Real estate markets and illicit financial inflows

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Motivation I

- Real estate market particularly prone to **money laundering schemes** (Ferwerda & Unger, 2013) and **illicit financial flows** (IMF, 2023).
- **2.3 billion USD** laundered through the **U.S. real estate market** between 2015 and 2021, with anonymous shell companies concealing ownership in 80% of these cases (GFC report, 2021).
- Between 1995 and 2013, at least **85% of residential property purchases in London** by foreigners were made through offshore special purpose vehicles registered in foreign countries (Badarinza & Ramadorai, 2018).
- Property purchases involve **large sums of money** while are subject to **less regulatory and reporting requirements** (Naheem, 2017).
- Real estate companies in selected European countries are suitable for money laundering, as they facilitate positioning, layering, and integration, while offering **one of the few profitable ways to launder money** (Teichmann, 2018).

Motivation II

- Scarce empirical evidence on the **impact of illicit transactions on real estate market**, usually covering varied **anecdotal evidence**.
  - Small influence of money laundering practices on housing prices in Netherlands (van Duyne and Soudijn, 2009).
  - Illicit financial inflows triggered a decrease in property price returns in Hong Kong (Cheung et al., 2017).
  - Offshore ownership had significant positive effects on housing prices in the UK (Johannesen et al., 2022).
- Illicit financial flows may **target different segments** of the real estate market or be initiated by different economic **actors or sources**.
  - The highest share of offshore corporations in the luxury property sector in the UK (Johannesen et al., 2022).
  - The probability of owning Dubai real estate increases with the wealth of individual foreign investors (Alstadsæter et al., 2022).
  - It may be linked to lower-income populations, particularly migrants (informal payment systems to facilitate remittance transfers (Olivie & O'Shea, 2022), migrant smuggling, and trafficking (UNODC, 2023).

Goal and main contribution

- We examine the **effects of illicit financial flows (IFF) on rental prices** in more than 100 European cities (2010-2019).
- We identify possible **transmission channels**, aiming to distinguish between supply and demand side effects in real estate markets.
- We consider the effect on four **different types of apartment** based on their size and where they are in the city (Heterogeneity analysis).

Data

- We combine **city-level data** (extending Reichle et al., 2023, for more cities) and publicly available data (e.g., Eurostat) with recent estimates of IFF.
- Sample of **110 (135) European cities (metropolitan areas)** from 2013 to 2019 - often listed among financial centers or tax haven territories.
- **Apartment rent prices** - collected from https://Numbeo.com and expressed as average rent for a one-room apartment: city center or periphery, 1 or 3 rooms.
- Potential **transmission channels of IFF** - pull factors - at the city level:
  - share of persons employed in financial and insurance activities,
  - Golden Visa (Residence by Investment),
  - construction sector, education (not reported here).
- **Standard demand- and supply-side determinants**: city population, unemployment rate, level of financial development.

Cities

We include the following cities:

Amsterdam, Antwerp, Arhus, Athens, Barcelona, Bari, Berlin, Bielefeld, Bilbao, Bonn, Bordeaux, Bradford, Brasov, Bremen, Bristol, Brno, Brussels, Bucharest, Budapest, Cardiff, Catania, Cluj-Napoca, Cologne, Constanta, Copenhagen, Cordoba, Cork, Craiova, Debrecen, Dresden, Dublin, Dusseldorf, Edinburgh, Eindhoven, Florence, Galati, Gdansk, Genoa, Gent, Glasgow, Gothenburg, Graz, Hamburg, Hanover, Helsinki, Iasi, Karlsruhe, Katowice, Kaunas, Krakow, Leeds, Leipzig, Linz, Lisbon, Liverpool, Ljubljana, Lodz, London, Lublin, Luxembourg, Lyon, Madrid, Malmo, Manchester, Maribor, Marseille, Milan, Munich, Munster, Nantes, Naples, Nice, Nicosia, Nuremberg, Ostrava, Palermo, Palma de Mallorca, Paris, Porto, Poznan, Prague, Riga, Rome, Rotterdam, Seville, Sofia, Split, Stockholm, Strasbourg, Stuttgart, Szczecin, Tallinn, Tampere, The Hague, Thessaloniki, Timisoara, Toulouse, Turin, Utrecht, Valencia, Valladolid, Valletta, Varna, Venice, Vienna, Vilnius, Warsaw, Wroclaw, Zagreb, Zaragoza

Measurement of illicit financial inflows

- Multiple measurement approaches to define IFF (Cobham & Jansky, 2022).
- Our measure of IFF is based on the concept of **'abnormal FDI'** developed by Delatte et al. (2022), with data derived from the study by Siranova et al. (2022).
- IFF volumes are captured by the **unexplained residuals** from a gravity-type regression, estimated for a sample of world bilateral FDI positions (liability side).
- 'Abnormal FDI' usually pass through tax havens and reflect investments that are not explained by standard economic and geographic factors.
- $IFF_{j,t-1}$ as ratio of GDP, where $IFF_{j,t-1} > 0$ signifies a positive stock of illicit capital.
- Luxembourg, Ireland, and the Netherlands are among the largest contributors to the volumes of 'abnormal FDI' positions in the world (Delatte et al., 2022).

