



CENTR RESEARCH

Summary Report: Findings from Five Studies on ccTLD Renewal and Registration Dynamics

Overview

This summary report presents the findings of a series of five studies commissioned by CENTR. The research was conducted to explore the various factors influencing the renewal and generation of country code top-level domains (ccTLDs). CENTR, has a vested interest in understanding the dynamics that impact the sustainability and growth of these digital assets.

- **Study 1. Examining the Relationship between Social Media Usage, Education, and Digital Skills on ccTLD Renewal Rates**
- **Study 2. Factors Influencing the Generation of New Domains at the Country Level: An time series econometrics Approach**
- **Study 3. Factors Influencing the Registration of New Domain registrations in the EU**
- **Study 4. Examining the Influence of .com Registrations on the Dynamics of Country Code Top-Level Domains (ccTLDs) Renewals**
- **Study 5. Examining the Impact of Parked Domains, Domain Pricing, and Economic Indicators on ccTLD Renewal Rates: A Regression Analysis**

The studies were conducted using suitable methodologies based on the available data sources, including multiple regression models, ARIMA analysis, and dynamic panel-data estimation, and were based on data supplied by authoritative sources, including the World Bank, IMF, and EuroStat.

The research was carried out over several periods, albeit a relatively short longitudinal series, covering a range of variables such as social media usage, education, digital skills, market concentration, domain pricing, and economic indicators. This initial indicator set was chosen given its plausible benefit in guiding policy, noting future iterations may benefit from broader exploration. The findings from these studies provide critical insights for CENTR and other stakeholders in the digital economy, offering evidence-based recommendations to enhance the sustainability and competitiveness of ccTLDs in the rapidly evolving digital landscape.

This report summarises the results of the commissioned studies, providing a brief examination of the factors that drive ccTLD renewals and registrations, and offers strategic insights that can inform future policy decisions and industry practices.

Study Summaries

Study 1. Examining the Relationship between Social Media Usage, Education, and Digital Skills on ccTLD Renewal Rates

This study provides a detailed examination of how social media usage, education, and digital skills influence ccTLD renewal rates within the European Union. Utilising multiple regression models, the research identifies a strong positive correlation between educational attainment and domain renewals, suggesting that better-educated populations are more likely to appreciate the importance of maintaining an online presence. Digital skills also emerge as a critical determinant, with populations possessing higher digital literacy more inclined to renew their domains. Social media engagement similarly drives domain renewals, indicating that active participation in digital platforms necessitates maintaining a web presence.

Moreover, the study finds that higher registrar market concentration (HHI) negatively impacts renewal rates, as less competitive markets may be less innovative, or offer less service innovations. Additionally, higher domain prices are consistently shown to discourage renewals, highlighting the importance of keeping domain pricing affordable to sustain the digital economy. The research concludes with policy recommendations, advocating for investment in education and digital skills, promotion of market competition, and maintenance of accessible domain pricing to enhance the sustainability of ccTLDs.

Study 2. Factors Influencing the Generation of New Domains at the Country Level: An time series econometrics Approach

Focusing on Denmark, France, and Ireland, this study utilises time series econometric approaches to explore the factors driving the generation of new domain registrations, particularly ccTLDs. The analysis reveals that in Denmark, the presence of .com and .eu domains, as well as retail domain pricing, has minimal impact on the generation of .dk domains. In France, the study suggests a potential negative impact of .com and .eu domains on the creation of .fr domains, although these effects are not statistically significant, potentially due to data limitations. For Ireland, .com domains have a statistically significant negative effect on .ie domain creation, indicating that the prevalence of .com domains may reduce the likelihood of new .ie registrations. Population size consistently emerges as a significant driver of domain generation across all three countries, highlighting the importance of a larger market base in fostering digital growth.

