

# Economic Consequences of FATF Greylisting (Draft 3.0)

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## 1 Introduction

This La Trobe University study was commissioned by the Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ) in 2021 to investigate whether there are negative economic impacts on a country when the Financial Action Task Force (FATF) includes it on its list of 'jurisdictions under increased monitoring', also known as its 'grey list'. Countries on the grey list have failed to adhere appropriately to the FATF Recommendations but commit themselves to working swiftly to resolve the identified strategic deficiencies within agreed timeframes, during which they are subject to increased monitoring.

Narratives about possible negative economic impacts of a listing have been used as a strategic tool to move countries to higher levels of compliance. In some cases business and civil society used the threat of negative economic impact to pressure government to comply with FATF standards while governments have also referred to potential negative economic consequences to weaken opposition to improved anti-money laundering and counter terrorist financing laws. For many years evidence of actual negative economic impact has, however, been largely anecdotal and often linked to FATF's earliest iteration of the use of listing in the form of its Non-Co-operative Countries and Territories (NCCT) initiative (2000 to 2007).<sup>2</sup> Studies of listing after this period were generally limited, and either found evidence of impact on one or a small number of indicators or impact on a specific country or group of countries, or have not found convincing evidence of impact. Most studies did not consider economic indicators following delisting.

This study considers greylisting by FATF from 2000-2019. During this period, the process underwent important changes. As a result, the researchers distinguish three different phases (Phase 1: 2000-2007; Phase 2: 2008-2015; and Phase 3; 2016 - ). The study developed an economic impact model and used it to identify appropriate economic indicators. The principal source of economic and

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<sup>22</sup> For more detail see [https://www.fatf-gafi.org/publications/high-riskandnon-cooperativejurisdictions/more/aboutthenon-cooperativecountriesandterritoriesncctinitiative.html?hf=10&b=0&s=desc\(fatf\\_releasedate\)](https://www.fatf-gafi.org/publications/high-riskandnon-cooperativejurisdictions/more/aboutthenon-cooperativecountriesandterritoriesncctinitiative.html?hf=10&b=0&s=desc(fatf_releasedate))

financial data was the World Bank's 'World Development Indicators' databank. Countries where the data was too sparse to be used were excluded from the analysis, so that the final analysis was based on 173 countries, and 3,287 country-years of data. For these remaining countries, some interpolation of missing data was also undertaken.

In order to explore whether an event, such as FATF listing or delisting, has a potential effect on a particular economic or financial variable, we had to control for other effects across countries, for example major economic or political disruptions. We did this by setting up a pooled cross-section and time-series model, and estimating a fixed effects model. As we explain in more detail below, demonstrating correlation between listing events and movements in particular economic or financial variables does not necessarily prove causation, so that care needs to be taken not to claim without additional reasoning and evidence that a significant relationship between variables demonstrates 'impact' or 'direct effect'.

The study finds evidence of significant negative correlation between the listing process and several relevant economic and financial variables, particularly in the 2008-2015 period. In some cases there is also evidence of positive correlation with some indicators. One or two year lags are also evident in a number of cases. Importantly, there is also evidence of positive correlations in Phase 3, for example with market capitalisation and reductions in non-performing loans. This may be due to changes in the list itself as the FATF, from February 2016, only added countries with strategic deficiencies that committed themselves to a plan of action and a timeline to address the concerns. The signalling by FATF was also more positive in relation to the listed countries in this phase. In addition, the market has also come to expect a delisting to follow a listing. This combination of factors may have resulted in more positive responses.

The findings should provide some comfort to FATF stakeholders who have been concerned about unintended consequences of greylisting. There is however more work to be done, especially in relation to causation and impact on individual countries, before FATF can be sure that listings in Phase 3 are not causing unnecessary or unintended harm.

This study was undertaken by a multi-disciplinary team consisting of Adjunct Professor Nicholas Morris (economist); John Howell (AML/CFT/FATF expert) and Professor Louis de Koker (regulatory expert), supported by an advisory panel consisting of Professor Mike Levi (criminologist), and Peter Andrews (regulatory economist).

## 2 FATF and its black- and grey-listing processes

The Financial Action Task Force (FATF) is the intergovernmental global standard-setter for anti-money laundering, and counter terrorist and proliferation financing. More than 200 jurisdictions are politically committed to meeting the FATF standards, known as the 'Forty Recommendations'.

The FATF itself has 37 member jurisdictions and 2 regional organisations. More than 200 countries, mainly smaller economies, have successfully applied to belong to one of nine affiliated FATF-Style Regional Bodies (FSRBs). FSRBs are regional versions of FATF, which is their accreditor and the guardian and arbiter of FATF activities.

To promote the adoption of its Recommendations by FATF and FRSB, and assist implementation, FATF publishes reports on threats, methods and trends, as well as guides to its operations. FATF also monitors progress, assessing if countries (members or not) have the necessary legal and institutional frameworks in place, and how effectively they are implementing them, by a process known as Mutual

Evaluation. Those failing to implement adequately are subject to risk-based countermeasures and held to account by a black- and grey-listing process.

## 2.1 Mutual evaluation

A successful Mutual Evaluation (ME) is a criterion for new applicants, and all members of FATF and FRSBs are reviewed by their peers in multiyear cycles of evaluation rounds.<sup>3</sup> Countries are scored for technical compliance of their arrangements with each of the 40 Recommendations and, since 2013, also on the effectiveness of their AML/CFT measures.

The evaluation is undertaken on the basis of a comprehensive methodology.<sup>4</sup> The possible scores for each of the 40 Recommendations are NC (Non-Compliant); PC (Partially Compliant); LC (Largely Compliant); and FC (Fully Compliant). Effectiveness of implementation is also evaluated using a set of 11 Immediate Outcomes that FATF has determined contribute to achieving FATF's overall goals<sup>5</sup>, with possible scores of High; Substantial; Moderate; and Low.

After the adoption of the MER a country will normally go into regular follow up, reporting back to Plenary after three years on issues raised in the MER (with requests for rerating and other signs of significant progress). It is then subject to a follow-up review after five years.

However, FATF has the discretion to place a country on enhanced follow-up if it has low compliance or effectiveness ratings, especially on key Recommendations<sup>6</sup>. Countries falling behind in regular follow-up or dropping standards may also go into enhanced follow-up. Where an MER and enhanced follow-up uncover significant problems, a country may enter FATF's International Cooperation Review Group (ICRG) process (see below).

## 2.2 FATF-related measures in relation to non-compliant jurisdictions

The FATF has no formal powers of compulsion but its standards (Rec 19) require countries to ensure that their financial institutions apply appropriate countermeasures, including enhanced due diligence measures, to business relationships and transactions relating to countries, where this is called for by the FATF or where enhanced risk requires them to adopt such measures.

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<sup>3</sup> <https://www.imf.org/en/Publications/Policy-Papers/Issues/2020/02/19/Participation-by-Fund-Staff-In-Anti-Money-Laundering-Combating-The-Financing-Of-Terrorism-49064>.

<sup>4</sup> For the genesis of the methodology, see <https://www.imf.org/en/Publications/Policy-Papers/Issues/2016/12/31/Anti-Money-Laundering-and-Combating-the-Financing-of-Terrorism-AML-CFT-Materials-Concerning-PP152>.

<sup>5</sup> Louis de Koker and Mark Turkington, Anti-Money Laundering Measures and the Effectiveness Question, in Barry Rider (ed) *Research Handbook on International Financial Crime* (2015) 520.

<sup>6</sup> 'A country will be placed immediately into enhanced follow-up if any one of the following applies: (i) it has 8 or more NC/PC ratings for technical compliance, or (ii) it is rated NC/PC on any one or more of R.3, 5, 10, 11 and 20, or (iii) it has a low or moderate level of effectiveness for 7 or more of the 11 effectiveness outcomes, or (iv) it has a low level of effectiveness for 4 or more of the 11 effectiveness outcomes. As regards effectiveness, the assessment body should consider what a reasonable level of effectiveness should be. In principle, FSRBs should aim to apply the same threshold as the FATF, i.e. a country would be placed into enhanced follow-up if it has a low or moderate level of effectiveness for 7 or more of the 11 effectiveness outcomes, or it has a low level of effectiveness for 4 or more of the 11 effectiveness outcomes.' FATF 4th Round Methodology par 28 <https://www.fatf-gafi.org/media/fatf/Universal-Procedures-2017.pdf>.

Within this context, the FATF has been advising specific action against countries that fail to show adequate commitment to compliance. Between 2000–2006<sup>7</sup> the FATF publicly listed 23 countries or territories in its Non-Cooperative Countries or Territories (NCCT) program. According to the FATF, this process was highly successful, ‘as all of the jurisdictions listed in 2000 and 2001 made significant progress and the last country was removed from the list in October 2006’.<sup>8</sup>

Since 2007, the FATF’s International Co-operation Review Group (ICRG) has identified, examined and worked with jurisdictions that are failing to implement effective AML/CFT systems. A jurisdiction will be reviewed when:<sup>9</sup>

- a) It does not participate in a FATF-style regional body (FSRB) or does not allow mutual evaluation results to be published in a timely manner; or
- b) It is nominated by a FATF member or an FSRB, based on specific money laundering, terrorist financing, or proliferation financing risks or threats coming to the attention of delegations; or
- c) It has achieved poor results on its mutual evaluation, specifically:
  - it has 20 or more non-Compliant (NC) or Partially Compliance (PC) ratings for technical compliance; or
  - it is rated NC/PC on 3 or more of the following Recommendations: 3, 5, 6, 10, 11, and 20; or
  - it has a low or moderate level of effectiveness for 9 or more of the 11 Immediate Outcomes, with a minimum of two lows; or
  - it has a low level of effectiveness for 6 or more of the 11 Immediate Outcomes.

A jurisdiction that enters the ICRG review process as a result of its mutual evaluation results has a one-year observation period to work with the FATF or its FSRB to address deficiencies before possible public identification and formal review by the FATF. The FATF then prioritises the review of those countries with more significant financial sectors, e.g. USD 5 billion or more in financial sector assets.<sup>10</sup>

During the review process the FATF considers the strategic AML/CFT deficiencies identified both in terms of technical compliance and effectiveness of measures in place, and any relevant progress made by the jurisdiction. If the FATF deems the progress insufficient to address its strategic deficiencies, the FATF develops an action plan with the jurisdiction to address the remaining strategic deficiencies. For all countries under ICRG review, the FATF requires a high-level political commitment that the jurisdiction will implement the legal, regulatory, and operational reforms required by the action plan.

At this point, when the country has committed to address the identified deficiencies, FATF may move to have it placed on a list of “Jurisdictions under Increased Monitoring”, its so-called grey list.

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<sup>7</sup> The 15 jurisdictions with serious, systemic money laundering problems placed on the FATF list were: the Bahamas, the Cayman Islands, the Cook Islands, Dominica, Israel, Lebanon, Liechtenstein, the Marshall Islands, Nauru, Niue, Panama, the Philippines, Russia, St. Kitts and Nevis, and St. Vincent and the Grenadines. See <https://www.fatf-gafi.org/media/fatf/documents/reports/1999%202000%20NCCT%20ENG.pdf>.

<sup>8</sup> <https://www.fatf-gafi.org/publications/high-riskandnon-cooperativejurisdictions/documents/moreabouttheinternationalco-operationreviewgroupicrg.html>

<sup>9</sup> [http://www.fatf-gafi.org/publications/high-risk-and-other-monitored-jurisdictions/more/more-on-high-risk-and-non-cooperative-jurisdictions.html?hf=10&b=0&s=desc\(fatf\\_releasedate\)](http://www.fatf-gafi.org/publications/high-risk-and-other-monitored-jurisdictions/more/more-on-high-risk-and-non-cooperative-jurisdictions.html?hf=10&b=0&s=desc(fatf_releasedate))

<sup>10</sup> This discussion of ICRG processes is based on [http://www.fatf-gafi.org/publications/high-risk-and-other-monitored-jurisdictions/more/more-on-high-risk-and-non-cooperative-jurisdictions.html?hf=10&b=0&s=desc\(fatf\\_releasedate\)](http://www.fatf-gafi.org/publications/high-risk-and-other-monitored-jurisdictions/more/more-on-high-risk-and-non-cooperative-jurisdictions.html?hf=10&b=0&s=desc(fatf_releasedate)).

### 2.3 Greylisting and blacklisting

The FATF publishes two statements at the end of each plenary meeting, in February, June, and October. The two statements reflect the different levels of risk posed at any given time by the deficiencies in the listed jurisdictions:

**High-Risk Jurisdictions subject to a Call for Action (previously called "Public Statement", more generally known as its black list):** These high-risk jurisdictions have significant strategic deficiencies in their AML/CFT/CFP regimes. For all countries identified as high-risk jurisdictions, the FATF calls on all members and urges all jurisdictions to apply enhanced due diligence, and in the most serious cases, countries are called upon to apply counter-measures to protect the international financial system from the (ML/TF/PF) risks emanating from the country. Only two countries, Iran and North Korea, are currently subject to a 'Call to Action' or 'blacklisting'.

**Jurisdictions under Increased Monitoring (previously called "Improving Global AML/CFT Compliance: On-going process", more generally known as the grey list):** Jurisdictions under increased monitoring are actively working with the FATF to address strategic deficiencies in their AML/CFT/CFP regimes. When the FATF places a jurisdiction under increased monitoring, it means the country has committed to resolve swiftly the identified strategic deficiencies within agreed timeframes and is subject to increased monitoring.

