# Diffusion of Regulatory Policy Across Nations
## The Example of Number Portability

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*Abstract:* Out of around 200 countries in the world, only 75 have number portability. What are the international factors that explain the diffusion of this regulatory policy? Research on policy diffusion offers several explanations: constructivist, coercion, competition, and learning. Each of these theories is explored based on a dataset that tracks the implementation of number portability, fixed phone competition and mobile phone competition, and documentary evidence gathered from the Asia Pacific Economic Cooperation (APEC), COMESA (Common Market for Eastern and Southern Africa, Economic Community of West African States (ECOWAS), European Union, and the Inter-American Telecommunications Commission (CITEL). In these three regulatory issue areas, Asia, Americas, and Europe are the three regions that innovate first; Middle East and Africa follow later on. Further, Hong Kong and New Zealand in Asia and Canada, Chile, and the US in Americas are pioneers, while others wait to see results before proceeding; learning appears to explain the diffusion pattern in these regions. In contrast, in Europe, regulatory diffusion begins early and proceeds rapidly with pioneers like Finland and United Kingdom, but others adopt without the lag time observed in Asia and Americas, very likely because of the leadership and enforcement powers of the European Union, a coercive explanation among member states and a competitive one among non-member states.

*Key words:* regulation, competition, number portability, switching costs, European Union, APEC, CITEL, international organizations.

If you cannot take your phone number with you, it is harder to switch phone companies. Number portability is the policy that makes it possible for consumers to keep their phone numbers when they change service providers. It oils the gears of competition in the market. Plus, just the threat of customers leaving can improve a phone company's customer service.

Number portability also reflects a change in regulatory mindset. It suggests the phone number belongs to the consumer, not to the phone company. When phones were first introduced, even the telephone sets belonged to the company, customers leased them; naturally, the same was true for the phone number. Over time, regulations required the phone companies to allow customers the opportunity to choose and buy their own phones. Attaching the phone number to the customer, rather than the company, is another step in re-drawing the boundary between the company's domain and the customer's.

Number portability is a signal policy, a marker that a regulator is serious about fostering competition in the market to the benefit of the ordinary consumer. Telecom markets are no longer a sleepy backwater of utility regulation, but rather the beating heart of the information industry. A phone is not just a phone anymore, it is a computer, a video camera, a personal organizer, an essential link to friends, family, work, entertainment, and news. A government's commitment to an open competitive phone market, such as implementing number portability, reflects its vision of technological modernity for its citizens. Why have not all countries adopted this marvelous policy, then? Out of around 200 countries in the world, only 75 have number portability.

The goal of this article is to examine the international dynamics that influence policy diffusion across countries. Global country-by-country comparisons of international policy diffusion get complicated when domestic contexts vary a lot. With number portability, domestic contexts vary less than in other policy areas. Interconnection policy, for example, is strongly shaped by the number and size of market players. Universal service programs differ widely because countries have diverse underserved communities. There remains philosophical disagreement over whether spectrum auctions are an appropriate licensing regime. Number portability is always in the consumers' interest, and in every country the challenge is whether the government and competitors can overcome the incumbent's willingness to cooperate. This dynamic is similar to those moments when telecom monopolies – whether fixed or mobile – are first broken. In this paper, the date of number portability implementation is compared to the date when fixed and mobile competition began.

Research on global policy diffusion offers several explanations: constructivist, coercion, competition, and learning. Constructivists argue that countries adopt a policy, sometimes even before they are ready, in order to appear modern and forward-looking. Coercive explanations argue that

countries adopt policies because they are forced to through bilateral or multilateral agreements, for example. Competition explanations suggest that countries adopt policies in order to make them more comparatively attractive, to foreign investors, for example. Finally, the learning explanation suggests that governments' beliefs about policies change over time. They learn when observing other countries implement a policy and monitoring its effectiveness. All of these explanations apply to diffusion of some policies internationally. The challenge is to understand which explanations apply more aptly, under what kind of conditions and for what kinds of policies (DOBBIN, SIMMONS & GARRETT, 2007).

To see which of the four explanations applies to the global diffusion of number portability regulation, first, I collected data on number portability, the start of fixed line phone competition, and the start of mobile phone competition in countries around the world. This global data set, centered on three regulatory issues, provides some clues as to the pace and pattern of regulatory diffusion in the communications arena.

Second, I collected qualitative information on number portability discussions in five regional organizations – Asia-Pacific Economic Cooperation (APEC), Inter-American Telecommunications Commission under the Organization of American States (CITEL), European Union, Economic Community of West African States (ECOWAS), and Common Market for Eastern and Southern Africa (COMESA). These documents show which and when countries were interested in number portability. These qualitative data reveal patterns and links not evident in the global quantitative datasets.

Finally, the paper concludes that examining regulatory diffusion through the lens of number portability suggests that Asia, Americas, and Europe are the three regions that innovate first; Middle East and Africa follow later on. Further, that in Asia and Americas, certain countries are pioneers, while others wait to see results before proceeding; learning appears to explain the diffusion pattern in these regions. In contrast, in Europe, regulatory diffusion begins early and proceeds rapidly, without the lag time observed in Asia and Americas, very likely because of the leadership and enforcement powers of the European Union, a coercive explanation among member states and a competitive one among non-member states. The data also make it possible to identify which countries often lead in regulatory innovation; conclusions that can be tested as more data on regulatory diffusion is collected for other communications issues. This is usable knowledge that can be applied to following the current diffusion of regulatory innovations across the world.

