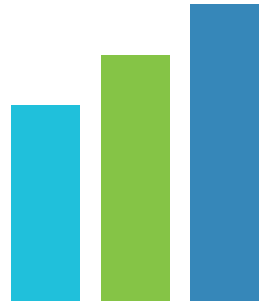


# HOW TO GROW M2M IN BRAZIL

Reforming taxation and enacting  
forward-looking policies

TechPolis Research Note No. 6  
(July 2015)  
Marc Schryer



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## Highlights

- TechPolis projects 50 million machine-to-machine (M2M) connections in Brazil by early 2018—up from 10.8 million today. TechPolis analysis shows M2M tax reduction is already having a positive effect on M2M growth.
- M2M is still in its infancy in the Brazilian market with its share of total mobile connections at 3.58%.
- In terms of total M2M connections, point-of-sale (POS) terminals to process credit and debit cards have the largest share, but are not covered by the recent tax break.
- For most M2M applications, the SIM-card activation tax for cellular connections in Brazil (Fistel) is more than the profit from M2M services would be, preventing those services from coming to market. The tax break is unleashing a number of services that otherwise would not be provided.
- The tax break benefits exclusively machine-to-machine connections which do not involve human interaction at all; but, this is sometimes hard to define. Uncertainty over which connections receive the tax break and which do not has had a negative impact on investments in M2M.
- The Brazilian government is considering increasing Fistel, the national tax on SIM cards, which would add even more uncertainty as most M2M applications would not survive any such increase. This would be counterproductive, as it would decrease the amount of tax collected from M2M over the next three years and inhibit M2M-enabled increases in the productivity and efficiency of many sectors in the Brazilian economy.
- Our analysis predicts tax revenues from new M2M connections subject to the tax break will be greater than revenue from standard M2M without the tax break by Q3 2015. And in just over 2.5 years, total tax revenue from M2M connections subject to the tax break will surpass the tax revenue that would be collected if the status quo were maintained—i.e. if all M2M connections were still charged the standard tax rate.
- Mobile operator Claro has the most M2M connections in Brazil with a 38.7% market share, while Vivo has the largest number of M2M connections benefiting from the tax break, the fastest-growing market segment.

## Introduction

M2M connections are growing rapidly in Brazil. TechPolis projects 50 million M2M connections by early 2018—up from 10.8 million today. However, high activation taxes are limiting growth potential. Lower taxes increase growth rates of important M2M market segments and would lead to higher overall tax collection than could be achieved under the current high-tax status quo.

In September 2014 Brazil introduced a tax reduction of 80% for certain categories of M2M services that, as defined by the legislation enacting the tax break, do not involve “human interaction,” only machines. We analyzed the impact of the tax break with the initial data made available by Brazilian regulator Anatel. We conclude the tax break has been effective in increasing growth rates. The average monthly state growth rate for M2M *especial* or special (with the tax break) is 17%, whereas it is (-2%) for M2M *padrão* or standard.<sup>[1]</sup>

Over the last year, according to Anatel, M2M connections eligible for the tax break have grown by 988% from 161,545 to 1,757,219 connections.

The M2M environment in Brazil needs good regulation and a low-tax policy to promote the uptake of the IoT. The reduction of Fistel was a positive move. However, the tax reduction should be applied to all M2M services, especially connected cars equipped with telematics and emergency calling (e-Call) as well as point of sale (PoS) terminals. Brazil is the clear leader in M2M for South America and must adopt policies to encourage growth and set an example to the region.

The Ministry of Finance is now considering increasing SIM-card activation taxes (Fistel) for all types of mobile connections. This step could hinder the current positive momentum for M2M growth in Brazil. An increase in Fistel would severely undermine the still nascent M2M market.

Uncertainty also lingers over which M2M applications can benefit from the tax break and which cannot. This uncertainty is limiting investment and needs to be addressed.

[1] The Portuguese terms *especial* and *padrão* are used interchangeably with their English translations ‘special’ and ‘standard,’ respectively.