To be removed from FATF monitoring, a jurisdiction must address all (or nearly all) the components of its action plan. Once the FATF has determined that a jurisdiction has taken material action, it will organise an on-site visit to confirm that the implementation of the necessary legal, regulatory, and/or operational reforms is underway and there is the necessary political commitment and institutional capacity to sustain implementation. If the on-site visit has a positive outcome, the FATF will decide on removing the jurisdiction from public identification at the next FATF plenary. The concerned jurisdiction will then continue to work within the FATF or the relevant FSRB, through its normal follow-up process, to improve its AML/CFT regime.

### 2.4 Phases in FATF's greylisting process

Since 2000 FATF's management of the listing processes and its communications regarding listing changed. We believe that three main phases can be distinguished.

We classify the NCCT process as a greylisting process. Confusingly, at the time, the NCCT process was described by some as a blacklisting process. The actions that had to be taken in relation to listed jurisdictions are more aligned with the later – and current - expectations linked to greylisting. With this as our point of departure we identify the following three phases:

- **Period I - 2000 - 2007:** This period saw key members of the original (and smaller) FATF leading the initiative. The FATF applied 25 criteria to identify and list countries, with "serious systemic problems".<sup>11</sup> The initial listings therefore did not follow on a comprehensive compliance assessment of each country or the capacity of countries to comply. As a result of political and economic development concerns, the IMF and World Bank became involved in the assessment process. In October 2002 a mutual FATF/IMF and World Bank evaluation methodology was agreed and implemented.<sup>12</sup> This MER methodology was revised and refined after the adoption of the

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<sup>11</sup> FATF Review to Identify Non-Cooperative Countries or Territories: Increasing the World-wide Effectiveness of Anti-Money Laundering Measures (June 2000) <https://www.fatf-gafi.org/media/fatf/documents/reports/1999%202000%20NCCT%20ENG.pdf>.

<sup>12</sup> FATF Annual Report 2002-2003 (2003) par 5. <https://www.oecd.org/newsroom/2789358.pdf>.

revised and expanded 2003 FATF standards. Even though NCCT listing pre-dated 9/11, the new 2001 Special IX Recommendations on Terror Finance provided wider opportunity for hawkish targeting of countries considered 'out of line' after 9/11. The rhetoric was uncompromising, with thinly veiled hints of economic isolation whilst any potential or actual listing endured. There was initially little consideration for context, capacity and capability and costs.

- **Period II - 2008 - 2015:** A transformation began, marked by the more active involvement of the wider FATF membership in the MER process and a greater emphasis on ground truths or an approximation thereof. MERs now had inputs from the IMF, and from the FSRBs to which nearly all non FATF countries had acceded. Wider stakeholder involvement moderated the rhetoric (especially in terms of labelling) and increased the technical content of MERs, which took greater account of local conditions. In June 2009 FATF adopted new ICRG procedures where countries with MERs of concern being reviewed by one of four ICRG regional review groups. Based on their report FATF would decide whether it should conduct a more in-depth review of the jurisdiction's key strategic AML/CFT deficiencies. Each reviewed jurisdiction now had an opportunity to participate in face-to-face meetings with the regional review group to discuss the report, including developing an action plan with the FATF to address the deficiencies identified. The FATF now specifically requested high-level political commitment to implement these action plans.<sup>13</sup>

The 2012 revised FATF standards embedded a mandatory risk-based approach and the 2013 revised mutual evaluation methodology was expanded to consider effectiveness of implementation in addition to technical compliance with FATF standards. In this period, countries with poor AML/CFT real life outcomes therefore became less likely to obtain good MER results merely for technical compliance. There was also a desire not to burden an international financial system and individual economies both struggling with the Global Financial Crisis (GFC). Compliant countries and institutions were however expected to consider the risks arising from the deficiencies associated with each listed jurisdiction and, by implication, adopt appropriate measures to address the risk, where necessary.

**Period III - 2016 – now:** Until 2015 the list in FATF's public statement contained jurisdictions that had not made sufficient progress in addressing the deficiencies and those that had not committed to an action plan developed with the FATF to address the deficiencies. A separate list was published naming countries with strategic AML/CFT deficiencies that developed an action plan with the FATF to address them. This list, ("Improving Global AML/CFT Compliance: On-going Process"), was colloquially known as the "light grey list".<sup>14</sup> From February 2016, however, FATF's grey list (now called "Improving Global AML/CFT Compliance: On-going Process") was restricted to those countries with an action plan, i.e. those countries actively working with the FATF to address strategic deficiencies in their AML/CFT/CFP regimes as identified by FATF.

MERs in this period follow a defect management approach emphasising identification, correction, general system improvement. The balance between effectiveness and technical compliance begins to stabilise. There is a higher level of FSRB technical input. Countries are commended on achievements rather than only castigated for failures. Changes to language and process

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<sup>13</sup> FATF Annual Report 2009-2010 (2010) 28-29.

<sup>14</sup> <https://fatfwatch.com/category/fatf/>.

terminology reflect the more restorative supportive style. Only non-engaged states such as Iran and North Korea are subject to overt criticism and blacklisting as non-cooperative.

Previously the FATF called on its members to consider the risks arising from the deficiencies associated with each listed jurisdiction. From October 2019, however, it moderated its language by adding: “FATF does not call for the application of enhanced due diligence to be applied to these jurisdictions, but encourages its members to take into account the information presented below in its risk analysis. In February 2021 the list heading changed from “Improving Global AML/CFT Compliance: On-going Process” to “Jurisdictions under Increased Monitoring”. This list sets out the names of countries that “are actively working with the FATF to address strategic deficiencies in their regimes to counter money laundering, terrorist financing, and proliferation financing” regimes and have “committed to resolve swiftly the identified strategic deficiencies within agreed timeframes” and are subject to increased monitoring.

During Periods II and III the Caribbean Financial Action Task Force, the FSRB for the Caribbean, also listed a few countries on its black, dark grey and light grey lists.<sup>15</sup>

## 2.5 Other lists

This study focuses on FATF’s grey list and its economic impact on listed countries. It is however important to note that, while important, this is only one of a number of country lists that are likely to be taken into regard in a risk-based AML/CFT country assessment. Such general lists include:<sup>16</sup>

- Tax Justice Network Financial Secrecy Index
- US State Department International Narcotics Control Strategy Report (INCSR)
- US State Department Trafficking in Persons (TIP) Report
- Transparency International Corruption Perceptions Index
- OECD Global Forum on Transparency and Exchange of Information for Tax Purposes compliance ratings
- TRACE Bribery Risk Matrix
- Basel Institute on Governance Anti-Money-Laundering (AML) Index

In addition, lists of country risk indicators and country risk profiles are also available commercially to subscribers. The separate and joint impacts of those lists are out of scope for this study, but in principle they modify or intensify the impacts of FATF listings.

A particularly important development was the launching of a European Union AML/CFT list in 2016, with listing rules revised in 2020.<sup>17</sup> This list was launched under the 4th AML Directive, (EU) 2015/849

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<sup>15</sup> <https://www.cfatf-gafic.org/cfatf-public-statement-process>. See for example <https://www.fatf-gafi.org/documents/documents/cfatf-ps-nov2013.html>; <https://fatfwatch.com/category/fatf/>; <https://www.cfatf-gafic.org/documents/cfatf-public-statements>

<sup>16</sup> Also see the lists such as the World Bank Extent of Corporate Transparency Index; WEF Global Competitiveness Report – Strength of auditing and reporting standards; World Bank IDA Resource Allocation Index – Financial sector regulations; International IDEA Political Finance Database – Political disclosure; International Budget Partnership Open Budget Index – Budget transparency score; World Bank IDA Resource Allocation Index – Transparency, accountability and corruption in the public sector; Freedom House: Freedom and the Media; WEF Global Competitiveness Report – Institutional pillar; WEF Global Competitiveness Report – Judicial independence; World Justice Project Rule of Law Index.

<sup>17</sup> European Commission, ‘Methodology for identifying high-risk third countries under Directive (EU) 2015/849’ Commission Staff Working Document SWD(2020) 99 final (2020) [https://ec.europa.eu/info/sites/default/files/business\\_economy\\_euro/banking\\_and\\_finance/documents/2005\\_07-anti-money-laundering-terrorism-financing-action-plan-methodology\\_en.pdf](https://ec.europa.eu/info/sites/default/files/business_economy_euro/banking_and_finance/documents/2005_07-anti-money-laundering-terrorism-financing-action-plan-methodology_en.pdf).

(the 'EU list') and is intended to protect the integrity of the EU's financial system and internal market, to reinforce internal security, and to promote sustainable development.<sup>18</sup> Countries that are placed on the FATF grey list are added to the EU list (unless they are exempted from the EU scheme as discussed below) but the EU may also add any other country to their list.

The EU Methodology may be applied to any country that is particularly relevant to the financial system of the EU, save for members of the EU and the European Economic Area (EEA), whose exemption owes more to *realpolitik* than to principle. Least developed countries (LDC) as identified by the UN are also exempted unless an LDC is identified as presenting a threat to the EU financial system or is designated as an OFC. Overseas dependencies of EU Member States which have their own legal system and jurisprudence also qualify as countries in their own right under the EU Methodology.

While the EU professes to support the FATF, there are various points of tension between the two listing processes, including that the EU may add its own requirements to any FATF country action plan and that FATF delisting does not necessarily lead to EU delisting of a listed country.<sup>19</sup>

The growing number of relevant country lists, and especially the operation of the EU list, may blunt or blur any economic impact that the FATF grey list may have.

### 3 Earlier studies on economic impacts of FATF listing

Initially, with the NCCT listing, the threat of negative economic impact was used to move countries towards higher levels of compliance with the FATF standards. The process of 'naming and shaming' has been cited by FATF<sup>20</sup> as a powerful tool to make important and necessary reforms happen. In its 2014-15 Annual Report, for example, it alluded to listing impacts in statements such as the following:<sup>21</sup>

When the FATF publicly identifies the countries and jurisdictions with strategic AML/CFT deficiencies, this could potentially have serious consequences for the countries in question. Non-compliance with AML/CFT standards could result in international trading partners facing higher costs due to the additional measures that will be imposed, or, as financial institutions increasingly look to minimise their risks, they could find that they are no longer able to do business with them at all. The public identification of countries with serious weaknesses in their AML/CFT measures has therefore proven to be a powerful tool. Not only does it protect the integrity of the international financial system by issuing a warning about the risks emanating from countries with inadequate AML/CFT measures, it also puts pressure on the countries in question to address these deficiencies in order to maintain their position in the global economy.

Concern over potential economic and reputational impact was however sufficient to ensure that countries generally took steps to ensure that they were delisted as soon as reasonably possible. While there was anecdotal evidence of negative economic impact on listed countries, clear and consistent economic evidence of such impact was not available. A number of studies analysed data to determine whether there was evidence of such impact.

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<sup>18</sup> [https://ec.europa.eu/info/business-economy-euro/banking-and-finance/financial-supervision-and-risk-management/anti-money-laundering-and-counter-terrorist-financing/eu-policy-high-risk-third-countries\\_en#objectives](https://ec.europa.eu/info/business-economy-euro/banking-and-finance/financial-supervision-and-risk-management/anti-money-laundering-and-counter-terrorist-financing/eu-policy-high-risk-third-countries_en#objectives).

<sup>19</sup> Andrew Dalip, The EU's 2020 Methodology vs. The FATF Greylist' *ACAMS Today* (2020) <https://www.acamstoday.org/the-eus-2020-methodology-vs-the-fatf-greylist/>.

<sup>20</sup> See e.g. Annual Reports 2014 -15 and 2015 -16.

<sup>21</sup> FATF *Annual Report 2014-15* (2015) 19 <https://www.fatf-gafi.org/media/fatf/documents/reports/Annual-report-2014-2015.pdf>.

### 3.1 Analytical studies that did not find conclusive evidence of negative economic impact

Kurdrle (2008)<sup>22</sup> looked at changes in Bank for International Settlements (BIS) data on financial flows to and from the tax havens through the banking system for 46 jurisdictions in the quarters before and after FATF and OECD tax haven listing and delisting. The study considered total assets and liabilities and the associated component non-bank assets and liabilities, as well as their counterparts for the loan and deposit data over the period for which the latter were available. The study produced mixed results and concluded that “no substantial and consistent impact of blacklisting on banking investment in and out of the tax havens was found across 38 jurisdictions.”<sup>23</sup>

Sharman (2009)<sup>24</sup> identified reforms adopted by three small island nations and four other countries as a result of concerns about potential negative economic impacts that were assumed or anticipated:

“St Kitts and Nevis, Vanuatu and the Cook Islands complied after seeing material economic damage that they interpreted as being caused by the effect of blacklisting on their reputation with foreign investors. Austria, the Cayman Islands, the Isle of Man and Mauritius anticipated that defying international organizations' demands would result in future economic damage caused by the effect blacklisting would have on their reputation with foreign investors.” (note that “blacklisting” is used here to refer to what was later called “greylisting”)

The IMF turned to the NCCT examples and the research cited above in their 2011 discussion of the economic impact of FATF listing.<sup>25</sup> They also referenced an unpublished internal paper by IMF staff<sup>26</sup> that identified non-bank external deposits as the variable which showed the most sensitivity to listing or delisting events. They noted however that the results of the IMF study of 196 jurisdictions lacked robustness, in part due to data limitations.