# ■ Prior research on policy diffusion

Simmons, Dobbin, and Garrett, in their two seminal articles on policy diffusion, identify four categories of explanations – social construction, coercion, competition and learning (SIMMONS *et al*., 2006; GARRETT *et al*., 2007).

*Social construction or emulation*

When policy diffusion occurs because countries are emulating a leader, these countries are adopting a policy in order to be more like the leader, and less because the policy makes sense and sometimes even when the policy is not a good fit.  In the literature, the cases where emulation is the major cause of policy diffusion, there has been a change in international values. One of the clearest cases about fundamental philosophical principles is women's suffrage.  It became the norm that women, as well as men, should also be citizens, and that other rights should follow (RAMIREZ, SOYESAL & SHANAHAN, 1997).  Particularly in cases where emulation is the major driving force for policy diffusion, once a critical mass of countries has adopted, there is a cost to countries which do not adopt.  For example, once most countries have ratified a human rights treaty, not ratifying appears deviant; even countries with no intention of implementing the rights then sign up to ratify.  Hafner-Burton and Tsuitsui argue that even in this worst-case scenario, the state's reluctant ratification of the treaty benefits rights advocates in that country (HAFNER-BURTON & TSUITSUI, 2005).

There are also cases of emulation where the change in norm is important, but because the norm is more instrumental than fundamental, the change in norm is not a victory in itself.  Competent policy implementation is equally crucial, and incompetent implementation undermines the norm.  In the literature, cases such as central bank independence, by McNamara, the shift in norm is to protect monetary policy from political interference (McNAMARA, 2002).  Where solid implementation is a critical underpinning of a change in values, then not only emulation, but also learning is an important factor in explaining policy diffusion.

*Learning*

With learning explanations of policy diffusion, there may be a change in norms involved, but the major shift is in people's understanding of a problem's cause and a reform's payoff.   Two examples are the environmental policy coordination around the Mediterranean and

privatization and the establishment of independent regulators in the telecom and electricity sectors. In the first instance, Haas shows the scientific community succeeded in identifying causes of pollution in the Mediterranean and promoted strategies that involved coordination among states bordering the sea. The introduction of science into the policy debate by an expert cohort triggered the policy diffusion (HAAS, 1989). In the second instance, Levi-Faur argues that new thinking about the positive payoffs of competitive markets in telecom and electricity and the need for a regulator independent from industry triggered a wave of reforms in these two sectors. However, Levi-Faur documents that the positive payoffs were greater in telecom than in electricity, in part because technological change in telecom lowered the costs of reform, and the effect was greater diffusion of reform in telecom than in electricity (LEVI-FAUR, 2003).

*Competition*

Competition appears to occur in specific circumstances – when countries adopt regulations or policy reforms in order to compete for a mobile asset. In the literature, the most common mobile asset is capital. Two examples include the diffusion of bilateral investment treaties and the diffusion of liberal economic policies such as unified exchange rates and liberalized capital and current accounts. Elkins, Guzman, and Simmons show that many developing countries eager to attract foreign investment sign Bilateral Investment Treaties that reduce ambiguity about property rights protection (ELKINS, GUZMAN & SIMMONS, 2006). Simmons and Elkins work on liberal economic practices, such as liberalizing current and capital accounts and unifying the exchange rate, showed that once many countries adopted, not adopting deterred foreign investment (SIMMONS & ELKINS, 2004). Beyond competing for foreign investment, policies could also diffuse because countries are competing for other mobile assets, such as labor or technology.

*Coercion*

There is little research that demonstrates coercion can be a primary cause of policy diffusion, although international organizations like the World Bank and International Monetary Fund seem likely coercive powers. Edwards' article from 1997 argues that while the World Bank does impose loan conditions like trade liberalization, it was unable or unwilling to enforce these conditions and that the leadership of many client countries used the World Bank and other international organizations to push forward their own economic liberalization agendas (EDWARDS, 1997). However, the

backlash against the Washington Consensus in the decade following suggests more research is needed from the point of view of World Bank clients, in order to explore the extent of coercion as a causal factor of policy diffusion. Drezner, in his 2007 book on regulatory regimes, argues that great powers play the most important role in regulatory coordination, and the literature on policy diffusion supports much of this argument (DREZNER, 2007). In all four categories of causes of diffusion – learning, coercion, emulation, and competition – some country has to go first, and usually that country would be considered a "great power," either globally or regionally. Once the change is afoot, however, the mechanisms of the policy diffusion vary.

## ■ How number portability works

Before number portability, a customer wishing to change telephone carriers would simply be assigned a new phone number. From the customer's perspective, this could be inconvenient, as all family, friends, and colleagues would have to be notified of the new phone number. Number portability policies allow the customer to keep the phone number when switching carriers.

There are two ways to implement number portability. First, is call forwarding. An incoming call is directed to the original telephone carrier, that carrier retains the customer's new carrier information and forwards the call. Second is all call query. For every phone number a new record, such as a location routing number, is created and stored in a central database. That record includes which telephone carrier the customer has selected. When a call comes in, the central database is checked, and the call is routed to the correct carrier. [1] From the regulator's perspective, implementing number portability requires several major decisions including:

- Whether to implement call-forwarding or all-call-query
- if all-call-query, designating a neutral third party to administer the central database

- The extent of number portability

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[1] CITEL, "Number Portability: A Winner for All", Info@CITEL. Electronic Bulletin No. 44, February 2008. See also "How Number Portability Works", http://www.npac.com/number-portability/how-lnp-works.