Empirical strategy

Baseline specification - FE model with Driscoll-Kray standard errors:

$$lnRent^{area}_{i,j,t} = \beta_0 + \beta_1 lnIFF_{j,t-1} + \gamma X_{i,j,t} + \delta Z_{j,t} + \theta_i + \tau_t + \epsilon_{i,j,t} \quad (1)$$

where
$lnRent^{area}$ is the log of residential rent (city center, periphery, average, for 1 or 3 rooms),
$IFF_{j,t-1}$ captures log of IFF,
$X_{i,j,t}$ and Z_{jt} represent city or country level control variables indexed by i and j,
θ_i denotes the city fixed effects,
τ_t denotes time effects,
β, γ and δ are estimated coefficients, $\epsilon_{i,j,t}$ is the error term.

We apply the **Driscoll-Kray estimator** (Driscoll & Kray, 1998) to account for the dependence of cross-sectional units.

Determinants of average monthly rents

	(1) base	(2) Fin.Dev.	(3) Golden Visa	(4) Fin.Sec.	(5) after 2013	(6) weighted
IIF	0.443**	0.443**	0.445**	0.474**	0.250*	0.153**
	(0.167)	(0.165)	(0.171)	(0.186)	(0.110)	(0.060)
log(income)	0.112***	0.112***	0.108***	0.074**	0.053	0.133***
	(0.030)	(0.029)	(0.026)	(0.031)	(0.065)	(0.027)
log(pop)	1.743***	1.742***	1.697***	1.679***	1.548***	1.742***
	(0.168)	(0.185)	(0.175)	(0.127)	(0.353)	(0.250)
log(UR)	-2.811***	-2.813***	-2.755***	-2.990***	-2.982***	-4.159***
	(0.262)	(0.255)	(0.227)	(0.253)	(0.164)	(0.445)
Fin.Dev.		0.020	0.074	-0.040	0.246	0.190
		(0.381)	(0.326)	(0.336)	(0.191)	(0.344)
Golden Visa			-0.015	-0.033	-0.058**	-0.072**
			(0.021)	(0.021)	(0.015)	(0.028)
Fin.Sec. Share				0.016	0.000	-0.018
				(0.027)	(0.015)	(0.012)
Constant	-2.606**	-2.612***	-2.405**	-2.087***	-1.434	0.000
	(0.828)	(0.753)	(0.723)	(0.547)	(1.957)	(0.000)
Obs.	791	791	791	547	390	544
Number of cities	110	110	110	74	73	74
Within R^2	0.738	0.738	0.738	0.738	0.738	0.738

Notes: Driscoll-Kray standard errors. Time effects included. IFF and city characteristics enter specifications with a one-year lag.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Determinants of monthly rents by location and size

	(1) av	(2) 3c1	(3) 3o	(4) 1o	(5) 1c
IFF	0.443**	0.116	0.802***	0.245	0.299***
	(0.167)	(0.090)	(0.193)	(0.185)	(0.075)
log(income)	0.112***	0.111***	0.094***	0.137**	0.169***
	(0.030)	(0.022)	(0.013)	(0.053)	(0.032)
log(pop)	1.743***	1.727***	1.784***	1.777***	1.376***
	(0.168)	(0.216)	(0.239)	(0.208)	(0.176)
log(UR)	-2.811***	-2.829***	-3.443***	-2.616***	-2.673***
	(0.262)	(0.511)	(0.166)	(0.494)	(0.166)
Constant	-2.606**	0.000	0.000	-2.878**	-1.817*
	(0.828)	(0.000)	(0.000)	(1.113)	(0.827)
Obs.	791	782	779	785	781
No of cities	110	110	110	110	110
Year FE	Yes	Yes	Yes	Yes	Yes
Within R^2	0.291	0.291	0.291	0.291	0.291

Notes: Driscoll-Kray standard errors. Time effects included. IFF and city characteristics enter specifications with a one-year lag.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Extensions and robustness analysis

- **Heterogeneous effects** in different real market segments.
- Marginal effects are driven by the population size and the change in rents of apartments located in suburban rather than center districts.
- Non-linear and interaction effects.
- Subsamples for different groups of cities.
- Decrease in rents for **one-room apartments outside the city center** with the interplay between IFF and the construction sector (e.g., Prague, Bologna, Antwerp).
- Positive effect on rents for **small apartments in the city center** in cities with a high share of tertiary-educated residents (e.g., Dublin, Stockholm, Copenhagen).
- Differences between low and high income migrant groups.

Conclusion

- IFF can impact rental prices, but the **effect varies depending on the transmission channel** or city profile.
- Income, population size, and unemployment have expected effects on rental prices.
- Selected indicators on financial developments are not robust.
- The strongest effects are on larger apartment out of the city center and small apartments in the city center.
- The pressures on the rental market leads to substitution to small apartments in the city center or to larger apartments out of the city center.

Thank you for your attention.

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