Balakina, D’Andrea and Masciandaro (2017)<sup>27</sup> explored whether “blacklisting”<sup>28</sup> has a measurable negative economic effect on a country, called the “stigma effect”. They analysed the relationship between international capital movements and FATF listing and delisting events in 126 countries from 1996 to 2014 and concluded that the stigma effect did not exist. Variables used for the analysis included total Foreign Claims (Bank Flow),<sup>29</sup> size of financial institutions and markets, the degree to which individuals can and do use financial services, the efficiency of financial intermediaries and

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<sup>22</sup> Kurdrle, R.T., —Did Blacklisting Hurt the Tax Havens? *Journal of Money Laundering Control*, Vol. 12, No. 1, 2008, pp. 33-49).

<sup>23</sup> We assume this is a loose use of the word “blacklisting”, and that the author simply means listing of some sort.

<sup>24</sup> Sharman, J. C. (2009) *The bark is the bite: International organizations and blacklisting* *Review of International Political Economy*, 16:4, 573-596, DOI:10.1080/09692290802403502

<sup>25</sup> IMF, *Anti-Money Laundering and Combating the Financing of Terrorism (AML/CFT)— Report on the Review of the Effectiveness of the Program* (2011) par 6-8 <https://www.imf.org/en/Publications/Policy-Papers/Issues/2016/12/31/Anti-Money-Laundering-and-Combating-the-Financing-of-Terrorism-AML-CFT-Review-of-the-PP4571>.

<sup>26</sup> Jonsson, Michael, Christian Larson, et al, —The Impact of Blacklists on External Deposits, unpublished paper, the AML/CFT group.

<sup>27</sup> Balakina, Olga, Angelo, D’Andrea, and Masciandaro, Donato, (2017), *Bank secrecy in offshore centres and capital flows: Does blacklisting matter?*, *Review of Financial Economics*, 32, issue C, p. 30-57, <https://EconPapers.repec.org/RePEc:eee:revfin:v:32:y:2017:i:c:p:30-57>.

<sup>28</sup> Again referring to what we would now call “greylisting”

<sup>29</sup> Taken from BIS data

markets in intermediating resources and facilitating financial transactions, the stability of financial institutions and markets, and the level of macroeconomic stability.<sup>30</sup>

The authors carried out a simple regression relating Bank Flows to FATF, regulation and institutional quality:

$$\text{Bank Flows}_{i,t} = \alpha_0 + \alpha_1 \text{FATF}_{i,t} + \alpha_2 \text{Regulation}_{i,t} + \alpha_3 \text{InstQuality}_{i,t} + \gamma X_{i,t} + \varphi_i + \mu_t + \varepsilon_{i,t},$$

The FATF variable was found not to be statistically significant. The coefficient was positive (not negative), so they concluded that “we can completely exclude the occurrence of the stigma effect”.

Some simple tests were carried out, for example the endogeneity of the FATF measure (bank flows may affect FATF decisions), but the study did not extend to a systematic testing for either multicollinearity or endogeneity in the overall system.

### 3.2 Analytical studies that found evidence of negative economic impact

A number of studies found more conclusive evidence of listing and economic impact correlations.

Farias and Almeida (2014)<sup>31</sup> analysed AML ratings, greylisting and corruption indicators in 36 Latin American and Caribbean countries between 1960 and 2010, and found correlations between poor institutional performance and reductions in investments and in financial development.<sup>32</sup>

Collin, Cook and Soramaki (2016)<sup>33</sup> used SWIFT data to explore the impact of AML regulation on payment flows. They found that greylisted countries faced “up to a 10 percent decline in cross border payments received from other jurisdictions, but no change in the number sent”. Such greylisted countries are also more likely to see a decline in payments from other countries with weak AML/CFT institutions. Their conclusions are based on monthly counts of cross-border payment messages recorded in the SWIFT system between January 2004 and August 2014.<sup>34</sup> In the period examined, the number of such messages rose from around 20 million/month to around 40 million/month, with substantial seasonal variation.<sup>35</sup> Correlations were observed between such messages and exports.<sup>36</sup> FATF listing decisions during the 15 years were tracked.<sup>37</sup> They noted that the poorest countries were

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<sup>30</sup> Martin Čihák, Asli-Demirgüç-Kunt, Erik Feyen, and Ross Levine’s “Global financial development Database” (GFDD). This is an extensive dataset of financial system characteristics for 205 countries from 1960 to 2010.

<sup>31</sup> María Elisa Fariás & Monica Arruda Almeida (2014) ‘Does Saying ‘Yes’ to Capital Inflows Necessarily Mean Good Business? The Effect of Antimoney Laundering Regulations in the Latin American and the Caribbean Economies’ *Economics and Politics*, vol. 26(1), pages 96-127, March, <https://ideas.repec.org/a/bla/ecopol/v26y2014i1p96-127.html>

<sup>32</sup> María Elisa Fariás & Monica Arruda Almeida (2014) ‘Does Saying ‘Yes’ to Capital Inflows Necessarily Mean Good Business? The Effect of Antimoney Laundering Regulations in the Latin American and the Caribbean Economies’ *Economics and Politics*, vol. 26(1), pages 96-127, March, <https://ideas.repec.org/a/bla/ecopol/v26y2014i1p96-127.html>

<sup>33</sup> Collin, Matthew and Cook, Samantha and Soramaki, Kimmo, *The Impact of Anti-Money Laundering Regulation on Payment Flows: Evidence from SWIFT Data* (December 20, 2016). Center for Global Development Working Paper No. 445, Available at SSRN: <https://ssrn.com/abstract=2893790> or <http://dx.doi.org/10.2139/ssrn.2893790>

<sup>34</sup> Known as MT103 messages, or ‘single customer credit transfer’

<sup>35</sup> Fig 4, p 9

<sup>36</sup> Fig 5, p 11, with an overall correlation of 0.33

<sup>37</sup> See Tables 11,12 and 13 in the appendix, and Fig 6, p14

most likely to be greylisted: “countries with a GDP per capita under \$20,000 face greylisting rates as high as 40%”.

To identify the covariance of FATF greylisting against other ‘treatment’ measures, the authors also explored the impact of International Narcotics Control Strategy Report (INCSR)<sup>38</sup> ratings and OFAC, EU or UN Sanctions. Control variables included GDP per capita (World Bank), a country's democracy score (POLITY IV), the World Bank World Governance Indicators, a dummy variable indicating whether or not there is an ongoing conflict, and the country's current exchange rate against the dollar.<sup>39</sup> Tests were carried out for ‘leads’ and ‘lags’ in the responses.<sup>40</sup>

The authors found that the impact is “more complex than recent narratives have suggested. We do not find any evidence that countries that have frequently been mentioned as sources of de-risking or sources of pressure to de-risk are the ones where there are substantial declines in payment flows to and from grey-listed countries”.

Julia Morse (2017)<sup>41</sup> analysed the interaction between “Reputation, Market Enforcement, and International Cooperation”, focusing on the global campaign to combat terrorist financing. Her PhD Thesis also provides some detail of specific country experience with being put on non-complier lists, including Thailand, Turkey, Philippines, Guyana and Panama.

Morse concluded that “when countries are included on the FATF non-complier list, cross-border bank flows decline and investors demand higher relative yields for sovereign debt.” A variety of methodologies were utilised to come to this conclusion, including interviews with 15 finance industry professionals, a ‘quasi experiment in FATF procedures’ related to the 2009 FATF initiative, ‘fuzzy regression discontinuity’<sup>42</sup>, ‘non-instrumented analysis of sovereign spreads’, and the ‘Cox Proportional Hazards model’. Morse’s case study of Thailand “provides a graphical presentation of trends in cross-border liabilities and relation to listing and removal from list”. No particular pattern was found.<sup>43</sup> Correlational evidence is cited that the non-complier list affected the risk premium for long-term debt.<sup>44</sup> In later work, Morse (2019) analysed growth in cross-border liabilities for 39 countries, 10 of which were grey-listed, and found a large significant impact of between 15-16%.<sup>45</sup>

Jayasekara (2021) analysed the short-term economic implications of AML/CFT policies.<sup>46</sup> The article focuses on seven countries – Ethiopia, Sri Lanka, Tunisia, Serbia, Afghanistan, Lao PDR and Guyana - selected from the FATF’s 2019 listing. The study found that the domestic currency of monitored jurisdictions depreciated during the review period. The study also found evidence that limitations on

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<sup>38</sup> Produced by the US State Department

<sup>39</sup> See Section 4.1, p20

<sup>40</sup> Table 5, p23

<sup>41</sup> Morse, Julia C. (2017) *From Blacklists to Bankers: Reputation, Market Enforcement, and International Cooperation* (PhD Dissertation, Princeton University)

<sup>42</sup> As we note in Annex B, the use of regression discontinuity methodologies may assist in attributing causal inferences, especially when exploring the differences between the evolution of different FATF approaches

<sup>43</sup> Fig 6.3, p 174

<sup>44</sup> Fig 6.4, p175 and Table 6.1, p 177

<sup>45</sup> Morse, Julia C. (2019) ‘Blacklists, Market Enforcement, and the Global Regime to Combat Terrorist Financing’ *International Organization*, 73 (3):511{545, <https://www.cambridge.org/core/journals/international-organization/article/abs/blacklists-market-enforcement-and-the-global-regime-to-combat-terrorist-financing/C40086326EAD3EB5857AAEDD52FB98C3>

<sup>46</sup> Jayasekara, S.D. (2021), "Deficient regimes of anti-money laundering and countering the financing of terrorism: agenda of digital banking and financial inclusion", *Journal of Money Laundering Control*, Vol. 24 No. 1, pp. 150-162. <https://doi.org/10.1108/JMLC-04-2020-0035>

fund transfers and correspondence banking relationships may have negative impacts on capital markets of listed countries.<sup>47</sup>

The most recent attempt to estimate the impact of FATF greylisting was published by the IMF Finance Department in May 2021.<sup>48</sup> This found that “gr[e]y-listing results in a large and statistically significant reduction in capital inflows”. The study used data from 89 emerging and developing countries in 2000 - 2017, and identified greylisting using FATF public statements. During the period, 78 of the countries were greylisted at least once, and the response to this event was explored using a machine-learning process known as *lasso*. They found statistically significant declines in capital inflows of 7.6%, in FDI inflows of 3.0%, in portfolio inflows of 2.9% and of other investment inflows of 3.6%.

## 4 Research questions

Most of the early greylisting studies considered impact during the NCCT period while later studies tended to combine the NCCT listings with later greylistings.. As pointed out in 2.4, however, different phases can be discerned in FATF’s greylisting after the NCCT process. The studies furthermore tended to focus on the listing impact but did not extend to delisting impacts. This study therefore set out to determine:

- whether listing and delisting had significant correlations with economic indicators, either immediately or potentially over one and two years after listing and delisting;
- if any correlations were identified, whether there was evidence of any differences across the three phases of greylisting; and
- where correlations were identified, whether there may be logical explanations as to how the listing or delisting may have resulted in actual impact.

The study and the research questions focused on correlations rather than causation as the latter is often very difficult to prove. The complexity can be illustrated using desired outcome of the listing process – the desired improvements in a jurisdiction’s AML/TF framework, as an example. Such an improvement, which may take the form of changes to laws and regulations, the creation of new regulatory apparatus, better monitoring or greater penalties for firms and individuals, would be correlated with FATF listing, i.e. they occur after the country is greylisted. But this does not necessarily mean that improvements in the AML/CFT regime have been caused by the FATF listing. It is possible that some other (and potentially unobservable) influence affected the improvement. The changes may for example have been driven primarily by internal political processes to combat crime rather than by FATF’s listing.

Similarly, negative economic impact may be discernible after a country was listed, and positive impact after its delisting. Given the complexity of global, regional and national socio-political and economic factors, it cannot be stated with confidence that those impacts were indeed caused, or even significantly affected, by, the listing and delisting. A more comprehensive study is required to determine whether any correlations are indeed indicative of causation, and such a study is proposed, building on the findings of this study. By carefully selecting the indicators to be considered and by ensuring that they are logically linked to listing and delisting impact, the probability of causation can however be strengthened in the current study.