- between phone carriers
- between modes (landline, mobile, VOIP)

- How to fund number portability processing

- Time frame within which number should be ported

Most countries implementing number portability choose all-call-query. Practically, relying on a neutral third party is more reliable than the customer's original phone carrier.  Initially, some countries rely on call-forwarding while decisions about implementing all-call-query are being made.  The largest third party administrator in the world is the Number Portability Administration Center which administers the central database for the U.S. and Canada; it holds more than 500 million telephone numbers. [2] Funding is usually shared by the carriers, although ultimately these costs are passed on to the consumer.  In the US, as of 2011, all carriers are required to port within one day. [3]

## ■ Actual patterns of number portability adoption worldwide

*Tracking number portability*.  I developed a dataset of the year in which number portability went into effect in a country based on country reports from industry consultants and documents from regulatory agencies.  Four types of number portability are included:  porting between fixed lines, porting between mobile lines, porting between fixed and mobile lines, and porting to VOIP lines.  The most common are porting between fixed and porting between mobile lines.  The year that the first of any of these four types of number portability is implemented marks the beginning of number portability in that country.  In the early days, fixed number portability tended to go first; after 2000, most countries implemented mobile number portability first.

To give perspective, I also created similar datasets for the introduction of competition in the fixed telephone market and in the mobile market.  The signal that competition has started is the beginning of a second operator in the market. Comparing them shows regional trends.

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[2] NPAC, "The NPAC", http://www.npac.com/the-npac.

[3] FCC, "Guide: Keeping Your Phone Number When You Switch Providers". http://www.fcc.gov/guides/portability-keeping-your-phone-number-when-changing-service-providers

**Table 1 - First three countries to adopt policy**

| | Fixed phone competition | | | Mobile phone competition | | | Number portability | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1st | | 3rd | 1st | 2nd | 3rd | 1st | 2nd | 3rd |
| **Asia** | **New Zealand (1990)** | Philippines (1993) | China (1994) | **Hong Kong (1984)** | Thailand (1987) | **New Zealand (1990)** | **Hong Kong (1997)** | Singapore (1997) (tie with 1st) | Australia (1998) |
| **Europe** | **UK (1984)** | Uzbekistan (1992) | Russia (1993) | **Finland (1991)** | **UK (1991) (tie with 1st)** | Denmark (1992) | **UK (1997)** | **Finland (1997) (tie with 1st)** | France, Germany, Netherlands, Sweden, Austria, Belgium (1998) |
| **Americas** | **US (1984)** | **Chile (1992)** | **Canada (1992) (tie with 2nd)** | **US (1984)** | **Chile (1989)** | Argentina (1990) | **US (1997)** | **Canada (1998)** | French Guiana, Guadeloupe, Martinique (2007) |
| **Africa** | Nigeria (1996) | Togo (1998) | Seychelles (1998) (tie with 2nd) | **South Africa (1993)** | Tanzania (1994) | Botswana, Cote D'Ivoire (1996) | Kenya (2006) | **South Africa (2006) (tie with 1st)** | Ghana (2011) |
| **Middle East** | **Israel (1996)** | Iran (2003) | Bahrain, Mauritania (2004) | **Israel (1994)** | Egypt (1998) | **Morocco**, Jordan (1999) | Oman (2006) | **Morocco (2007)** | **Israel**, Saudi Arabia (2007) (tie with 2nd) |

As of 2012, 75 countries had adopted number portability. The first economy to adopt number portability was Hong Kong, China, in January 1997. Organizing countries by region, number portability began in Asia in 1997, in Europe and Central Asia in 1997, in the Americas in 2003, in Africa in 2006, and in the Middle East in 2006.

- In Asia Hong Kong, Singapore, and Australia launch first in 1997 and 1998, three years pass before the next market launches Macau, and it is 2005 before there is another cluster of markets that launch.

- In Americas, US and Canada begin in 1997 and 1998. Then, there is a cluster of 16 countries between 1998 and 2004 that implement number portability. It is not until 2007 that a handful of Caribbean countries begin, followed by Mexico and Brazil in 2008.

- By contrast in Europe, regulatory diffusion is very quick with followers immediately on the heels of the leaders.  Diffusion in Europe is rapid among members of the European Union and non-members alike.  In the first four years of number portability 1997-2000, 14 European countries launch.

- Africa and Middle East, once a policy gets started in these regions, diffusion is also very quick.  This suggests regional differences in the pace of policy diffusion.  For number portability, both regions begin in 2006.

Table 1 shows the first three countries in each region to implement each of these policies, in all regions there is at least one country that shows up frequently, highlighted in bold type.   This gives us a useful short list of leaders in their regions - South Africa; US, Canada, Chile; Hong Kong, New Zealand; United Kingdom, Finland; Israel and Morocco.

## ■ APEC (Asia Pacific Economic Cooperation)

APEC has a telecommunications and information group that meets twice yearly, often with workshops and committee meetings in the intervening periods.  Looking at the working group's published documents from the launch of number portability in 1997 to the 2012, it is possible to spot waves of interest, reflected in individual economy policy updates to the group and the convening of special meetings on number portability.  Of the four possible diffusion dynamics, learning is the most likely explanation. However, coinciding with a global uptick in interest in Free Trade Agreements (FTA's) around 2010, there are presentations in APEC that reflect the norms for telecommunications elements of FTA's.   Through APEC, it is possible to see the potentially coercive dynamic that might lead to number portability, although APEC itself is not a forum for negotiating these agreements.