The study underscores the importance of considering country-specific dynamics when developing policies to encourage digital growth through domain registrations. For instance, policies in Denmark might need to explore economic or technological drivers beyond domain pricing, while in France, efforts to reduce internet costs could promote domain generation. In Ireland, the study suggests that strategies to diversify domain offerings or reduce barriers to entry in other domain segments may be necessary to counteract the negative impact of .com domains.

Study 3. Factors Influencing the Registration of New Domain registrations in the EU

This research analyses the factors influencing the creation of new domain registrations within the European Union, focusing on variables such as household internet penetration, market concentration, population size,

broadband coverage, and digital skills. The findings indicate that higher household internet penetration significantly drives the creation of new website domains, reflecting the growing demand for online presence as more households gain internet access. Market concentration, as measured by the Herfindahl-Hirschman Index (HHI), is found to negatively impact the registration of new domains, suggesting that a more competitive market environment is more conducive to domain generation.

Population size also shows a consistently positive and significant effect on domain creation, indicating that larger populations correlate with higher demand for domains. Broadband coverage is positively associated with the generation of new domains, as better connectivity and access stimulate the creation of online platforms. Digital skills within the population significantly contribute to the growth of new domains, underscoring the importance of educational and training initiatives aimed at improving digital literacy.

The study also identifies a negative association between locally registered .com domains and new domain registrations, particularly when accounting for additional factors such as digital skills. This finding is different to the findings pertain to study 2 and is plausibility due to aggregation effects attenuating the impact of the .com variable within the models. This suggests that the impact of .com domains varies markedly across different jurisdictions, and time series analysis may be necessary to disentangle each ccTLD specific effect. This finding may indicate market saturation within the commercial domain space, suggesting potential areas for policy intervention to promote further growth. The results emphasise the need for policies that foster internet access, market competition, broadband expansion, and digital skills development to enhance the digital economy within the EU.

Study 4. Examining the Influence of .com Registrations on the Dynamics of Country Code Top-Level Domains (ccTLDs) Renewals

This paper investigates the dynamic relationship between locally registered .com domain registrations and the renewal rates of ccTLDs. Using an Arellano-Bond dynamic panel-data estimation technique, the study finds that contrary to expectations, .com registrations do not have a statistically significant impact on ccTLD renewal rates, when considering ccTLDs collectively. This suggests that while .com domains are pervasive, they do not directly undermine the renewal of ccTLDs. Instead, local market conditions, particularly competition and demographic factors, play more significant roles in determining ccTLD renewal dynamics. However, we propose that both .com and .eu, competition and reform parameters do impact registrations, however the effects may be attenuated, or suffer from aggregation bias in the pooled (all jurisdictions) model. Therein, we assert that jurisdiction specific studies employing ARIMAX and times series methods may be necessary to disentangle the ccTLD, and jurisdiction level effects of .com, .eu, and regulatory reform. The effects may only be visible in more jurisdiction specific country level analyses.

Nonetheless, the study highlights the negative and significant relationship between market concentration and ccTLD renewal rates, where markets with fewer dominant players tend to experience lower renewal rates. This finding aligns with the broader literature that suggests reduced competition may discourage continued use of ccTLDs. Population size is positively correlated with higher renewal rates, emphasizing the importance of a robust market size in sustaining ccTLD renewals.

The paper concludes by suggesting that the dominance of .com domains does not inherently threaten the existence or renewal of ccTLDs (though jurisdiction specific effects may vary and further research is needed).

Instead, local factors such as market competition and population size are more critical in ensuring the sustainability of ccTLDs. Policymakers and domain registries are encouraged to focus on fostering competitive markets and supporting ccTLDs in regions with smaller populations or higher market concentration.

Study 5. Examining the Impact of Parked Domains, Domain Pricing, and Economic Indicators on ccTLD Renewal Rates: A Regression Analysis

This study examines into the factors influencing ccTLD renewals, with a particular focus on the roles of parked domains, domain pricing, consumer price index (CPI), and economic indicators such as new business registrations and trademark activity. The analysis reveals that the higher the level of parked domains (the ratio of parked domains to total domains) the lower the likelihood of ccTLD renewals. This finding suggests that domains that are not actively used are less likely to be renewed, indicating that policies promoting the active use of domains could help sustain renewal rates.