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<sup>47</sup> Table II, p665

<sup>48</sup> Mizuho Kida and Simon Paetzold (2021) ‘The Impact of Gray-Listing on Capital Flows: An Analysis Using Machine Learning’ (IMF Working Paper, May 2021), <https://www.imf.org/-/media/Files/Publications/WP/2021/English/wp1ea2021153-print-pdf.ashx>

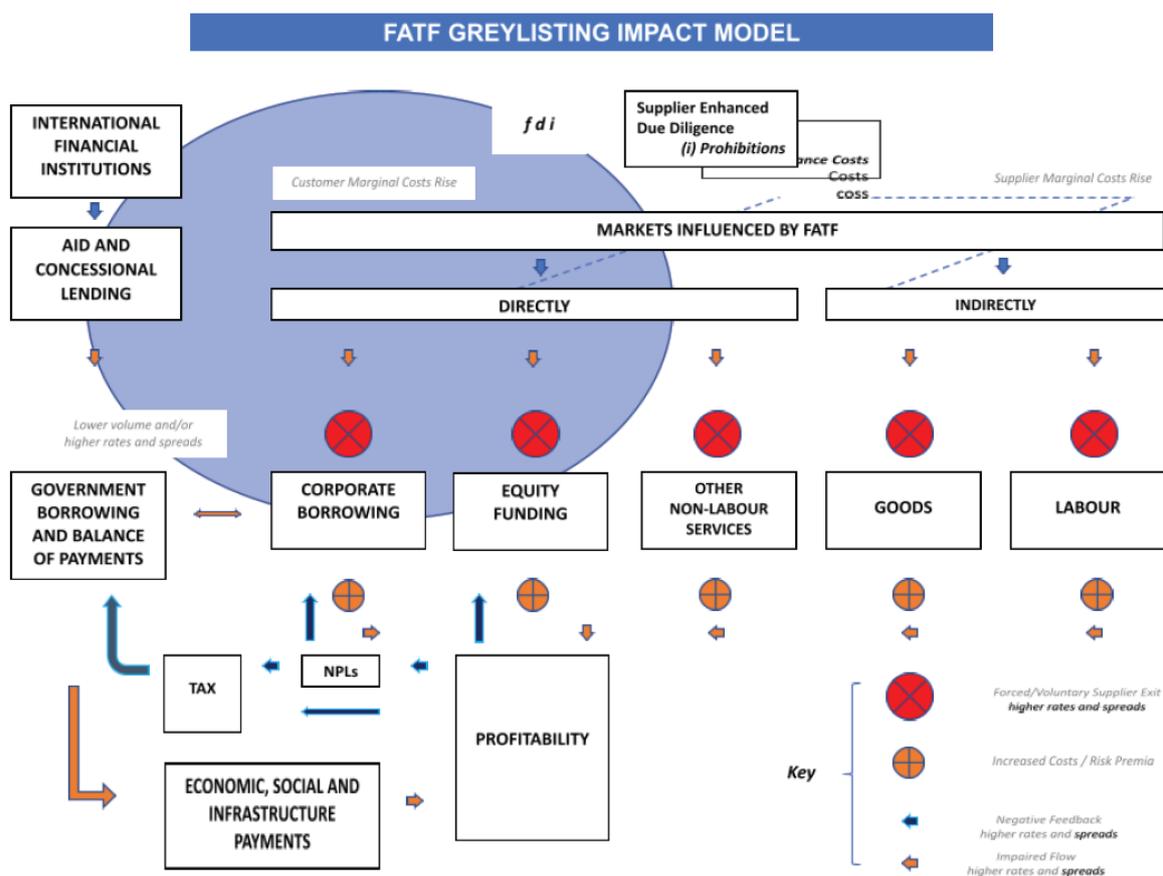
## 5 Methodology

The study developed a model to map economic impacts of greylisting (see **Box 1**). First and second order impacts as well as potential indicators of such impacts were identified as well as the potential for time lags and endurance

### 5.1 The model

The model set out below shows how greylisting could restrict the economy in terms of market access and/or imposes higher costs, in both the listed country and in its trading partner countries, raising public and private financing costs in what can turn into a negative self-sustaining cycle of higher interest rates and lower firm profitability. This theoretical model is used to identify indicators which can then be used for empirical testing of whether listings are correlated with the relevant economic or financial variable.

[Box 1]



This model reflects the authors' view of how FATF listing signals could pass through and affect the economy of the listed jurisdiction. The model relates to countries where national and international suppliers operate in markets according to FATF-derived norms. These norms include national regulations (for example derived from FATF Recommendations) as well as suppliers' own policies (for example based on FATF statements about a particular country or threat). Suppliers who are neither

financial bodies nor DNFPBs are indirectly affected as they normally require the services of both these sectors if they are to function as a business. Listed country national governments, donor/lender governments and international lending institutions also act in this space, as do national and international investors.

When a country is greylisted for non-compliance, costs of doing business may increase according to how governments, firms and end clients react, domestically and globally. For example:

- Listing may trigger additional government regulations on business with the listed country, or products/services provided by firms in or connected to that country. Their impact may restrict business or even prohibit it entirely.
- Firms in, or dealing with, the listed country will have to undertake more checks to comply, and be seen to be complying, with existing and additional regulations.
- End clients may experience changes in volume, variety, quality and cost of supplies.

Both firms and end clients may exit markets for goods and services or reduce activity where significant additional costs accrue, making business unprofitable for either or both parties. In terms of financial flows, increased purchaser, lender and investor caution in payments, debt and stock markets may reduce the volume and increase the cost of transfers (e.g. payments for goods and services, remittances) and restrict or increase the cost of access to capital.

There may be other costs, such as higher cost of domestic labour, goods and services, where external supplies become more limited.

Lower margins and higher costs will reduce firm profitability and increase the risk of non-performing loans. Both of these effects would reduce national tax take in the listed country.

At the same time, the listed country may be raising money directly in capital markets, whereby it may also be affected by reduced volume of funds and/or increased prices on offer. A combination of lower tax income and borrowing capacity would reduce government funds available to support the economy and improve firm profitability through e.g. economic, social and infrastructure (ESI) payments.

Donors and direct investors may also exercise caution, further reducing flows.

The situation is liable to procyclical progression as higher government borrowing rates lead to higher corporate credit costs and firm default risk, and thus lower profitability and tax take. This in turn could further reduce the ability of government to fund the social and infrastructure projects and both impacts could feed back into private sector profitability. A negative spiral could develop.

The cycle may return to normal after the listing constraints are removed and transactions return to prior profitable rates. However, it may take some time for investor confidence to return in full and public surpluses to replenish. Also, some (reputable) firms may have been forced to exit the market permanently, reducing supply of their offerings and their demand for third party offerings, thus maintaining pressure on prices.

The model relates to countries where national and international suppliers operate in markets according to FATF-derived norms. The norms include national regulations (for example derived from FATF Recommendations) as well as suppliers' own policies (for example based on FATF statements about a particular country or threat).

The major first and second order effects associated with aspects of the model are set out below along with *Possible Indicators* for use in testing.

## 5.2 First order effects

- *Increased supplier costs*

Suppliers are assumed to trade at least in line with legal minima (to avoid penalties for non-compliance), to which their internal standards (based on commercially-derived risk criteria) may be super-equivalent.

The effect of greylisting on suppliers is to increase attention paid to, and action taken to avoid, risks highlighted by FATF. Suppliers will observe national regulatory requirements in respect of greylisting the grey listing and amend internal policies and operating practices.

At the margin the new level of risk may prove unmanageable or inadequately compensated and thus unacceptable. Suppliers who cannot remain profitable by passing on additional compliance costs may exit the market entirely or reduce the range of goods on offer.

- *Reduced firm profitability, tax payments and debt service capacity*

Reduced supply and increased factor costs limit the availability, and increase the purchase price, of goods and services to firms, reducing gross profit margins. This in turn reduces their tax payments and ability to service debt.

- *Reduced national income and expenditure*

There may also be a reduction in the flow of direct aid to a listed country with donors negotiating or imposing new control measures to address increased perceptions of integrity risk, or even withdrawing direct aid. These effects combine with lower tax income to compound budgetary pressures. One way to relieve which is for the government to reduce ESI payments. This, however, further increases firm costs.

*Possible Indicators:* Net official development assistance and official aid received [current US\$], IFC, private nonguaranteed [NFL, current US\$] IBRD loans and IDA credits [DOD, current US\$]. The focus here is on changes in access to capital given degrees of politicization.

- *Reduced access to capital*

International bond markets will see FATF listing as a negative event and the borrowing spread of the listed country is likely to widen. Some sovereign debt creditors may no longer lend or may reduce the level of investment. Governments and international lending organisations may react in similar fashion, including by increasing the conditionality (and thus expense) of lending. There will be less liquidity and of the liquidity that exists some will be needed to cover higher costs of indebtedness.

*Possible Indicators:* Risk premium on lending [lending rate minus treasury bill rate, %], Lending interest rate (%), Interest rate spread [lending rate minus deposit rate, %]. Testing should show ballooning/tightening of both indicators on listing/delisting

## 5.3 Second order effects

- *Downward profitability spiral*

In addition to higher reference rates, due to higher sovereign borrowing levels, lowered profitability and debt service capability will reduce firm credit standing, leading to higher borrowing spreads.

Firms thus face a double impact in the debt markets, with knock-on effects in equity markets. This will produce further reductions in profitability, tax payment and debt service capacity, plus an increase in non-performing loans.

*Possible indicators:* Bank nonperforming loans to total gross loans (%) - important for showing incipient failures of companies, though also an indicator of reckless lending. Market capitalization of listed domestic companies [current US\$] - this would be expected to fall with MER and rise on delisting.

- *Reduced government income*

The continuing drop in profitability will reduce government income adding to the pressure in capital markets and also ESI payments, again impacting firm costs and causing the cycle to repeat in a negative feedback loop.

*Possible Indicators:* Private non-guaranteed loans, commercial banks and other creditors [NFL, current US\$]

## 5.4 Time lags and endurance

- *Time Lags*

The effects described by the model may not all impact at the same time. Some, mainly more market, impacts may be immediate and slight but become significant as iterations of the negative cycle take cumulative effect. Other impacts, more linked to structural factors (such as multilateral lending and aid), may take time to operate but be significant when eventually they do so.

*Possible Leading Indicators:* Generally speaking, Exchange rates and monthly GDP [current LCU]/GDP(US\$)] with both falling with Listing and rising with Delisting; Net financial flows, bilateral [NFL, current US\$] with flows falling as commercial activity and FX values diminish (expect for inflows from release of foreign holdings); Foreign direct investment, net inflows [BoP, current US\$] again, falling with Listing, rising with Delisting; Foreign direct investment, net outflows [BoP, current US\$] - rising with Listing, falling with Delisting.

*Possible Lagging Indicators:* Net foreign assets [current LCU] - falling as assets liquidated, possibly at a discount, to cover local trading losses and as a result of LC depreciation, External debt stocks, total [DOD, current US\$] Rising and falling as trade drops off. Net acquisition of financial assets (% of GDP) (though it is important to exclude external buying on weakness) Claims on central government, etc. [% GDP]; Claims on other sectors of the domestic economy [% of GDP].

- *Persistence*

Negative listing impacts will continue, and potentially increase, as long as the original cause (listing) remains uncorrected. Even after successful correction (as a result of delisting and reversion to *status quo ante* in national and firm level norms), the above impacts may subsist due to (for example) caution, market re-entry /expansion costs or poor information.

An important function of the model is to show if removal of FATF grey listing acts in the same way as raising a blind - immediately readmit sunlight or whether it resembles more removing an iron - where outcomes depend on the fabric, the level of retained heat and whether permanent damage has (already) occurred.

## 6 Empirical testing

Using the above as a theoretical basis, we constructed a global FATF greylisting database for the period from 2001 to 2019. This brought together data on the financial and economic outcomes for all countries with data on when FATF and related events occurred, including publication dates for relevant listing statements. The focus was on NCCT listings, dark-grey listings prior to 2016 and greylisting from 2016 onwards. For consistency, the handful of CFATF dark-grey listing were added on the assumption that international responses to FATF and CFATF greylisting would tend to be similar.

The investigation had to contend with a surprising lack of easily available data on publication dates of MERs and listing and de-listing dates. The FATF Secretariat was however very kind to assist with a selection of key dates in the Phases II and III of the greylisting process. Most of the listing and delisting data had to be collected from public statements and some of the earlier Phase II statements and also CFATF statements required interpretation to determine which of the listed countries were relevant for this study.

The principal source of economic and financial data was the World Bank's 'World Development Indicators' databank. Countries where the data was too sparse to be used were excluded from the analysis, so that the final analysis was based on 173 countries, and 3,287 country-years of data. For these remaining countries, some interpolation of missing data was also undertaken.

In order to explore whether an event, such as FATF listing, is related to a particular economic or financial variable, we needed to control for other effects across countries, for example major economic or political disruptions.<sup>49</sup> We did this by setting up a pooled cross-section and time-series model and estimating a fixed effects model.<sup>50</sup> Formally, the estimating equation took the form:

$$Y_{ti} = \alpha_i + \delta_t + \sum_k \beta_k X_{kti} + \varepsilon_{ti} \quad (1)$$

Where:

$Y_{ti}$  is the economic or financial variable which may be correlated with or affected by listing.

This may either be the level of a variable<sup>51</sup> or the year-on-year change in a variable<sup>52</sup>.

$\alpha_i$  is the cross-section effects, a vector of dummy variables indicating cross-section  $i$  (fixed effects)

$\delta_t$  is a vector of dummy variables indicating time  $t$  (fixed effects)

$X_{kti}$  are the  $k$  independent variables that vary over cross-section and time

$\beta_k$  are the respective coefficients indicating the effect of  $X_k$  on  $Y$

$\varepsilon_{ti}$  are the stochastic errors that vary over both cross-section and time.

Under this specification, all variation across countries is absorbed by  $\alpha_i$  and all variation over time is absorbed by  $\delta_t$ .

Introducing fixed effect dummies across both countries and time reduces the degrees of freedom of the analysis significantly however, leading to less efficient estimates of the coefficients. One method

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<sup>49</sup> So that 'special events' not related to FATF investigations such as elections, or the Arab Spring, would be taken account of in the coefficient estimated for the dummy variable in that country-year.

<sup>50</sup> For discussion of the relative merits of fixed and random effects formulations, see Raffalovich, L.E. and R. Chung (2014) 'Models for Pooled Time-Series Cross Section data' LICV Vol 8, pp 209-212

<sup>51</sup> This is appropriate where the relevant variable is a flow, for example growth in GDP or investment

<sup>52</sup> Where the relevant variable is a stock, for example market capitalization, or the level of non-performing loans

of improving the efficiency of parameter estimation is to estimate fixed effects parameters either over the cross section (by country) or over time, but not both. For this study, the heterogeneity across countries is likely to be significantly more important than the heterogeneity over time, so the study used the estimating equation:

$$Y_{ti} = \alpha_i + \sum_k \beta_k X_{kti} + \varepsilon_{ti} \quad (2)$$

However, as many of the regulatory actions we are exploring coincide with the chaos caused by the GFC, we chose to also include dummy variables for the two years of 2007 and 2008. We therefore chose a hybrid system of fixed effects with country variation and some time variation.