*2007 – Pioneering economies update other members*
*on number portability adoption – first wave of learning*

APEC Telecommunications Working Group meets twice yearly with delegations from the member economies including government policy makers and regulatory officials, companies, civil society organizations, and academics.  In September 1997, number portability figured prominently in the discussions.  Hong Kong and Singapore had both launched number portability and several other countries were reviewing proposals – including

Australia, Canada, Japan, and New Zealand. [4]   In addition, number portability was identified as an important issue in the task force organized to discuss interconnection and competition issues. [5]

*2010 –wave of bilateral Free Trade Agreements*
*and possible elements of coercion*

The APEC Telecommunications Working Group organized a workshop on August 5, 2010, specifically to coach economies interested in entering into Free Trade Agreements.   The workshop focused on the telecommunications elements of agreements already concluded.   There were presentations by Japan, Korea and Singapore.   Both Singapore and Japan's presentations identified number portability as one of the additional elements that could be included in an FTA; Japan provided the language on number portability from its FTA with Switzerland. [6]   According to the workshop's final report, there were delegates from Brunei Darussalam, China, Indonesia, Taiwan, Malaysia, New Zealand, Thailand, the US, and Vietnam. [7]

*2009-2012 – Demand for more information on mobile number portability*
*The second wave of learning*

In 2009, the Vice Chair's long term action plan includes sharing information on successful number portability cases. [8]   In their regulatory updates submitted to the group for publication, Mexico, Thailand, Peru, Malaysia, and Singapore, all reported on the status of number portability rules in their economies. [9]   In March 2011, the APEC TEL group agreed to

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[4] APEC,  Chairman's report, Sixteenth Meeting, APEC Working Group on Telecommunications, Wellington, New Zealand, September 24-27, 1997, pp. 97, 104, 114, 131, and 167.

[5] APEC, 16th meeting report, p. 27, and subsequent report "Effective Interconnection in the APEC Region, March 1998 [I chaired the task force that produced this report].

[6] APEC, "Singapore's Approach to FTA's" 3 August, 2010, 2010/TEL42/LSG/WKSP/002; "Japan's EPA/FTA Policy: the Approach of Leading Industrial Nations to FTA's and Other Trade Negotiations in Telecoms" 3 August 2010, 2010/Tel42/LSG/WKSP/003.

[7] APEC, "Summary Report:  Capacity Building Workshop on Telecommunications Elements of RTA's/FTA's, 3 August 2010, 2010/TEL42/LSG/WKSP/006, p.1.

[8] APEC, "Summary report:  Economies' Priorities for the Long Term Action Plan, September 28-30, 2009, Cancun, Mexico" 2009/TEL40/PLEN/017.

[9] APEC, See "Malaysia- Policy and Regulatory Update," 2009/TEL40/PLEN/019, "Peru Policy and Regulatory Update, "2009/TEL39/PLEN/012, "Thailand Policy and Regulatory Update" 2009/TEL40/PLEN/017, "Economic Outlook of Mexican Telecommunications Industry" 2009/TEL40/LS/011, "TEL39-LSG Report" 2009/TEL40/LSG/002 for information on Singapore, September 28-29, 2009.

fund a workshop on number portability. [10]  This workshop was held in 2012 in Vietnam.

- Hong Kong has 18 mobile operators, which increases the complexity of porting numbers. [11]  Hong Kong implemented number portability for mobile phones in 1999.  At its peak, Hong Kong operators ported nearly 160,000 lines between May and October 2001, nearly 3% of all mobile phones in Hong Kong.

- Japan:  Mobile number portability began there in 2006.  As of the end of 2012, about 11% of all mobiles, around 14 million phones, had been ported sometime in the previous six years.  They also showed that average revenue per mobile phone decreased 1% between 2006 and 2009, leading to less expensive service for customers. [12]

- Taiwan, Korea, Malaysia, and Thailand also provided similar information on the successful porting of numbers in their mobile market.

- Vietnam outlined concerns that operators will use unfair tactics to hold on to their subscribers; the cost of implementing number portability in economies where telecom rates are low; and worries about coordination especially as Vietnam lacks a telecommunications industry association. [13]

## ■  CITEL (Inter-American Telecommunications Commission under the Organization of American States)

CITEL is a group under the umbrella of the Organization of American States that also reports as a regional organization to the International Telecommunications Union.  It meets regularly and members share information on policy and regulatory issues.  Examining the meeting documents of CITL that relate to number portability highlights CITEL's role as a channel for policy and regulatory learning.  Also, it underscores the

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[10] APEC, "Chair's Report:  the 43rd Telecommunications and Information Working Group Meeting", March 24-April 1, 2011, Hangzhou, China, pp. 7, 24.

[11] APEC, "Mobile Number Portability in Hong Kong, China", Regulatory Roundtable on Mobile Number Portability, Da Nang, Viet Nam, 5 April 2012, 2012/TEL45/LSG/RR003.

[12] APEC, "MNP Frameworks and Future Challenges in Japan", Regulatory Roundtable on Mobile Number Portability, April 5, 2012.  2012/TEL45/LSG/RR/002.

[13] APEC, "MNP in Viet Nam – Preparation and Challenges", Regulatory Roundtable on Mobile Number Portability.  Da Nang, Vietnam, April 5, 2012.

leadership role of Brazil and Mexico, a dynamic that does not come forward as clearly in the analysis of the global dataset earlier in this paper.

### 2005 – Preparing for number portability in Latin America
### The first wave of learning

In 2005 CITEL, the Inter-American Telecommunications Commission under the Organization of American States, held a workshop on number portability in Washington, D.C. [14]   The International Telecommunications Union had described number portability in the 2005 edition Blue Book on Telecommunications Policies for the Americas, a reference guide produced by CITEL that encapsulates the status of policies across many of its member States. [15]   The workshop coordinators were from Brazil and Mexico, both implemented number portability in 2008.