## IoT and M2M in Latin America

The Internet of Things (IoT) represents a unique opportunity to foster economic growth by boosting productivity in key economic sectors. The IoT provides a huge potential for mobile operators, car manufacturers, utilities, health institutions, agro-industries, mining enterprises and many other sectors to grow and increase the productivity of Latin American economies.

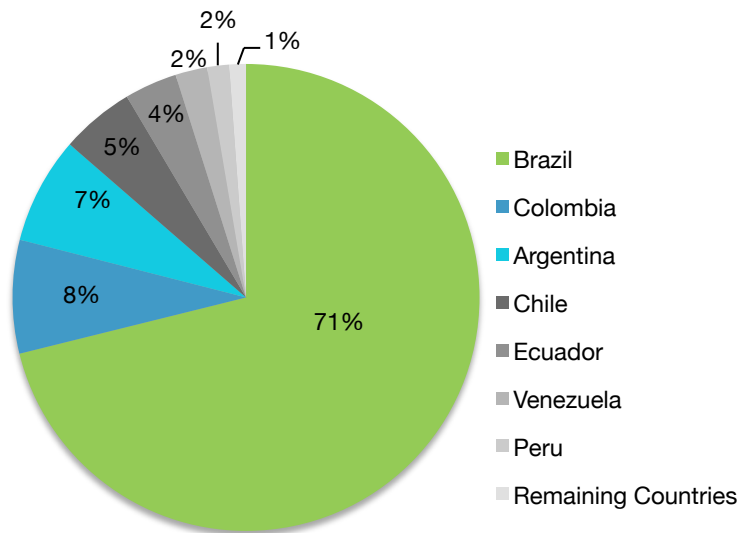
M2M in Latin America is set to expand rapidly in the next few years. In Brazil alone, TechPolis' analysis suggests substantial M2M growth from 10.8 million connections as of July 2015 to 50 million by early 2018.<sup>[2]</sup>

However, four primary barriers exist that are slowing the uptake of IoT in the region:

- Taxation policies slowing down the adoption of M2M services in several verticals, as in the case of Brazil.
- Lack of effective policies from governments to encourage M2M adoption such as connected car/e-Call and smart grids.
- Mobile operators have been slow in adopting institutional change, innovations and partnerships to enable M2M growth.
- Vertical players, such as automakers, utilities, and others are just beginning to gain awareness of the benefits of the Internet of Things.

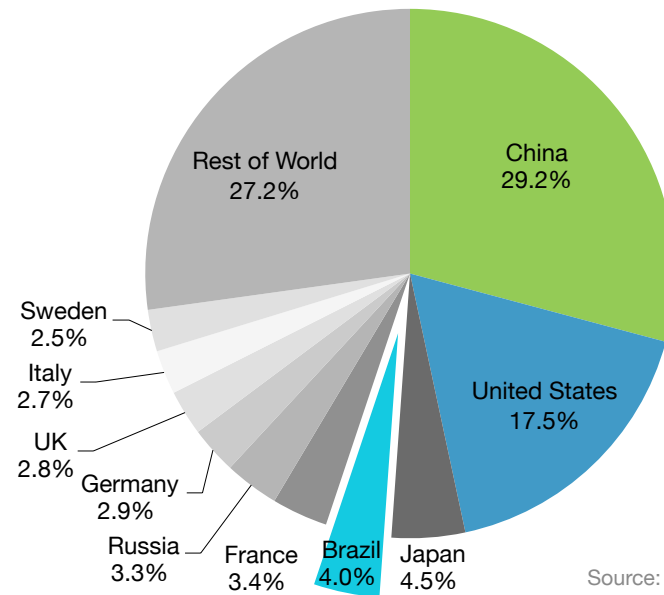
[2] Data used for M2M connections in Brazil comes from Anatel, the Brazilian telecoms regulator. The most recent publication of database is for January 2015 data. An updated dataset is expected by the end of 2015.

Chart 1: M2M Distribution in South America, December 2014



Source: GSMAi.

Chart 2: Global M2M Distribution, Q1 2015



Source: GSMAi, created by TechPolis.