For each of the three FATF regulatory periods described above in 2.4, we set up dummy variables for the listings and delistings experienced by countries, giving us a total of nine possible variables for each country. The magnitude and significance of the coefficients on these variables then provide us with an indication of the effect of FATF regulatory action in the period with respect to the financial or economic indicator we have chosen as our dependent variable.

The detailed econometric results are presented in Annex A, grouped into First Order and Second Order effects reflecting the indicators selected for testing in the theoretical model. The tables presented there are colour-coded to denote significance at the 90% (green)<sup>53</sup> and 60% (blue)<sup>54</sup> confidence levels and whether the effect is positive (yellow)<sup>55</sup> or negative (orange). Those tables present results for all the possible indicators identified for testing in sections 5.2 and 5.3 above. In Section 7 below we focus on those economic and financial indicators that were found to be correlated in a significant way.

However, as we noted in the methodology section above, simply demonstrating a correlation between an improved AML/CFT regime and FATF actions does not prove that FATF action causes such an improvement. Collinearity between explanatory variables in a regression equation can cause bias to estimated coefficients, and also generate spurious measures of a particular variable's significance. In addition, explanatory factors used in regression equations may themselves be endogenous, meaning that they may be co-determined with the variable they are supposed to be explaining.

For example, reductions in overseas investment and lending may be associated with FATF listing but in principle it could be that the same underlying concerns that drive the listing of a country also drive private sector concerns about inward investment and lending. So a reduction in inward investment following a listing may not be caused by the listing. It is hard to tell without some model of causation. A plausible hypothesis, however, is that the fact of listing includes information from the perspective of the market. Vulnerabilities that were suspected but could mostly not be observed by honest private agents are verified or falsified by official action by an independent authority with some private information, such as FATF. The unambiguous signal to the market from FATF reduces information asymmetry from the perspective of the private agents and underpins a plausible hypothesis that listing itself makes a significant contribution to the relevant impact.

The existing empirical literature on the impact of FATF actions often does not address these questions adequately, despite there being a well-developed literature on causality and endogeneity as applied to other topics. Nor was the data and resources available for the current study adequate

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<sup>53</sup> In technical terms, where the t-statistic is greater than 1.65

<sup>54</sup> T-stat greater than 0.85

<sup>55</sup> Depending on the sign of the relevant coefficient

to provide robust guidance on these issues. It is for this reason that we describe our empirical findings as **correlations** between listings and the economic and financial variables we explore, rather than the **effects** of listings. However, we do believe that light could be shed on the issue by a more detailed, micro and meso level, investigation. Annex B provides further discussion of the issue and makes suggestions about how further work could be undertaken.

## 7 Key findings

### Period 1: 2000-2007

In the first FATF regulatory period, the econometric results suggest, as predicted by the theoretical model, that the main correlation was with market-related indicators. The more significant findings are summarised in Table 1 below. (Significance is colour-coded at 90% (green) and 60% (blue) confidence levels; Correlations are coded as positive (yellow) or negative (orange).

Dependent Variable	Correlations with indicator variables in 2000-2007 period					
	Initial Listing I	t-stat	Listed I	t-stat	Delisting I	t-stat
Risk Premium y-on-y change	-0.37379	-0.977	-0.5415	-1.431	-0.3873	-1.012
Risk Premium t+1 y-on-y change	-0.33686	-0.879	-0.5853	-1.545	-0.3046	-0.795
Risk Premium t+2 y-on-y change	-0.33778	-0.883	-0.5334	-1.411	-0.3809	-0.996
Market capitalization of listed domestic companies (current US\$) y-on-y change	-0.04695	-0.492	-0.0552	-0.584	-0.0317	-0.332
Market capitalization of listed domestic companies (current US\$) t+1 y-on-y change	-0.02996	-0.310	0.0030	0.032	0.1338	1.385
Market capitalization of listed domestic companies (current US\$) t+2 y-on-y change	0.03845	0.571	0.1765	2.651	0.0944	1.402
Exchange Rate (GDP(LC)/GDP(US\$)) y-on-y change	-0.03564	-1.379	0.0064	0.251	-0.0111	-0.431
Exchange Rate (GDP(LC)/GDP(US\$)) t+1 y-on-y change	0.01426	0.526	-0.0054	-0.201	-0.0539	-1.986
Exchange Rate (GDP(LC)/GDP(US\$)) t+2 y-on-y change	-0.02982	-1.170	-0.0145	-0.574	-0.0611	-2.396
Net financial flows, bilateral [NFL, current US\$]	-0.00029	-0.105	-0.0027	-0.988	-0.0019	-0.675
Net financial flows, bilateral [NFL, current US\$] t+1	-0.00065	-0.240	-0.0036	-1.339	0.0007	0.263
Net financial flows, bilateral [NFL, current US\$] t+2	0.00029	0.102	-0.0031	-1.135	-0.0002	-0.060
Net foreign assets (current LCU)/GDP y-on-y change	-0.27869	-0.243	-2.6724	-2.357	-0.8363	-0.729
Net foreign assets (current LCU)/GDP t+1 y-on-y change	-0.27869	-0.243	-2.6724	-2.357	-0.8363	-0.729
Net foreign assets (current LCU)/GDP t+2 y-on-y change	-0.77377	-0.413	-2.8245	-1.524	-1.1132	-0.594
Claims on other sectors of the domestic economy (% of GDP t+1)/GDP y-on-y change	0.00069	0.054	-0.0008	-0.061	0.0148	1.164
Claims on other sectors of the domestic economy (% of GDP t+1)/GDP t+1 y-on-y change	-0.00167	-0.131	0.0158	1.252	0.0009	0.069
Claims on other sectors of the domestic economy (% of GDP t+1)/GDP t+2 y-on-y change	0.01572	1.154	0.0032	0.234	0.0053	0.392

Note: The period 'Initial listing' refers to the calendar year in which the listing occurs, 'Listed' refers to the full calendar year(s) between listing and delisting and 'Delisting' to the calendar year in which delisting occurred.

Among the leading indicators identified in the theoretical model, there is evidence of a positive correlation with market capitalisation, with a time lag, both on delisting and during the follow up process. There is some weakly significant evidence that risk premiums fell during the listing periods. Weakened exchange rates were also correlated with listings, which reinforces the findings of Jaysekara (2021). Interestingly however, there is also evidence of negative correlation over a longer time period, including after delisting. Net financial flows and net foreign assets declined during the period in which countries were listed, which provides some support for the findings of Collin, Cook and Soramaki (2016), while claims on other sectors of the economy rose.

### Period II: 2008 -2015

The second period of FATF listings - a period characterised by higher levels of compliance with FATF listing signals by compliant countries and institutions - seems to have had more wide-ranging

correlations, including with investment flows and with bank behaviour, as predicted by the theoretical model and by Collin, Cook and Soramaki (2016). Table 2 summarises the more significant findings.

Table 2	Correlations with indicator variables in 2008-2015 period					
	2008-2015					
Dependent Variable	Initial Listing I	t-stat	Listed I	t-stat	Delisting I	t-stat
Market capitalization of listed domestic companies (current US\$) y-on-y change	-0.0554	-1.003	-0.08716	-2.257	-0.0706	-1.146
Market capitalization of listed domestic companies (current US\$) t+1 y-on-y change	-0.0803	-1.436	-0.04089	-1.047	-0.0291	-0.467
Market capitalization of listed domestic companies (current US\$) t+2 y-on-y change	-0.0230	-0.589	0.02828	1.039	-0.0253	-0.581
Exchange Rate (GDP(LC)/GDP(US\$)) y-on-y change	-0.0122	-0.814	0.01565	1.497	0.0125	0.748
Exchange Rate (GDP(LC)/GDP(US\$)) t+1 y-on-y change	0.0051	0.325	0.02816	2.567	0.0418	2.386
Exchange Rate (GDP(LC)/GDP(US\$)) t+2 y-on-y change	0.0327	2.214	0.04207	4.081	0.0498	3.027
Bank nonperforming loans to total gross loans (%) y-on-y change	-0.0651	-1.358	0.00970	0.290	0.0412	0.771
Bank nonperforming loans to total gross loans (%) t+1 y-on-y change	-0.0300	-0.629	0.06867	2.062	0.0163	0.307
Bank nonperforming loans to total gross loans (%) t+2 y-on-y change	0.0768	1.550	0.05332	1.542	0.1754	3.180
Year-on-year change in GDP (current US\$)	0.0521	2.719	-0.0334	-2.503	-0.0222	-1.042
Year-on-year change in GDP (current US\$) t+1	-0.0329	-1.708	-0.0834	-6.207	-0.1046	-4.879
Year-on-year change in GDP (current US\$) t+2	-0.0765	-4.096	-0.0976	-7.485	-0.1092	-5.251
Net financial flows, bilateral [NFL, current US\$]	0.0027	1.687	0.00616	5.489	0.0042	2.329
Net financial flows, bilateral [NFL, current US\$] t+1	0.0048	3.063	0.00629	5.710	0.0045	2.565
Net financial flows, bilateral [NFL, current US\$] t+2	0.0048	2.957	0.00555	4.894	0.0026	1.453
Net foreign assets (current LCU)/GDP y-on-y change	-0.2343	-0.353	0.96632	2.084	0.0439	0.059
Net foreign assets (current LCU)/GDP t+1 y-on-y change	-0.2343	-0.353	0.96632	2.084	0.0439	0.059
Net foreign assets (current LCU)/GDP t+2 y-on-y change	3.6703	3.379	-0.69206	-0.913	0.0728	0.060
Net official development assistance and official aid received (current US\$)/GDP	-0.0066	-1.389	-0.01120	-3.396	-0.0116	-2.207
Net official development assistance and official aid received (current US\$)/GDP t+1	-0.0080	-1.755	-0.01153	-3.614	-0.0105	-2.061
Net official development assistance and official aid received (current US\$)/GDP t+2	-0.0111	-2.439	-0.01111	-3.504	-0.0094	-1.856
IBRD loans and IDA credits (DOD, current US\$)/GDP	-0.0353	-3.617	-0.04381	-6.428	-0.0399	-3.674
IBRD loans and IDA credits (DOD, current US\$)/GDP t+1	-0.0306	-3.346	-0.03799	-5.959	-0.0340	-3.343
IBRD loans and IDA credits (DOD, current US\$)/GDP t+2	-0.0241	-2.889	-0.03084	-5.288	-0.0257	-2.759

In this period FATF listing activity correlates with a decline in market capitalisation of companies in the countries selected for listing. However, in contrast to the previous period, there is some weakly significant evidence of an upward correlation with exchange rates. Listing of a country does seem to have coincided with an increase in the incidence of non-performing loans, and a reduction in bank loans with a one and two year lag, reinforcing the findings of Balakina, D'Andrea and Masciandaro (2017). These findings also reinforce those of Morse (2017).

There is strongly significant evidence of a correlation between listing and a decline in growth in GDP both following the initial listing and in the following years.<sup>56</sup> There is evidence of an increase in financial (out) flows, and some increase in net foreign assets co-incident with the listing period. Finally, but importantly, we find a strongly significant negative correlation with net ODA, IBRD loans and IDA credits throughout the listing, investigation and delisting periods.

### Period III: 2016-2019

As discussed above, the third period of FATF regulatory intervention consists more of guidance and risk management and less of 'naming and shaming'. From 2016, listing was restricted to those countries with an action plan, i.e. those countries that were actively working with the FATF to address strategic deficiencies in their AML/CFT/CFP regimes. This meant that the public statements

<sup>56</sup> Noting, of course, that correlation does not prove causation. Whether FATF action in fact is directly responsible for a decline in the economic growth of countries is a subject which is beyond the scope of the present research.

flagged these countries as jurisdictions with problems but also with political commitment and action plans to address the problems. Table 3 summarises the more significant results.

Table 3	Correlations with indicator variables in 2016-2019 period					
	2016 onwards----->					
Dependent Variable	Initial Listing I	t-stat	Listed I	t-stat	Delisting I	t-stat
Net official development assistance and official aid received (current US\$)/GDP	0.0197	1.018	-0.0268	-2.350	-0.0333	-2.628
Net official development assistance and official aid received (current US\$)/GDP t+1	-0.0086	-0.462	-0.0286	-2.594	-0.0302	-2.467
Net official development assistance and official aid received (current US\$)/GDP t+2	-0.0072	-0.386	-0.0303	-2.765	-0.0317	-2.604
IBRD loans and IDA credits (DOD, current US\$)/GDP	-0.0172	-0.432	-0.0299	-1.267	-0.0565	-2.158
IBRD loans and IDA credits (DOD, current US\$)/GDP t+1	-0.0009	-0.023	-0.0233	-1.055	-0.0474	-1.938
IBRD loans and IDA credits (DOD, current US\$)/GDP t+2	0.0138	0.403	-0.0161	-0.800	-0.0349	-1.558
Year-on-year change in GDP (current US\$)	-0.0444	-0.568	-0.0695	-1.503	-0.1282	-2.498
Year-on-year change in GDP (current US\$) t+1	-0.0653	-0.830	-0.0689	-1.481	-0.0986	-1.910
Year-on-year change in GDP (current US\$) t+2	-0.0638	-0.837	-0.1085	-2.406	-0.1535	-3.065
Bank nonperforming loans to total gross loans (%) y-on-y change	-0.0731	-0.373	-0.0154	-0.133	-0.0653	-0.508
Bank nonperforming loans to total gross loans (%) t+1 y-on-y change	0.1564	0.802	-0.1079	-0.936	0.0983	0.768
Bank nonperforming loans to total gross loans (%) t+2 y-on-y change	-0.3377	-1.669	-0.0381	-0.319	-0.0932	-0.702
Market capitalization of listed domestic companies (current US\$)	-0.0050	-0.022	-0.0896	-0.671	0.2565	1.730
Market capitalization of listed domestic companies (current US\$) t+1	-0.0543	-0.238	-0.0658	-0.487	-0.0564	-0.376
Market capitalization of listed domestic companies (current US\$) t+2	0.0083	0.052	0.1215	1.290	0.0269	0.257

The negative correlation between net ODA, IBRD and IDA loans and credits and listings persists into this period. There is also significant evidence of correlation between the listing and delisting process and reduced GDP growth rates. There is some weakly significant evidence that this co-occurred with a reduction in non-performing loans and an improvement in the market capitalisation of listed companies. However, it should be emphasised that the data currently available for this period is still relatively limited, and we do not yet have the benefit of viewing the data over a longer period.