CITEL's electronic bulletin published several short articles on number portability.  In August 2005, one announced the workshop the following month.  In February 2008, Telcordia, a company which provides technical support for number portability, published an article describing the status of policies in the Americas and elsewhere. [16]  Number portability is mentioned among other issues for implementation of Voice over Internet Protocol services, in the US such providers include Skype and Vonage. [17]   In the same year, CITEL published a 14-page technical paper with number portability implementation options and standards that CITEL disseminated to the membership.  Walter Calil Jabur of Brazil's communications regulator led work on the paper.

### 2009-2011 – Second wave of learning about number portability

By 2009, US, Canada, Mexico, Brazil, Dominican Republic, and Ecuador had implemented number portability.  Starting in 2009 through 2012, a second wave of countries moved forward – Peru, Chile, Colombia, Panama, and Argentina. Brazil Anatel's Walter Calil Jabur coordinated a second workshop in March 2011.  This time seven of the 11 countries with number

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[14] CITEL, "Workshop on Number Portability", info@CITEL, Electronic Bulletin No. 14, August 2005.

[15] CITEL, https://www.citel.oas.org/en/Pages/Publications.aspx

[16] CITEL, "Number Portability: A Winner for All" Info@CITEL, Electronic Bulletin No. 44, February 2008.

[17] CITEL, "Key VoIP Issue"  info@CITEL, Electronic Bulletin No. 60, June 2009.

portability were able to report on their success, serving as models for the remaining countries that had yet to move forward. [18]

*The leadership of Mexico and Brazil.*   In examining the documents produced by both CITEL and APEC the political influence of Brazil and Mexico is revealed as more apparent, suggesting that policy diffusion patterns may take place in regions more subtly defined than in a five-region world in Table 1.  For example, at the APEC TEL meeting in September 28-29, 2009, in Cancun, the Mexican delegation presented an update of its telecom industry that proudly states it is the first Latin American country to implement number portability. [19]   At the CITEL workshops on number portability, the first was organized by Mexico and Brazil; the second by Brazil, with Mexico participating as a success case study.   In short, examining only the quantifiable data surrounding policy diffusion can miss important dynamics.   Complementing the quantifiable data with the qualitative data suggests that a more accurate definition of region may need to separate the Caribbean from Latin America; and the US/Canada as a bloc from the rest of the Americas.

## ■ European Union

In contrast with APEC and CITEL, the European Union has more coercive power over its member states.  Once the EU requires a policy, it diffuses quickly among member states, although often not by the EU deadline.  Countries that aspire to EU membership also have an incentive to adopt such policies.

*Fixed number portability required by 2000 – the first coercion*

In the area of number portability, the European Union issued an Interconnection Directive in 1998 that required member states to implement

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[18] CITEL, "Seminar on Regional Experiences and/or Models of the Implementation of Number Portability in the Americas,"  CITEL XVIII Meeting of the Permanent Consultative Committee 1: Telecommunications/ Information and Communication Technologies, March 1-4, 2011, Lima Peru.  https://www.citel.oas.org/en/Pages/Seminars-and-Workshops.aspx for documents.

[19] APEC, "Economic Outlook of Mexican Telecommunications Industry", Liberalization Steering Group, APEC 40th meeting, 2009/TEL40/LSG/011, September 28-29, 2009.

fixed number portability by January 1, 2000. [20]  By the end of 1999, number portability was available in eight member countries.

*Mobile number portability required – the second coercion*

In 2002 the EU's Universal Service Directive required that member states implement mobile number portability. [21]  2010 was the first year that the EU could announce that number portability had been implemented in all member states; the last to implement was Bulgaria in 2009. [22]

*Port numbers faster – the third coercion*

The EU's attention then turned to the speed of number porting.  In 2009, in the EU's Revised Regulatory Framework for electronic communications, member states are required to establish systems that implement number portability in one working day to minimize the inconvenience to the user. [23] For example, comparing October 2008 to October 2009, fixed number porting decreased from an average of 7.5 days to 5.9 days; mobile number porting decreased from an average of 8.5 days to 4.1 days. [24]

*Aspiring member states also adopt – competition*

Beyond EU member states, there are the EU enlargement countries.  As of 2012, there are five candidate countries – Croatia, Iceland, Macedonia, Montenegro, and Serbia – and four potential candidate countries – Turkey, Albania, Bosnia & Herzegovina, and Kosovo.  A study commissioned by the EU examined the regulation of electronic communications in these countries. Of these nine countries, six had fixed and seven had mobile number portability as of the end of 2011 (CULLEN INTERNATIONAL, 2012).

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[20] EU, Directive 98/61/EC of the European Parliament and of the Council of 24 September 1998 amending Directive 97/33/EC with regard to operator number portability and carrier pre-selection.

[21] EU, Directive 2002/22/EC of the European Parliament and of the Council of 7 March 2002 on Universal Service and Users' Rights Relating to Electronic Communications Networks and Services (Universal Service Directive).

[22] EU, Progress Report on the Single European Electronic Communications Market 2009 (15th Report) SEC (2010)630, pp. 13-14.

[23] EU, Directive 2009/136/EC of the European Parliament and of the Council of 25 November 2009 amending Directive 2002/22/EC on universal service and users' rights relating to electronic communications networks and services, p. 17.

[24] EU, "Progress Report on the Single European Electronic Communications Market 2009 (15th Report) SEC (2010)630, pp. 13-14.

## ■ African regional organizations

In two regional organizations in Africa, there are groups that focus on telecommunications policy and regulation. In these groups, number portability appears to be a policy that countries aspire to – a goal that countries that want their consumers to enjoy the same rights as in other countries.