Brazil is the largest cellular M2M market in South America and fourth-largest market globally [See Charts 1 and 2]. As of the end of 2014, Brazil continued to dominate the regional market with 71% of total M2M connections. M2M connections in South America represent 2.7% of total mobile connections.

## M2M vs. IoT

While they are very closely related, M2M typically refers to devices connected to the Internet. These devices might be sensors, tools, data storage units, or POS terminals. Traditionally many M2M devices were proprietary to particular companies, manufacturers, or users. IoT is about using M2M devices to promote interoperability over networked platforms.

When we talk of the Internet of Things (IoT), we are talking about interconnectivity between many types of M2M devices (machines across all M2M verticals), users, manufacturers, and datasets. M2M connections are the building blocks of IoT, but not the only component. IoT offers vast opportunities for analytics to improve efficiency and sustainability while reducing transaction costs. IoT encompasses highly-connected systems, such as Connected Car, Smart Home and Smart City applications, and Integrated Health systems—all of which aim to provide social, business, and financial benefits as a result of data collected by M2M devices.

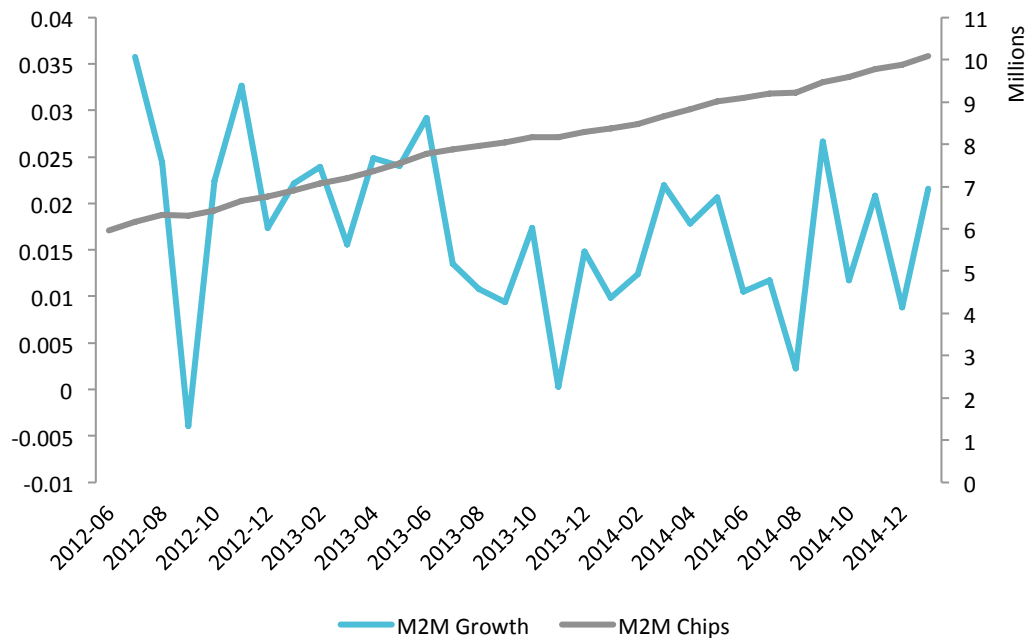
In short, M2M generates the data—IoT provides the solutions. In the context of this report, growing the M2M framework and functionality is necessary to grow present and future IoT capabilities.

## M2M in Brazil

TechPolis recently conducted a round of interviews with key players in the M2M landscape in Brazil. The overall results were clear: M2M will play a very important role in the future of Brazil's economy.

Since Anatel began collecting M2M data in June 2012, M2M connections have steadily been increasing with a compound annual growth rate (CAGR) of 23.4%. M2M growth is significantly higher than non-M2M cellular connections growth, indicating the vast potential of M2M services for the current market and future of the telecommunications industry.