Domain pricing generally has a negative association on renewal rates, although the effect is less consistent across different models. The study also finds a highly significant positive relationship between new business registrations and domain renewals, indicating that economic dynamism, reflected in the creation of new businesses, is a key driver of ccTLD renewals. Trademark registrations also show a significant positive relationship with domain renewals, suggesting that intellectual property considerations play a role in sustaining domain ownership.

The study’s findings underscore the importance of encouraging active domain use and supporting a vibrant economic environment to enhance the sustainability of ccTLDs. It concludes that maintaining affordable domain pricing and fostering economic activity are essential strategies for ensuring the continued relevance and viability of ccTLDs.

Conclusions

The combined findings of these five studies offer a detailed understanding of the factors that influence the renewal and generation of ccTLDs. Key determinants include education, digital skills, market conditions, economic activity, and active domain use. These insights are critical for policymakers, domain registries, and stakeholders aiming to promote a thriving digital economy. By addressing the challenges identified in these studies, such as market concentration and the prevalence of parked domains, and by fostering conditions that support digital engagement and economic vitality, it is possible to sustain and grow the digital assets represented by ccTLDs.

In conclusion, a holistic approach that integrates educational initiatives, market regulation, economic policies, and technological advancements will be essential in shaping the future landscape of ccTLD renewals and registrations. As the digital economy continues to evolve, these factors will play a pivotal role in ensuring that ccTLDs remain a vibrant and integral part of the global internet infrastructure.

Scope for future research

The current research examines all available domain specific data to support discovery and prediction but is limited by the availability of short series longitudinal data. As more data and more expansive longitudinal datasets in particular are created, the scope for more accurate processes of discovery and prediction will increase. The current methods are best understood as sound econometric and data science methods for datasets with a large number of panels or segments and small n values, and short series data. While the chosen methods are robust more data will enable the use of additional methods with robustness.

Additionally, further times series analysis, at a ccTLD and jurisdictional level may be necessary to understand the impacts of competition, reform, regulation and TLDs on ccTLD uptake. Such analyses would inform the calibration of policy and pricing.

Forecasting future uptake of ccTLDs, and understanding the implications of regulation, reform, pricing, concentration, competition and new technology, would benefit from a broader research program. In particular the use of non-parametric methods such as MPANN models and other suitable techniques will become more plausible supporting more robust forecasting, and prediction, while enhancing the existing models employed. This would potentially allow for the modelling of different future scenarios, based on particular market calibrations. Such analyses are plausible with modest investment. Such investment could yield highly effective and responsive predictive models.

The availability of jurisdiction specific pricing, uptake, data and higher frequency data will all enhance current and proposed forecasting methods.

About the Author

Dr. Michael D’Rosario is a Senior Research Fellow at Central Queensland University’s CREATE institute and a Lecturer at the University of Adelaide, specializing in applied economics, data science, and policy evaluation. He facilitates Executive Education for the University of Oxford’s AI in Business program, focusing on the strategic applications of artificial intelligence in industry.

Formerly Chief Economist and Head of Data Science at Per Capita, Dr. D’Rosario led initiatives like the Australian Inequality Index and consulted for organizations such as Transparency International and CENTR. With a PhD in Econometrics and Policy, he has over 15 years of experience in research, teaching, and advising on economic and data-driven solutions spanning the University of Melbourne, Deakin University and Loyola University, where he was a Prime Minister’s Fellow.

Dr. D’Rosario’s work bridges complex data analysis with practical insights, advancing ethical AI integration, education, and policy innovation. His interdisciplinary expertise drives collaborations across academia, government, and industry to tackle contemporary challenges.