*ECOWAS (Economic Community of West African States)*

In 2004, the International Telecommunications Union and the European Union supported the undertaking of a study on information and communications technology policies for the West Africa regional organizations, West African Economic and Monetary Union (UEMOA) and the Economic Community of West African States (ECOWAS). The paper included a short discussion number portability, and the policy choices available (ZOUAKIA, 2004). Three years later, in a supplementary act on numbering plan management, the ECOWAS Council of Ministers released a document that includes one line supporting the "promotion of appropriate number portability." (ECOWAS, 2007). As of 2012, out of ECOWAS's 15 member countries, only Ghana has implemented number portability.

*COMESA (Common Market for Eastern and Southern Africa)*

In 2011, COMESA mentions number portability as part of its goals for consumer protection in the Information Communications Technology area. At the 30th Council of Ministers, infrastructure ministers decided that member states should implement number portability (COMESA, 2011). As of 2012, out of COMESA's 19 member countries, Egypt and Kenya have implemented number portability.

The first countries in Africa to implement number portability are South Africa and Kenya. South Africa is often a policy leader in Africa. Kenya is the first low-income country [25] in the world to implement number portability, which makes it not only a regional leader in this instance, but also a global leader. In time, as more technical information spreads about number portability, the constructivist dynamic may be overtaken by learning, and eventually lead to adoption of number portability.

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[25] "Low-income" by World Bank GDP per capita classifications.

## ■ Which theories apply?

All the theories apply in different regions and at different times. A small number of coercive environments exist. Within the international trade regime, instruments like free trade agreements present the possibility of coercion, although number portability is a policy of middle level importance, not significant enough to break a trade deal. The European Union also creates a coercive environment, but even so, the deadlines it sets are often missed by states, and the EU must take measures to enforce its decisions. Related to the EU's coercion dynamic, aspiring EU members adopt number portability and other policies as they compete to enter the Union.

The most common diffusion dynamic for number portability is learning. Countries that have succeeded sharing with others the technical information on what technology, databases, and fee collection systems work best. They share data on how long it takes to port a customer's number, what volume of ports can be executed and how quickly, and the effectiveness of the various vendors that compete to provide hardware, software, and management of the required systems.

In the case of the regional organizations in Africa, ECOWAS and COMESA, their broad statements in favor of number portability may be an example of policy emulation. When a regulator adopts number portability, the regulator is asserting that a phone number belongs to the customer, not the phone company. This is a shift in values. When states articulate number portability as a goal, they are taking a strong pro-consumer stance. For number portability, successful implementation in several countries is what makes it worthy of emulation. If it had failed, emulation would be unlikely.

By comparing the data on number portability to the data on larger regulatory changes, the introduction of competition in the fixed and mobile telecom markets, it is possible to elicit which countries are leaders in regulatory innovations. Indeed, the introduction of competition in the phone markets is a necessary precursor to number portability. If a country has only one telecom operator, customers have no use for number portability, after all. The results of this study suggest that Morocco and Israel; Great Britain and Finland; Hong Kong and New Zealand; South Africa; and the US, Canada, and Chile are leaders in their respective regions. They are often the first to begin a policy innovation and information from their experience spreads to the rest of the region and to the rest of the world. Also, neighboring countries are likely to watch for their experience to show results

before implementing a regulatory innovation themselves.   At least for communications regulation, these countries are the "great powers" that others follow.

This analysis has shortfalls, however.   For example, examining the qualitative documentary evidence of regulatory learning within CITEL for the Americas region demonstrates that Brazil and Mexico are major leaders, with higher profiles in the organization's educational workshops than the US, Canada, or Chile.   This suggests that careful qualitative analysis and field work need to complement the overall collection of global data in order to trace accurately what other countries use as practical models for their own regulatory decisions.

## ■  Implications

Number portability is a national regulation and it may seem odd to treat it as an international phenomenon.   Most analyses focus on domestic sources of political change such as maturing competition, consumer complaints of high switching costs, and a regulator sufficiently independent from the incumbent operator to move forward.   No doubt these are reasonable places to look to understand why a country has succeeded in implementing number portability or not.   Although expatriates with Voice-Over-Internet-Protocol can use a phone number from their home country while they are abroad, suggesting that international number portability may not be far-fetched.

This study takes a panoramic view of regulatory change and shows there are discernible transnational trends.   Certain countries tend to move first with regulatory innovations.   Certain regions adhere to a predictable pace as one country after another adopts an innovation.   Why might this be happening? That is the question this article seeks to answer.   Might this be happening in other issue areas?   The data on the introduction of telecom competition for both fixed and mobile suggest that it might be.   It would be fruitful to pursue this question for other recent regulatory innovations, like spectrum auctions, establishing separate universal service funds, or the convergence of telecom and media regulators.   Each is perceived as primarily domestic matters, but there may be transnational patterns.

In the political economy literature, there is work on transnational policy diffusion both in areas that are clearly international, for example, bilateral investment treaties and unified currency exchange rates, and also in areas

that are primarily national such as women's suffrage, human rights, and environmental policies.   With the exception of Levi-Faur's work on the spread of independent regulators, where telecom is included, none of these studies examine one of the most global of industries – communications services.

This study shows more research on the global diffusion of communications regulation is possible and informative. Qualitative data can be gathered systematically to track the process of learning, competition, emulation, and coercion that can take place among countries over time. There are documents, facts, and evidence that show diffusion in progress. This article is too short, however, to expand to fieldwork or interview material.  That is left for the future.