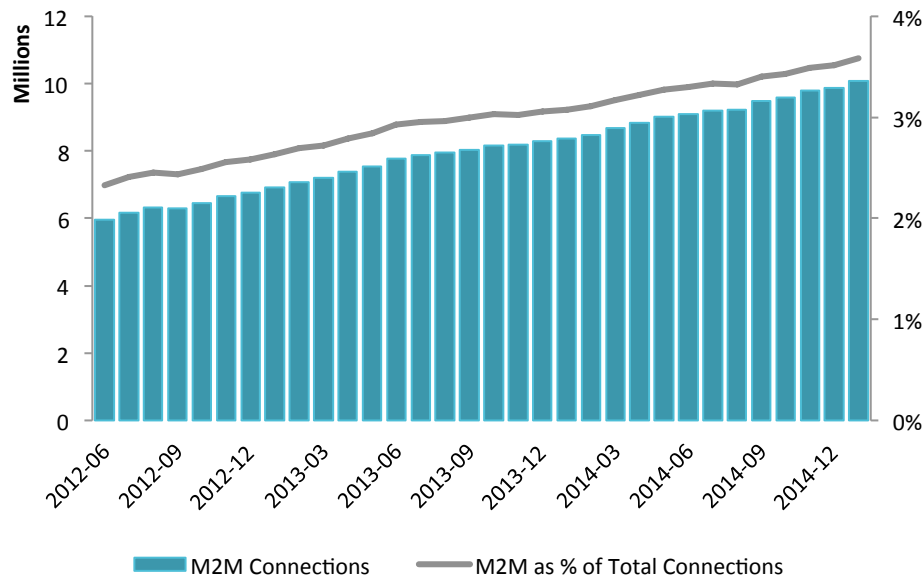
**Chart 3: Evolution of M2M Growth Rates in Brazil**



Source: Anatel, analysis by TechPolis.



Chart 4: Evolution of M2M Share of Total Connections in Brazil



Source: Created by TechPolis from Anatel Data.

As of January 2015, the M2M share of total mobile connections in Brazil stood at 3.58%. This market share has been steadily increasing over the past three years. Compared to leading international markets, such as the US (11.3%) and China (5.1%), this is a low level of market maturity. However, Brazil's M2M penetration is slightly above the global average (3.3%).<sup>[3]</sup> The regulatory environment in this nascent market is constantly changing and there is uncertainty about future regulations or the permanence of existing ones.

[3] GSMA, *M2M in Latin America*, June 2015. <https://gsmaintelligence.com/research/2015/05/m2m-in-latin-america-state-of-the-market/506/>

## Introduction to Mobile Taxation in Brazil

Brazil is unique among growing M2M markets in having an activation tax on SIM cards (Fistel). As many M2M applications have low Average Revenue per User (ARPU), the fixed tax can deter the uptake of M2M applications and IoT technologies. In addition, this tax limits future revenue streams for all major parties involved in telecoms, including the government, as the number of active devices is reduced by this entry barrier. Specifically for the government, a high activation tax on M2M connections results in losses of future taxable revenue, social welfare benefits, and investments in infrastructure. An upfront fixed tax on M2M SIM card activation is overburdening for most M2M applications.

In a M2M market with high growth potential, such a taxation policy is counterproductive.

In the 12-month period from May 2014 to April 2015 M2M connections eligible for the tax break grew by 988% from 161,545 to 1,757,219 connections, according to Anatel.<sup>[4]</sup> Since the tax reduction came online in September 2014, the overall average monthly growth rate has been a high 11.6%. This contrasts starkly with the near zero percent growth of services not covered by the tax break.

[4] The most recent publicly available dataset from Anatel is current as of January 2015. However, Anatel released a report in June 2015, which included April 2015 values only for special M2M. Our model has been updated with the most current values, for each M2M type.

## Challenges to the uptake of M2M

TechPolis has identified several key challenges in Brazil's M2M environment. First is the application of Fistel to M2M. The average cost per unit impacts the growth rate of the service. Lower M2M taxes would create revenue in parallel industries (car manufacturing, health care, energy and so on), generating revenue that could be taxed in a more equitable way.

