49...  ...          0.0          0.0    NaN
2   68179  Patek Philippe  https://www.patek.com/en/collection/twenty4/49...  ...          0.0          0.0    NaN
3  1301874  Patek Philippe  https://www.patek.com/en/collection/twenty4/49...  ...          0.0          0.0    NaN
4  3369296  Patek Philippe  https://www.patek.com/en/collection/twenty4/49...  ...          0.0          0.0    NaN

[5 rows x 16 columns]
✓ Success! Data saved to data/patek_philippe_data_cleaned.csv
🔧 Preprocessing features...
💡 Training Random Forest Model...
🎉 Model Trained! R2 Score: 0.98 (1.0 is perfect)
✓ Predictions saved to model_predictions.csv
root@f00587f5ac25:/app# python -m patek_analysis.model]
```

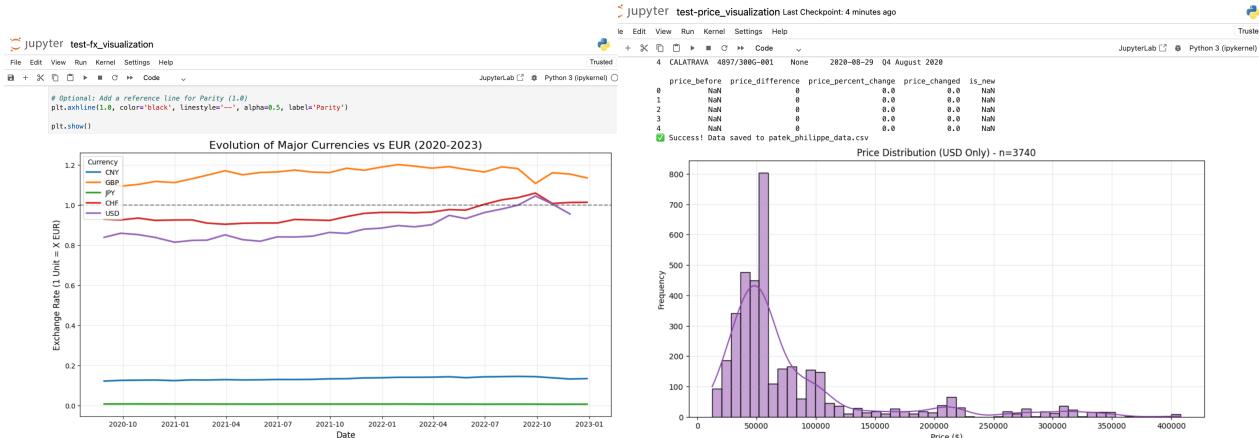
+ exit

## II. SCENARIO B - The "Visual Analysis" (The Notebook)

```
[alizeearchereau@Alizees-MacBook-Air patek_project % docker compose run --rm --service-ports app make notebook
Container patek_project-app-run-29c556d08c5f Creating
Container patek_project-app-run-29c556d08c5f Created
[I 2026-02-12 22:23:29.250 ServerApp] jupyter_lsp | extension was successfully linked.
[I 2026-02-12 22:23:29.253 ServerApp] jupyter_server_terminals | extension was successfully linked.
[W 2026-02-12 22:23:29.254 LabApp] 'token' has moved from NotebookApp to ServerApp. This config will be passed to ServerApp. Be sure to update your config before our next release.
[W 2026-02-12 22:23:29.254 LabApp] 'password' has moved from NotebookApp to ServerApp. This config will be passed to ServerApp. Be sure to update your config before our next release.
[W 2026-02-12 22:23:29.256 ServerApp] ServerApp.token config is deprecated in 2.0. Use IdentityProvider.token.
[I 2026-02-12 22:23:29.256 ServerApp] jupyterlab | extension was successfully linked.
[I 2026-02-12 22:23:29.258 ServerApp] notebook | extension was successfully linked.
[I 2026-02-12 22:23:29.260 ServerApp] Writing Jupyter server cookie secret to /root/.local/share/jupyter/runtime/jupyter_cookie_secret
[I 2026-02-12 22:23:29.268 ServerApp] notebook_shim | extension was successfully linked.
[W 2026-02-12 22:23:29.647 ServerApp] All authentication is disabled. Anyone who can connect to this server will be able to run code.
[I 2026-02-12 22:23:29.649 ServerApp] notebook_shim | extension was successfully loaded.
[I 2026-02-12 22:23:29.652 ServerApp] jupyter_lsp | extension was successfully loaded.
[I 2026-02-12 22:23:29.654 ServerApp] jupyter_server_terminals | extension was successfully loaded.
[I 2026-02-12 22:23:29.660 LabApp] JupyterLab extension loaded from /usr/local/lib/python3.12/site-packages/jupyterlab
[I 2026-02-12 22:23:29.660 LabApp] JupyterLab application directory is /usr/local/share/jupyter/lab
[I 2026-02-12 22:23:29.661 LabApp] Extension Manager is 'pypi'.
[I 2026-02-12 22:23:29.694 ServerApp] jupyterlab | extension was successfully loaded.
[I 2026-02-12 22:23:29.699 ServerApp] notebook | extension was successfully loaded.
[I 2026-02-12 22:23:29.701 ServerApp] Serving notebooks from local directory: /app
[I 2026-02-12 22:23:29.701 ServerApp] Jupyter Server 2.17.0 is running at:
[I 2026-02-12 22:23:29.701 ServerApp] http://d0c5f889eb7f:8888/tree
[I 2026-02-12 22:23:29.701 ServerApp] http://127.0.0.1:8888/tree
[I 2026-02-12 22:23:29.701 ServerApp] Use Control-C to stop this server and shut down all kernels (twice to skip confirmation).
[I 2026-02-12 22:23:29.716 ServerApp] Skipped non-installed server(s): basedpyright, bash-language-server, dockerfile-language-server-nodejs, javascipt-typescript-langserver, jedi-language-server, julia-language-server, pyrefly, pyright, python-language-server, python-lsp-server, r-languageserver, sql-language-server, texlab, typescript-language-server, unified-language-server, vscode-css-languageserver-bin, vscode-html-languageserver-bin, vscode-json-languageserver-bin, yaml-language-server
[W 2026-02-12 22:23:39.791 ServerApp] Clearing invalid/expired login cookie username-127-0-0-1-8888 <- user went to the webpage
^C[I 2026-02-12 22:23:47.185 ServerApp] interrupted <- user typed ctrl+C
[I 2026-02-12 22:23:47.192 ServerApp] Serving notebooks from local directory: /app
    0 active kernels
  Jupyter Server 2.17.0 is running at:
  http://d0c5f889eb7f:8888/tree
  http://127.0.0.1:8888/tree
[Shut down this Jupyter server (y/[n])? y
[C 2026-02-12 22:23:48.913 ServerApp] Shutdown confirmed
[I 2026-02-12 22:23:48.925 ServerApp] Shutting down 5 extensions
make: *** wait: No child processes. Stop.

alizeearchereau@Alizees-MacBook-Air patek_project % ]
```

Our example Visualizations:



+ Ctrl+C

### III. SCENARIO C - The Dashboard (Looker Studio)