This method can also be applied to Internet policy.   Issues such as assignment of domain names, policies toward network management, implementation of emergency services numbers, and privacy protection may all experience regulatory innovations that will spark change in a few leading countries and then be adopted by others.  Understanding how such ideas spread may be useful, for example, if a better technique emerges to send public safety alerts in times of natural disaster.

Finally, this narrow look at number portability illuminates how international cooperation and organizations are not simply diplomatic organs that address issues  remote from the daily lives of most citizens.  Instead, the ideas exchanged at these organizations affect the quality of life of ordinary people.  This underscores how important the management of such organizations can be.   For organizations like CITEL and APEC, their effectiveness depends on the efficient dissemination of ideas and opportunities for learning.  For an organization like the EU, effectiveness depends not only learning, but also on enforcement when consensus is reached.  In short, this study shows the global impact of domestic regulatory change and *vice versa*.

**Annex**

**Number Portability:  Number of countries in a given year that adopt**
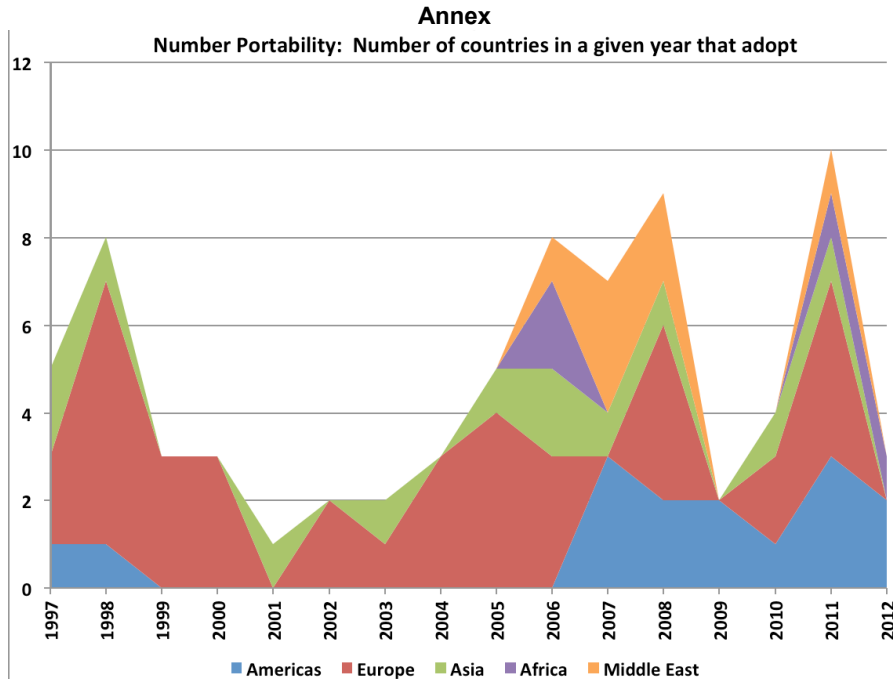


Sources:  International Telecommunications Union, Telegeography,
government and news sources.

**References**

APEC:

- (2010): "A Guide for Telecommunications Elements of Regional Trade Agreements
and Free Trade Agreements", 5 August 2010, p. 33.

- (1997): Chairman's report, 16th meeting, APEC Working Group on
Telecommunications, Wellington, New Zealand, September 24-27, pp. 97, 104, 114,
131, and 167.

- (2011): "Chair's Report: the 43rd Telecommunications and Information Working
Group Meeting", March 24-April 1, Hangzhou, China, pp. 7, 24.

- (2009): "Economic Outlook of Mexican Telecommunications Industry", Liberalization
Steering Group, APEC 40th meeting, 2009/TEL40/LSG/011, September 28-29.

- (2009): "Malaysia - Policy and Regulatory Update", 2009/TEL40/PLEN/019,
September 28-29.

- (2009): "Peru Policy and Regulatory Update", 2009/TEL39/PLEN/012, September
28-29.

- (2009): "Thailand Policy and Regulatory Update", 2009/TEL40/PLEN/017,
September 28-29.

- (2012): "Mobile Number Portability in Hong Kong, China", Regulatory Roundtable on Mobile Number Portability, Da Nang, Viet Nam, 5 April, 2012/TEL45/LSG/RR003.

- (2012): "MNP Frameworks and Future Challenges in Japan", Regulatory Roundtable on Mobile Number Portability, April 5, 2012/TEL45/LSG/RR/002.

- (2012): "MNP in Viet Nam – Preparation and Challenges", Regulatory Roundtable on Mobile Number Portability, Da Nang, Vietnam, April 5.

- (1998): 16th meeting report, p. 27, and subsequent report "Effective Interconnection in the APEC Region, March. [I chaired the task force that produced this report].

- (2010): "Singapore's Approach to FTA's", 3 August, 2010/TEL42/LSG/WKSP/002; Japan's EPA/FTA Policy: the Approach of Leading Industrial Nations to FTA's and Other Trade Negotiations in Telecoms", 3 August 2010, 2010/Tel42/LSG/WKSP/003.

- (2010): "Summary Report: Capacity Building Workshop on Telecommunications Elements of RTA's/FTA's, 3 August 2010, 2010/TEL42/LSG/WKSP/006, p.1.

- (2009): "Summary report: Economies' Priorities for the Long Term Action Plan", September 28-30, Cancun, Mexico, 2009/TEL40/PLEN/017.

- (2009): "TEL39-LSG Report", 2009/TEL40/LSG/002 for information on Singapore,. September 28-29.

CITEL (https://www.citel.oas.org/en/Pages/Publications.aspx):

- (2008): Number Portability: A Winner for All", Info@CITEL, Electronic Bulletin, No. 44, February.