One surprising result was that we did not find significant correlation between listing events in any period and foreign direct investment inflows or outflows<sup>57</sup>. For details, please see the 'Leading Indicators' section of Annex A. This is in contradiction to the findings of the recently published IMF study (IMF (2021)), which, using a different methodology and a smaller sample of countries, found significantly negative correlations between both FDI inflows and outflows and greylisting.<sup>58</sup> Further research is needed to pin down in detail why the two studies have come up with different results.

## 8 Linking the findings and the model

Compliance is defined (OED) as 'action in accordance with a wish or desire'. Wishes or desires for countries to act in accordance with FATF standards must be signalled to target audiences to have effect. In the case of FATF, the key audiences are countries (government officials), markets (regulated institutions and investors) and society (civil society, commentators, etc).

The model reflects how listing signals could reasonably affect trade and public finance, and thus the relevant economy. With respect to greylisting it focuses on:

- A *specific signal* to the listed country expressing concern about the seriousness of the identified AML/CFT deficiencies, the risk they pose to the global AML/CFT, and the urgency with which the deficiencies have to be remedied. It is conveyed as a formal and objective

<sup>57</sup> after adjusting for the varying characteristics of countries, and events such as the global financial crisis.

<sup>58</sup> The authors of the IMF study claim to have established a causal (negative) link between listings and investment, but the Working Paper does not contain enough evidence for readers to verify the claim.

finding based on agreed standards and made by trained evaluators and peers after a carefully managed process that included dialogue and review.

- A *general signal* to the rest of the AML/CFT world community drawing attention to the findings and how stakeholders may react to the risks posed by the identified deficiencies. This signal is less defined and more open to interpretation, depending on specific country knowledge and dealings as well as own risk exposure. Responses are also informed by expectations of appropriate behaviour by counterparts and national regulators.

It is important to note that the market response to the FATF signal has often reflected lags and delays. A negative impact may only eventuate a year or even two years after listing.

As greylisting conveys not one signal but two, maintaining the correct balance or blend is essential. Otherwise, action taken by target groups may lead to outcomes FATF did not intend. Firms, the media and even national regulators may, for example, overact or over-comply with the general signal. This is a common precautionary reaction to new information being received or new and old information being combined. Over-compliant stakeholders may be less responsive to positive news emanating from listed countries. This would be expressed in the model as a delisted country still experiencing prohibitions and adverse terms of trade caused by enduring market sentiment or regulatory expectations.

Disruption of FATF general signalling could also be caused by interference from other macro signals such as market crises, political bargains and other competing review processes (EU list, TI Index). Such determinants would be reflected in the model as changes in government access to funds and firm access to factors of production (positive or negative).

Over time, however, FATF stakeholders would be expected to become more familiar with the FATF process and to observe that unless greylistings become blacklistings (now an event of global significance, though very rare) they apparently inevitably resolve over time. Stakeholders would also develop the ability to balance specific and general signals and note their individual relevance to outcomes.

In Period I the FATF general signal into the model was new and, for reasons described above, very strong. The specific signals were more limited. In this period it was easier for FATF to generate general signals than specific ones, given both the FATF and the mutual evaluation process were still work-in-process. In terms of their effects, the correlation of foreign exchange rate falls on listing *and* delisting in this period are consistent with signals that combined to create/confirm high level negative country opinions and thus hardened terms of credit and trade in markets influenced by FATF norms. At the same time there may be disinvestment by criminal and marginal players put off by the increase in scrutiny and cooperation associated with listing and the improved AML/CFT measures signalled by delisting. The decrease in foreign holdings seen could also follow from lower firm/government purchasing power, due to currency depreciation, and sales of foreign assets to cover cash short falls or in response to regulatory pressure (especially host regulatory pressure on listed-country owned firms). The increase in ODA after delisting would correspond to a country having met delisting conditionality criteria. The lags support the notion of a learning process on all sides.

Period II coincides with IMF and G7/G20 attempts to limit the negative impacts of the Global Financial Crisis on the many smaller countries, now members of FRSBs. There were also internal adjustments between key FATF stakeholders, with rebalancing between IMF (Article IV) and FATF processes helping to rebalance FATF signalling towards the technical assistance and specifics (carrot)

whilst maintaining the opportunity to name and shame generalities (stick). The increase in MDB assistance is again consistent with delisting signals being more readily discerned by markets with a corresponding positive impact on credit, good and services.

Period III is characterised by a tilt in the emphasis of FATF signalling towards multiple specific signals of a technical nature and general signals to reinforce process, progress and collaboration. The restriction of the list to countries with deficiencies who had adopted appropriate action plans also meant that the list and the general signal would be read more positively by the market. The market, on the other hand, has also become more used to listing signals of all kinds as lists proliferated globally. In addition, the market would anticipate a fast resolution of the concerns followed by a delisting. This would tend to limit negative responses. The more positive approach correlates with more positive outcomes with positive aid and concessional lending correlations possibly reflecting positive signals into credit markets, with knock on effects in equity market confidence.

## 9 Conclusion

This study identified three distinct phases in the FATF's greylisting of countries that are not appropriately compliant with FATF standards. The econometric analysis identified correlations between listing and delisting and a range of negative and positive economic indicators. The study also provides an explanation of the potential causal drivers that may explain the correlations.

We find significant correlations with several of the economic and financial variables which are suggested as possible indicators by the economic and financial and model, but not with all. One or two year lags are evident in a number of cases. Several of our findings reinforce those previously identified in the literature, but there are also some differences. Importantly, negative indicators are less visible in the dataset in Phase 3. This may be due to changes in the list itself as the FATF, from February 2016, only added countries with strategic deficiencies that committed themselves to a plan of action and a timeline to address the concerns. The signalling by FATF was also more positive in relation to the listed countries. The market on the other hand has also come to expect a delisting to follow a listing. This combination of factors may result in more muted negative responses.

It should of course be noted that these findings are general and should not be interpreted as an absence of negative responses or indicators for any particular country. Country profiles differ widely and some may have been negatively affected although on balance most other peers were not affected.

FATF still maintains its blacklist for countries that defiantly 'fail' to commit themselves politically to appropriate compliance with its standards. While that list is available, it is worthwhile considering whether a greylisting process is still required. What is the benefit of signalling to the market that a particular country has strategic deficiencies that it is working to resolve?

Cultivating open no-blame supportive regulatory environments which seek quietly to understand and collaboratively pre-empt compliance failures, rather than publicly cajole and coerce firms, have had notable success at a national level.<sup>59</sup> It may be that developing such an approach at macro level in global governance may have comparable benefits in terms of promoting positive relations

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<sup>59</sup> Civil Aviation and Pharmaceuticals are two such regulatory spaces in UK. For more discussion see Braithwaite, J. *Markets in vice, markets in virtue* (2005) Oxford University Press; Hodges, C. *Ethics in Business Practice and Regulation* (2016) HMG Assets Publishing Service

between FATF/FSRBs and members and enhancing national and global safety against illicit finance threats.

Should FATF wish to retain greylisting, the findings and the model suggest least harm is done when FATF uses strong specific FATF signals that are to the point, and general signals which reinforce positive impacts and reassure unsettled markets. Positively framed and communicated grey listing need not have unintended and/or over enduring effects on a national economy and has the potential to correct unfounded perceptions of risk that clouded earlier phases in FATF's greylisting.

Future decisions regarding greylisting should ideally be informed by data and research. In particular, it would be helpful to strengthen the understanding of causation. This study has identified correlations and more work is required to deepen insights into causation. With the data at our disposal and the model that was developed it is possible to prospectively assess the likely economic impact of a listing on a country. An assessment of the likely impact (intended and unintended effects) would be a useful inclusion in future listing discussions of the FATF, especially coupled with planning for development assistance to address such impact and safeguards/mechanisms to check and correct unintended consequences.

The methodology developed in this paper, combined with the empirical investigation we have undertaken, does, we believe, demonstrate the value of policy research in this area. We suggest that this work is developed in the following ways:

1. Drilling down into the micro and meso foundations of policy responses, using detailed FATF data on compliance and effectiveness, in order to establish causal effects of FATF regulatory actions. See Annex B for a technical discussion of how to make the transition from exploring correlation to causation.
2. Exploring how the impact of FATF listings varies by type of country, for example by income range, geographic area, type of legal system etc.
3. Identifying whether the impacts are different for those jurisdictions regarded as 'tax havens' and others.
4. Extending the work into the current period (Period III) to more fully understand the effects and impact of the more recent (2016- onwards) period, bringing in the most recent data.
5. Exploring longer time lags. For example, does FATF listing bring benefits three, four, five or longer years after the events?
6. Developing methods to support country impact analysis pre-listing to inform policy decisions as well as technical assistance analyses?

## Annex A: Econometric results

Summary of Pooled Cross-section Time Series regressions with Fixed Effects		First Order Correlations										T-stat 90% 1.65		T-stat 60% 0.85		https://www.stat.colostate.edu/inmem/gumina/st201/pdf/Uts-Heckard_t-Table.pdf http://uregina.ca/~gingrich/tt.pdf							
Changes in variable		Immediate, one and two year lags										Significant?											
Country fixed effects relative to USA												Negative impact											
Constant set to zero												Positive impact											
Dependent Variable	2000-2007					2008-2015					2016-2019					Diagnostics							
	Initial Listing I	t-stat	Listed I	t-stat	Delisting I	t-stat	Initial Listing II	t-stat	Listed II	t-stat	Delisting II	t-stat	Initial Listing III	t-stat	Listed III	t-stat	Delisting III	t-stat	GFC Dummy	t-value	R-Square	F-stat	Outliers
Net official development assistance and official aid received (current US\$)/GDP	0.00452	0.554	-0.0010	-0.121	0.0101	1.242	-0.0066	-1.389	-0.01120	-3.396	-0.0116	-2.207	0.0197	1.018	-0.0268	-2.350	-0.0333	-2.628	0.0001	0.070	0.8474	84.15	55
Net official development assistance and official aid received (current US\$)/GDP t+1	0.01216	1.541	0.0003	0.041	0.0131	1.658	-0.0080	-1.755	-0.01153	-3.614	-0.0105	-2.061	-0.0086	-0.462	-0.0286	-2.594	-0.0302	-2.467	0.0041	2.247	0.8522	87.43	55
Net official development assistance and official aid received (current US\$)/GDP t+2	0.01172	1.494	0.0012	0.154	0.0019	0.240	-0.0111	-2.439	-0.01111	-3.504	-0.0094	-1.856	-0.0072	-0.386	-0.0303	-2.765	-0.0317	-2.604	0.0034	1.875	0.8496	85.65	59
IFC, private nonguaranteed (NFL, current US\$)/GDP	-0.00007	-0.163	-0.0001	-0.231	-0.0003	-0.696	0.0002	0.628	0.00005	0.280	0.0001	0.298	-0.0003	-0.298	-0.0004	-0.748	0.0006	0.842	-0.0002	-1.909	0.0504	0.80	31
IFC, private nonguaranteed (NFL, current US\$)/GDP t+1	-0.00033	-0.768	0.0000	-0.009	-0.0001	-0.335	0.0000	-0.176	0.00015	0.891	0.0002	0.798	-0.0004	-0.427	-0.0002	-0.338	-0.0012	-1.878	0.0001	1.418	0.0501	0.80	31
IFC, private nonguaranteed (NFL, current US\$)/GDP t+2	-0.00025	-0.586	0.0002	0.425	0.0000	-0.047	0.0002	0.726	0.00007	0.429	-0.0002	-0.685	-0.0005	-0.518	-0.0001	-0.201	0.0000	0.022	0.0004	3.664	0.0526	0.84	29
IBRD loans and IDA credits (DOD, current US\$)/GDP	0.00470	0.279	0.0073	0.436	-0.0022	-0.130	-0.0353	-3.617	-0.04381	-6.428	-0.0399	-3.674	-0.0172	-0.432	-0.0299	-1.267	-0.0565	-2.158	-0.0147	-3.805	0.6149	24.20	75
IBRD loans and IDA credits (DOD, current US\$)/GDP t+1	0.00494	0.313	0.0032	0.205	-0.0037	-0.234	-0.0306	-3.346	-0.03799	-5.959	-0.0340	-3.343	-0.0009	-0.023	-0.0233	-1.055	-0.0474	-1.938	-0.0147	-4.076	0.6016	22.90	82
IBRD loans and IDA credits (DOD, current US\$)/GDP t+2	0.00283	0.196	0.0005	0.033	-0.0049	-0.339	-0.0241	-2.889	-0.03084	-5.288	-0.0257	-2.759	0.0138	0.403	-0.0161	-0.800	-0.0349	-1.558	-0.0123	-3.733	0.5948	22.25	74
Dependent Variable	2000-2007					2008-2015					2016-2019					Diagnostics							
	Initial Listing I	t-stat	Listed I	t-stat	Delisting I	t-stat	Initial Listing II	t-stat	Listed II	t-stat	Delisting II	t-stat	Initial Listing III	t-stat	Listed III	t-stat	Delisting III	t-stat	GFC Dummy	t-value	R-Square	F-stat	Outliers
Risk Premium y-on-y change	-0.37379	-0.977	-0.5415	-1.431	-0.3873	-1.012	-0.0784	-0.354	-0.02763	-0.178	0.0005	0.002	0.0140	0.015	-0.0443	-0.083	-0.1620	-0.273	-0.0224	-0.255	0.0513	0.82	9
Risk Premium t+1 y-on-y change	-0.33686	-0.879	-0.5853	-1.545	-0.3046	-0.795	-0.0192	-0.087	-0.01883	-0.122	-0.0382	-0.154	0.0166	0.018	-0.0402	-0.075	-0.3402	-0.572	-0.0100	-0.114	0.0512	0.82	9
Risk Premium t+2 y-on-y change	-0.33778	-0.883	-0.5334	-1.411	-0.3809	-0.996	-0.0492	-0.222	-0.01568	-0.101	-0.0698	-0.283	0.0165	0.018	-0.0277	-0.052	-0.1829	-0.308	0.0054	0.062	0.0505	0.81	9
Spread y-on-y change	-0.00485	-0.022	0.0514	0.238	-0.0110	-0.051	-0.0770	-0.610	-0.00862	-0.098	-0.0075	-0.054	-0.0299	-0.058	-0.0352	-0.115	-0.0237	-0.070	-0.0023	-0.045	0.0154	0.24	11
Spread t+1 y-on-y change	0.05107	0.231	0.0469	0.214	-0.0192	-0.087	-0.0080	-0.063	0.02011	0.225	0.0185	0.130	0.2033	0.388	-0.0797	-0.257	-0.0018	-0.005	0.1389	2.736	0.0157	0.24	13
Spread t+2 y-on-y change	0.05566	0.251	-0.0179	-0.082	-0.0166	-0.075	0.0174	0.136	0.00545	0.061	0.1035	0.724	0.0322	0.061	0.1520	0.491	-0.0424	-0.123	0.1456	2.868	0.0163	0.25	13

Note: The period 'Initial listing' refers to the calendar year in which the listing occurs, 'Listed' refers to the full calendar year(s) between listing and delisting and 'Delisting' to the calendar year in which delisting occurred.

Summary of Pooled Cross-section Time Series regressions with Fixed Effects													Second Order Correlations					T-stat 90% 1.65		T-stat 60%		0.85		https://www.stat.colostate.edu/inmem/gumina/st201/pdf/Utts-Heckard_t-Table.pdf http://uregina.ca/~gingrich/tt.pdf											
Changes in variable													Immediate, one and two year lags					Significant?																	
Country fixed effects relative to USA																		Negative impact																	
Constant set to zero																		Positive impact																	
													2008-2015					2016-2019					Diagnostics												
													Initial Listing I					Delisting I																	
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													t-stat					t-stat																	
													GFC Dummy					t-value					R-Square F-stat Outliers												
Bank nonperforming loans to total gross loans (%)-y-on-y change													-0.0391	-0.482	-0.0739	-0.904	-0.0399	-0.482	-0.0651	-1.358	0.00970	0.290	0.0412	0.771	-0.0731	-0.373	-0.0154	-0.133	-0.0653	-0.508	0.0235	1.238	0.0651	1.06	34
Bank nonperforming loans to total gross loans (%)+1 y-on-y change													-0.00264	-0.044	-0.0243	-0.299	-0.0152	-0.185	-0.0300	-0.629	0.06867	2.062	0.0163	0.307	0.1564	0.802	-0.1079	-0.936	0.0983	0.768	0.2299	12.179	0.1064	1.80	32
Bank nonperforming loans to total gross loans (%)+2 y-on-y change													-0.01013	-0.119	-0.0390	-0.461	-0.0415	-0.486	0.0768	1.550	0.05332	1.542	0.1754	3.180	-0.3377	-1.669	-0.0381	-0.319	-0.0932	-0.702	0.1727	8.814	0.0833	1.38	34
Market capitalization of listed domestic companies (current US\$)-y-on-y change													-0.04695	-0.492	-0.0552	-0.584	-0.0317	-0.332	-0.0554	-1.003	-0.08716	-2.257	-0.0706	-1.146	-0.0050	-0.022	-0.0896	-0.671	-0.2565	-1.730	-0.1004	-4.586	0.0739	1.21	20
Market capitalization of listed domestic companies (current US\$)+1 y-on-y change													-0.02996	-0.310	0.0030	0.032	0.1338	1.385	-0.0803	-1.436	-0.04089	-1.047	-0.0291	-0.467	-0.0543	-0.238	-0.0658	-0.487	-0.0564	-0.376	-0.0410	-1.854	0.0629	1.02	20
Market capitalization of listed domestic companies (current US\$)+2 y-on-y change													0.03845	0.571	0.1765	2.651	0.0944	1.402	-0.0230	-0.589	0.02828	1.039	-0.0253	-0.581	0.0083	0.058	0.1215	1.290	0.0269	0.257	0.0886	5.739	0.0655	1.06	80
Private non-guaranteed loans, commercial banks and other creditors													-0.00203	-0.445	-0.0009	-0.209	-0.0026	-0.560	0.0118	4.451	0.00792	4.292	0.0078	2.653	-0.0002	-0.017	0.0072	-1.125	-0.0020	-0.286	0.0017	1.648	0.3227	7.22	52
Private non-guaranteed loans, commercial banks and other creditors t+1													-0.00083	-0.180	-0.0025	-0.549	-0.0012	-0.251	0.0064	2.388	0.00687	3.657	0.0012	0.414	-0.0003	-0.031	0.0058	0.894	-0.0052	-0.718	0.0034	3.190	0.3109	6.84	49
Private non-guaranteed loans, commercial banks and other creditors t+2													-0.00351	-0.745	-0.0020	-0.426	-0.0015	-0.316	0.0053	1.944	0.00256	1.344	-0.0036	-1.181	-0.0009	-0.081	-0.0036	-0.544	-0.0143	-1.957	0.0013	1.228	0.3134	6.92	49
Leading Indicators													2008-2015					2016-2019					Diagnostics												
													Initial Listing I					Delisting I																	
													t-stat					t-stat																	
													Listed I					Delisting I																	
													t-stat					t-stat																	
													Initial Listing II					Delisting II																	
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													t-stat					t-stat																	
													Initial Listing III					Delisting III																	
													t-stat					t-stat																	
													Listed III					Delisting III																	
													t-stat					t-stat																	
													GFC Dummy					t-value					R-Square F-stat Outliers												
Exchange Rate (GDP(LC)/GDP(US\$))-y-on-y change													-0.03564	-1.379	0.0064	0.251	-0.0111	-0.431	-0.0122	-0.814	0.01565	1.497	0.0125	0.748	0.0312	0.510	0.0085	0.236	0.0441	1.098	-0.0534	-9.015	0.2132	4.11	48
Exchange Rate (GDP(LC)/GDP(US\$))+1 y-on-y change													0.01426	0.526	-0.0054	-0.201	-0.0539	-1.986	0.0051	0.325	0.02816	2.567	0.0418	2.386	0.0603	0.939	0.0224	0.591	-0.0099	-0.235	0.0134	2.154	0.2154	4.16	47
Exchange Rate (GDP(LC)/GDP(US\$))+2 y-on-y change													-0.02982	-1.170	-0.0145	-0.207	-0.0641	-2.396	0.0327	2.214	0.04207	4.081	0.0498	3.027	0.0638	0.706	0.0646	1.811	0.0809	2.044	0.0292	4.994	0.2177	4.22	51
Year-on-year change in GDP (current US\$)													-0.0458	-1.385	0.0447	1.367	0.0460	1.391	0.0521	2.719	-0.0334	-2.503	-0.0222	-1.042	-0.0444	-0.568	-0.0695	-1.503	-0.1282	-2.498	0.1034	13.649	0.3816	9.35	33
Year-on-year change in GDP (current US\$)+1													0.0009	0.027	0.0383	1.167	0.0507	1.527	-0.0329	-1.708	-0.0834	-6.207	-0.1046	-4.879	-0.0653	-0.830	-0.0689	-1.481	-0.0986	-1.910	-0.0300	-3.943	0.3648	8.71	31
Year-on-year change in GDP (current US\$)+2													0.0276	0.858	0.0640	2.007	0.0991	3.076	-0.0765	-4.096	-0.0976	-7.485	-0.1092	-5.251	-0.0638	-0.837	-0.1085	-2.406	-0.1535	-3.065	-0.0599	-8.110	0.3737	9.05	30
Net financial flows, bilateral (NFL, current US\$)													-0.00029	-0.105	-0.0027	-0.988	-0.0019	-0.675	0.0027	1.687	0.00616	5.489	0.0042	2.329	0.0128	1.951	0.0053	1.367	0.0144	3.345	-0.0021	-3.268	0.4220	11.07	52
Net financial flows, bilateral (NFL, current US\$)+1													-0.00065	-0.240	-0.0036	-1.339	0.0007	0.263	0.0048	3.063	0.00629	5.710	0.0045	2.565	0.0090	1.398	-0.0005	-0.127	0.0038	0.905	-0.0003	-0.489	0.4171	10.85	52
Net financial flows, bilateral (NFL, current US\$)+2													0.00029	0.102	-0.0031	-1.135	-0.0002	-0.060	0.0048	2.957	0.00555	5.489	0.0042	2.329	0.0128	1.951	0.0053	1.367	0.0144	3.345	-0.0021	-3.268	0.4220	11.07	52
Foreign direct investment, net inflows (BoP, current US\$)/GDP													-0.02049	-0.561	-0.0107	-0.297	-0.0166	-0.455	0.0045	0.214	0.01142	0.773	0.0370	1.573	0.0064	0.074	-0.0065	-0.128	0.0045	0.079	0.0276	3.302	0.4432	12.07	39
Foreign direct investment, net inflows (BoP, current US\$)/GDP+1													-0.02561	-0.696	-0.0055	-0.152	-0.0017	-0.046	0.0373	1.750	0.00430	0.289	0.0076	0.322	-0.0014	-0.016	-0.0013	-0.025	0.0003	0.005	0.0091	1.075	0.4349	11.67	40
Foreign direct investment, net inflows (BoP, current US\$)/GDP+2													-0.01132	-0.413	0.0001	0.002	-0.0087	-0.238	0.0077	0.364	-0.00191	-0.130	-0.0026	-0.109	-0.0096	-0.112	-0.0066	-0.129	0.0097	0.172	0.0055	0.653	0.4525	12.53	40
Foreign direct investment, net outflows (BoP, current US\$)/GDP													-0.01360	-0.429	-0.0029	-0.093	-0.0084	-0.266	-0.0088	-0.482	0.005	0.408	0.0399	1.954	0.0038	0.051	0.0033	0.075	0.0027	0.054	0.0209	2.876	0.3580	8.45	36
Foreign direct investment, net outflows (BoP, current US\$)/GDP+1													-0.01225	-0.379	-0.0006	-0.017	-0.0025	-0.078	0.0309	1.649	0.004	0.327	0.0100	0.480	0.0017	0.022	0.0031	0.067	0.0035	0.070	0.0046	0.621	0.3344	7.62	40
Foreign direct investment, net outflows (BoP, current US\$)/GDP+2													-0.00524	-0.162	-0.0003	-0.009	-0.0021	-0.066	0.0063	0.337	0.002	0.174	0.02	0.902	0.0008	0.010	0.0002	0.004	0.0004	0.009	0.0014	0.195	0.3412	7.85	40
Lagging Indicators													2008-2015					2016-2019					Diagnostics												
													Initial Listing I					Delisting I																	
													t-stat					t-stat																	
													Listed I					Delisting I																	
													t-stat					t-stat																	
													Initial Listing II					Delisting II																	
													t-stat					t-stat																	
													Listed II					Delisting II																	
													t-stat					t-stat																	
													Initial Listing III					Delisting III																	
													t-stat					t-stat																	
													Listed III					Delisting III																	
													t-stat					t-stat																	
													GFC Dummy					t-value					R-Square F-stat Outliers												
Net foreign assets (current LCU)/GDP y-on-y change													-0.27869	-0.243	-2.6724	-2.357	-0.8363	-0.729	-0.2343	-0.353	0.96632	2.084	0.0439	0.059	0.0754	0.028	-0.0168	-0.010	-1.9297	-1.083	-0.2753	-1.047	0.0644	1.04	9
Net foreign assets (current LCU)/GDP t+1 y-on-y change													-0.27869	-0.243	-2.6724	-2.357	-0.8363	-0.729	-0.2343	-0.353	0.96632	2.084	0.0439	0.059	0.0754	0.028	-0.0168	-0.010	-1.9297	-1.083	-0.2753	-1.047	0.0644	1.04	9
Net foreign assets (current LCU)/GDP t+2 y-on-y change													-0.77377	-0.413	-2.8245	-1.524	-1.1132	-0.594	3.6703	3.379	-0.69206	-0.913	0.0728	0.060	0.2006	0.045	-0.0196	-0.007	-1.8969	-0.651	-0.0022	-0.005	0.0630	1.02	6
External debt stocks, total (DOD, current US\$)/GDP y-on-y change													-0.00552	-0.135	-0.0359	-0.889	-0.0572	-1.399	-0.0176	-0.742	0.02595	1.569	0.0104	0.394	0.0978	1.011	0.0423	0.740	0.1035	1.630	-0.0407	-4.340	0.0601	0.97	62
External debt stocks, total (DOD, current US\$)/GDP t+1 y-on-y change													0.02985	0.724	-0.0907	-2.225	0.0046	0.111	0.0219	0.916	0.04587	2.749	0.0721	2.710	0.1024	1.049	-0.0019	-0.033	-0.0059	-0.092	0.0370	3.914	0.0611	0.99	58
External debt stocks, total (DOD, current US\$)/GDP t+2 y-on-y change													0.00706	0.176	-0.0900	-2.268	-0.0414	-1.032	0.0473	2.036	0.05780	3.563	0.0604	2.336	-0.0053	-0.055	-0.0081	-0.144	0.0802	1.287	0.0611	6.643	0.0702	1.14	68
Net acquisition of financial assets (% of GDP)													-0.00278	-0.141	0.0054	0.275	-0.0006	-0.030	0.0044	0.382	-0.00005	-0.007	0.0038	0.298	0.0127	0.272	-0.0030	-0.107	0.0157	0.514	0.0011	0.245	0.2665	5.51	17
Net acquisition of financial assets (% of GDP)+1													-0.00062	-0.031	0.0048	0.249	-0.0006	-0.029	0.0050	0.435	-0.00068	-0.086	0.0015	0.118	-0.0207	-0.444	0.0077	0.278	0.0134	0.436	-0.0018	-0.392	0.2662	5.50	17
Net acquisition of financial assets (% of GDP)+2													-0.00105	-0.053	0.0068	0.352	-0.0039	-0.201	0.0014	0.127	0.00076	0.096	0.0056	0.440	-0.0003	-0.007	0.0162	0.591	-0.0071	-0.232	0.0020	0.442	0.2758	5.77	17
Claims on central government, etc. (% GDP)-y-on-y change													-0.10563	-0.056	5.7085	3.043	-0.1693	-0.089	0.5830	0.530	0.50844	0.662	0.2536	0.207	-0.0014	0.000	-0.1405	-0.053	0.8834	0.300	-0.7763	-1.785	0.0624	1.01	12
Claims on central government, etc. (% GDP)+1 y-on-y change													7.42725	3.902	-1.2747	-0.677	-0.1747	-0.092	0.4069	0.369	0.60157	0.781	0.8370	0.682	0.1847	0.041	-0.3320	-0.125	0.5558	0.188	0.5190	1.189	0.0638	1.03	11
Claims on central government, etc. (% GDP)+2 y-on-y change													0.02400	0.013	-0.1609	-0.090	-0.0973	-0.036	0.3745	0.356	0.68045	0.926	0.1440	0.439	0.1425	0.033	-0.1594	-0.063	0.3032	0.107	0.3959	0.951	0.0580	0.93	12
Claims on other sectors of the domestic economy (% of GDP+1)/GDP y-on-y change													0.00069	0.054	-0.0008	-0.061	0.0148	1.164	0.0055	0.748	0.01178	2.299</													