- (2009): "Key VoIP Issue", info@CITEL, Electronic Bulletin, No. 60, June.

- (2008): "Number Portability: A Winner for All", Info@CITEL, Electronic Bulletin No. 44, February.

- (2009): "Number Portability Implementation Scenarios", Info@CITEL, Electronic Bulletin No. 63, September.

- (2011) "Seminar on Regional Experiences and/or Models of the Implementation of Number Portability in the Americas", CITEL XVIII Meeting of the Permanent Consultative Committee 1: Telecommunications / Information and Communication Technologies, March 1-4, Lima Peru.
https://www.citel.oas.org/en/Pages/Seminars-and-Workshops.aspx for documents.

- (2005): "Workshop on Number Portability", info@CITEL, Electronic Bulletin, No. 14, August.

COMESA (2011): "Report of the 30th meeting of the Council of Ministers. Theme: Harnessing Science and Technology for Development", October 10-11, Lilongwe, Malawi.

Cullen International (2012): "Supply of Services in monitoring regulatory and market developments for electronic communications and information society services in Enlargement Countries 2011-2013, Report 2, Annex 1 Cross-Country Comparative Data, July.

DOBBIN, F., B. SIMMONS & G. GARRETT (2007): "The Global Diffusion of Public Policies: Social Construction, Coercion, Competition or Learning?", *Annual Review of Sociology*, 33:449-72.

ECOWAS (2007): "Supplementary Act A/SA.4/01/07 on Number Plan Management", 31st Session of the Authority of Heads of State and Government, Ougadougou, 19 January.

EDWARDS, S. (1997): "Trade Liberalization Reforms and the World Bank", *The American Economic Review*, 87 (2): 43-48.

ELKINS, Z., A. T. GUZMAN & B. A. SIMMONS (2006): "Competing for Capital: the Diffusion of Bilateral Investment Treaties: 1960-2000", *International Organization*, 60 (Fall): 811-846.

European Union:
- (1998): Directive 98/61/EC of the European Parliament and of the Council of 24 September amending Directive 97/33/EC with regard to operator number portability and carrier pre-selection.
- (2002): Directive 2002/22/EC of the European Parliament and of the Council of 7 March on Universal Service and Users' Rights Relating to Electronic Communications Networks and Services (Universal Service Directive).
- (2009): Directive 2009/136/EC of the European Parliament and of the Council of 25 November amending Directive 2002/22/EC on universal service and users' rights relating to electronic communications networks and services, p. 17.
- (2010): "Progress Report on the Single European Electronic Communications Market 2009 (15th Report) SEC (2010)630, pp. 13-14.

FCC (2014): "Guide: Keeping Your Phone Number When You Switch Providers". http://www.fcc.gov/guides/portability-keeping-your-phone-number-when-changing -service-providers

GLEDITSCH, K. S. & M. D. WARD (2006): "Diffusion and the International Context of Democratization", *International Organization*, 60 (Fall): 911-933.

HAAS, P.:
- (2002): "Introduction: Epistemic Communities and International Policy Coordination", *International Organization*, 46 (1): 1-35.
- (1989): "Do Regimes Matter: Epistemic Communities and Mediterranean Pollution Control", *International Organization*, 43(3): 377-403.

HAFNER-BURTON, E. & K. TSUITSUI (2005): "Human Rights in a Globalizing World: the Paradox of Empty Promises", *American Journal of Sociology*, 110(5): 1373-1411.

LEE, C. K. & D. STRANG (2006): "The International Diffusion of Public-Sector Downsizing: Network Emulation and Theory-Driven Learning", *International Organization* 60 (Fall): 883-909.

LEVI-FAUR, D. (2003): "The Politics of Liberalisation: Privatisation and Regulation-for-competition in Europe's and Latin America's Telecoms and Electricity Industries", *European Journal of Political Research* (42):705-740.

McCOY, J. L. & H. HECKEL (2001): "The Emergence of Global Anti-Corruption Norm", *International Politics*, 38: 65-90.

McNAMARA, K. (2002): "Rational Fictions: Central Bank Independence and the Social Logic of Delegation", *West European Politics*, 25 (1): 47-76.

NPAC (Number Portability Administration Centre): "The NPAC". http://www.npac.com/the-npac

RAMIREZ, F. O., Y. SOYSAL & S. SHANAHAN (1997): "The Changing Logic of Political Citizenship: Cross-National Acquisition of Women's Suffrage Rights, 1890 to 1990", *American Sociological Review*, 62 (5): 735-745.

SIMMONS, B. A. & Z. ELKINS (2004): "The Globalization of Liberalization: Policy Diffusion in the International Political Economy", *American Political Science Review*, 98 (1): 171-189.

SIMMONS, B. A.; F. DOBBIN & G. GARRETT (2006): "Introduction: the International Diffusion of Liberalism", *International Organization*, 60 (Fall): 781-810.

SWANK, D. (2006): "Tax Policy in an Era of Internationalization: Explaining the Spread of Neoliberalism", *International Organization*, 60 (Fall): 847-882.

WEYLAND, K. (2005): "Theories of Policy Diffusion: Lessons from Latin American Pension Reform", *World Politics*, 57 (January): 262-295.

WTO - World Trade Organization (1996): "Telecommunications Services: Reference Paper - Negotiating group on basic telecommunications, 26 April. http://www.wto.org/english/tratop_e/serv_e/telecom_e/tel23_e.htm

ZOUAKIA, R. (2004): "West African Common Market Project: Harmonization of Policies Governing the ICT Market in the UEMOA-ECOWAS Space: Interconnection", ITU and European Union.