## Annex B: Separating correlation from causation

### The concept of causation

The concept of causation is one which philosophers worldwide, including Russell, Hume and Kant, have debated for centuries. The complexity of the basic idea is reflected, for example, in the need for a 3-year research project at the London School of Economics on causality.<sup>60</sup> As argued by Cartwright (2004) "causation is not a single, monolithic concept. There are different kinds of causal relations imbedded in different kinds of systems."

Bertrand Russell, a leading British philosopher, argued that causal principles cannot be derived from laws of association.<sup>61</sup> This means that statistical correlation does not necessarily tell us anything about what is causing the correlation. The problem is that "background correlations between the purported cause and other causal factors may conceal the increase in probability which would otherwise appear".<sup>62</sup> These problems were discussed at length in the earliest statistical textbooks, for example Yule (1911).<sup>63</sup> To establish causation requires that the process by which the purported cause and the outcome be specified, and demonstrated to occur, with a reasonable degree of certainty. This in turn ensures that statistical investigation focuses on the right variables: "partitioning on an irrelevancy can make a genuine cause look irrelevant, or make an irrelevant factor look like a cause"<sup>64</sup>.

### Unobservable variables

In some cases, the true cause of an effect may be *unobservable*, and all that is present in the data is (often inadequate) proxies for this cause. For example, if we believed that ML or TF are likely to be higher in countries with lower moral standards, we might observe church attendance or prosecutions for corruption and hope that these were indicators of moral standards. But we all know myriad reasons why neither could be regarded as an adequate measure of morality, and that numerous other factors that may affect moral compass. For this reason, statisticians have developed *difference-in-differences* (DID) methods which attempt to control for unobserved variables that bias estimates of causal effects.<sup>65</sup> This approach suggests that the best way to assess the validity of results is to "compare the trends of outcome variables across treatment and control groups before application of the treatment". In other words, we need to try to control for the other things that may be affecting the observed outcome before attributing causality to any particular influence. Techniques have been developed which try to do this, including Kalman-Filtering, principal

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<sup>60</sup> Funded by the British Arts and Humanities Research Board (AHRB), carried out between 2002 and 2004 (Causality: Metaphysics and Methods, Centre for Philosophy of Natural and Social Science, London School of Economics). The project is summarized in Cartwright (2004) 'Causation: One word, many things' *Philosophy of Science* 71(5):805-819 DOI:10.1086/426771, available at [https://www.researchgate.net/publication/249081462\\_Causation\\_One\\_Word\\_Many\\_Things](https://www.researchgate.net/publication/249081462_Causation_One_Word_Many_Things)

<sup>61</sup> Russell, Bertrand. "On the Notion of Cause," *Proceedings of the Aristotlean Society*, 13(1912-13), 1-26. Russell's claim is discussed in detail in Cartwright, Nancy (1979) 'Causal Laws and Effective Strategies' *Nous*, Volume 13, Issue 4, Special Issue on Counterfactuals and Laws (Nov., 1979), 419-437.

<sup>62</sup> Cartwright (1979) p421

<sup>63</sup> G. Yule (1904) *An Introduction to the Theory of Statistics* (London, C. Griffin and company), available at [http://cda.psych.uiuc.edu/Wallace/yule\\_1911.pdf](http://cda.psych.uiuc.edu/Wallace/yule_1911.pdf)

<sup>64</sup> Cartwright (1979) p432

<sup>65</sup> See P J McEwan (2010) 'Difference-in-differences', *International Encyclopedia of Education* (Third Edition), available at <https://www.sciencedirect.com/science/article/pii/B9780080448947012112>

components, factor analysis, LISREL, MIMIC, DYMIMIC, and PLS with respect to parameter estimation.<sup>66</sup>

### Endogeneity

*Endogeneity* is a classic problem for econometric estimation. In our case, even if we can establish a high degree of correlation, we do not know, for example, whether FATF compliance causes lower ML/TF activity, or whether higher ML/TF activity induces better FATF compliance. A technique which has been developed by econometricians to solve this problem is that of *instrumental variables*. Here, a variable is chosen which is exogenous (nothing to do with either AML/CFT or FATF compliance), but which nevertheless is highly correlated with an explanatory variable. Tests have been developed for endogeneity (Hausman-Wu), for whether the variable is correlated with the endogenous variables (F-test) and whether the instruments are uncorrelated (overidentifying Chi-squared test). Assuming the IV satisfies these tests, a first stage regression is carried out of the endogenous variables on the IV, testing for different possible lag structures.<sup>67</sup>

When causal inferences are made from regressions which demonstrate correlation, the underlying assumption is that the unexplained portion of the dependent variable is not correlated with other explanatory variables. In the jargon, this is called *Conditional Mean Independence* (CMI). However, if CMI is violated, estimated parameters will be unidentified or biased. There are three main reasons why this may occur:

1. Omitted Variable (OV) bias – that is, there is something else we have not included which is in fact causing (some or all of) the observed effect.
2. Measurement Error (ME) bias – and the extent to which estimates are measured incorrectly is correlated with the effect (for example, countries with weak ML/TF regimes may also have weak statistical agencies).
3. Simultaneity bias – where an explanatory variable is jointly determined with the observed effect we are trying to explain.

Over the years, econometricians have developed solutions to all three of these problems. These include using a structural approach<sup>68</sup>; and using reduced forms (finding exogenous variations through understanding institutional details or economic mechanisms, using DID or IV approaches). Unfortunately, the existing empirical literature on the impact of FATF actions often does not address these problems adequately, despite there being a well-developed literature on causality and

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<sup>66</sup> For evaluation of these techniques, see Wilhelm Krelle (1997) 'How to deal with unobservable variables in economics', CORE Discussion Paper No. B-414, available at <https://core.ac.uk/download/pdf/6334288.pdf>

<sup>67</sup> For more on applications of these testing methods see, for example, Harold Demsetz (1983) 'The Structure of Ownership and the Theory of the Firm' *Journal of Law and Economics*, 1983, vol. 26, issue 2, 375-90; Harold Demsetz and Kenneth Lehn (1985) 'The Structure of Corporate Ownership: Causes and Consequences' *Journal of Political Economy*, Vol. 93, No. 6 (Dec., 1985), pp. 1155-1177, [https://www.uts.edu.au/sites/default/files/ADG\\_Cons2015\\_Demsetz%20Lehn%20JPE%201985.pdf](https://www.uts.edu.au/sites/default/files/ADG_Cons2015_Demsetz%20Lehn%20JPE%201985.pdf); and Jeffrey L. Coles, Felix Meschke and Michael Lemmon (2012) 'Structural Models and Endogeneity in Corporate Finance: The Link Between Managerial Ownership and Corporate Performance' *Journal of Financial Economics* 103(1):149-168, [https://www.researchgate.net/publication/224818221\\_Structural\\_Models\\_and\\_Endogeneity\\_in\\_Corporate\\_Finance\\_The\\_Link\\_Between\\_Managerial\\_Ownership\\_and\\_Corporate\\_Performance](https://www.researchgate.net/publication/224818221_Structural_Models_and_Endogeneity_in_Corporate_Finance_The_Link_Between_Managerial_Ownership_and_Corporate_Performance)

<sup>68</sup> For a good example, see Hennessey and Whited (2007) 'How Costly Is External Financing? Evidence from a Structural Estimation', *Journal of Finance* Volume 62, Issue 4, August 2007, Pages 1705-1745

endogeneity as applied to other topics. It may be useful for FATF, or central banks, to consider collecting the further data required to explore the effects of interventions.

#### Possible extensions

In future work, it will be helpful to move to the 'meso' and 'micro' levels, identifying what aspects of AML/CFT compliance received attention at what time and how they impacted in terms of the model we are developing. Some of this work has been carried out for the two country case studies carried out as part of the present project, Mauritius and Tunisia, and these provide helpful guidance for what will be needed for the remaining countries. For example, a compilation of the scores for the 40 technical compliance headings and 11 effectiveness criteria, and how these have evolved over time, will be a necessary part of this work.<sup>69</sup> Doing this will help to move from the correlations that we are able to demonstrate in the present project to the estimation of something closer to causal links.

There are new methods for dealing with the problem of causation which also allow possible causal inference. In Section 3 above we noted attempts in the literature to attribute causal inferences to some empirical findings. One interesting example, which is worthy of further exploration, is the use by Julia Morse of regression discontinuity (RD) and other techniques. RD could be used, perhaps in combination with DID techniques, for example, to explore the differences between the various FATF regime periods identified in this paper.

A second approach involves using a panel of data (such as that we have assembled) to synthesise (through Machine Learning) a 'country' which resembles the country of interest. Specifically, the Machine Learning process identifies an amalgam of real countries in the dataset whose (averaged) trend in the dependent variable is most similar to the trend in the country of interest up to the point of the FATF intervention being studied. Then the outcome of the relevant variable in each period after the intervention (derived from averaging data across several countries) could be compared with the outcome in the country of interest. The difference between the two is the impact of the FATF intervention so long as there are not material divergences, in non-FATF dimensions after the FATF intervention, between the country of interest and the amalgam of countries or, if there are such differences, so long as they have been properly controlled for.<sup>70</sup> This could be a basis for describing the inference as 'causal'.<sup>71</sup> A recent literature has emerged which provides the technical procedures for generating unbiased coefficient estimates and standard errors suitable for making causal inference using 'double selection Lasso' which could be drawn on here.<sup>72</sup>

In parallel, start work on an ex ante listing impact model that can be used to inform FATF listing decisions, not least by documenting intended effects, risks and risk mitigation measures.

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<sup>69</sup> Compiling this will require doing through all the MERs and FURs for each country, supplemented by any announcements made by FATF during the process.

<sup>70</sup> This is related to the basis on which the IMF authors in the working paper identified in Section 3.2 (Kida and Paetzold (2021)) attribute causality between listings and foreign direct investment for their sample of countries.

<sup>71</sup> The method is described here: <https://google.github.io/CausalImpact/CausalImpact.html>. The diagram in section 4 is highly intuitive.

<sup>72</sup> For example, Belloni, Alexandre, Victor Chernozhukov, and Christian Hansen. 2014a. "High-Dimensional Methods and Inference on Structural and Treatment Effects." *Journal of Economic Perspectives* 28 (2):29-50; Urminsky, Oleg, Christian Hansen, and Victor Chernozhukov. 2016. "Using Double-Lasso Regression for Principled Variable Selection." Available at SSRN: <https://ssrn.com/abstract=2733374>.