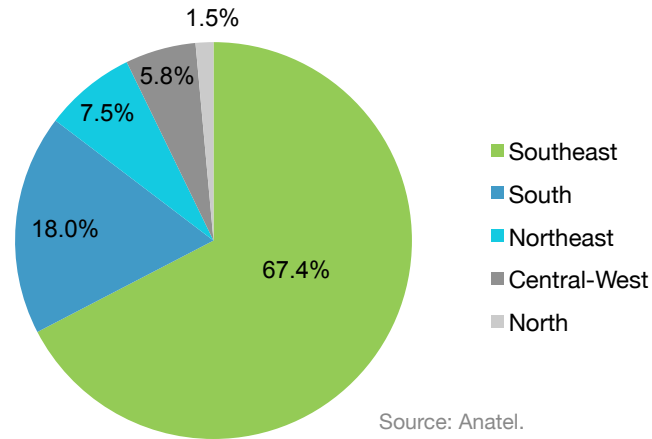
Secondly, M2M verticals, such as the connected car, require regulation to ensure interoperability and interconnectivity. SIMRAV attempted to guarantee this, but became overburdening due to hardware difficulties.<sup>[5]</sup> However, automakers, such as Volvo Cars, are opting for proprietary solutions that meet SIMRAV specifications with a standard SIM card. Applications for Smart Home and Smart Cities will require standards to be set, to ensure systems are able to communicate with one another.

[5] The SIMRAV (*Sistema Integrado de Monitoramento e Registro Automático de Veículos*) project, or Contran 245, is a policy that aimed to set a national standard for vehicle telematics and theft prevention.

## Regional Distribution

Most M2M connectivity is in Brazil's South and Southeast regions, which together account for 85% of total M2M connections. The Southeast region possesses the highest connectivity at 0.08 per capita (i.e. 8 connections per 100 people) followed by the South, 0.06; Central West, 0.04 ; and North and Northeast, 0.01. The State of São Paulo has by far the largest number of connections and connections per capita, accounting for 56.2% of total M2M connections in Brazil. The two states with the most M2M connections, São Paulo and Paraná, account for 65.4% of connections in Brazil. In terms of per capita connections São Paulo and Paraná are the most connected states with 12.9 and 8.4 connections per 100 people, respectively. When we consider only M2M especial connections, Paraná has the highest connections per capita at 2.0 per 100, followed by São Paulo at 1.6 per 100 people.

Chart 5: M2M Distribution in Brazil by Region, January 2015

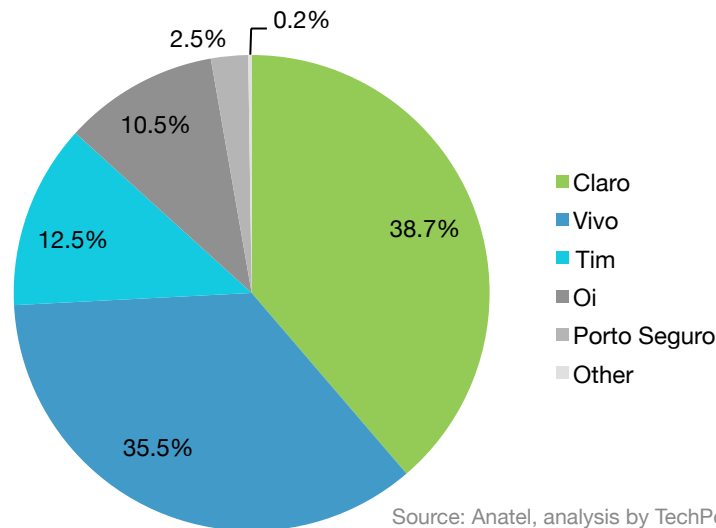


Regionally, new M2M services are spurring rapid growth in the underdeveloped M2M markets of Brazil's North and Northeast. Brazil's North has boasted 55% growth in M2M especial connections since the beginning of the tax break in September 2014. Across Brazil, growth rates in M2M connections covered by the tax break are markedly higher than those not covered. Growth rates are similarly high in more developed regions in the South and Southeast, which tells us M2M growth is not limited by higher mobile market penetration rates.

## Mobile Operators' Market Share

The M2M industry is dominated by two major players in Brazil—Claro and Telefónica Vivo. Claro, owned by Mexican group America Movil, accounts for 39% of all M2M connections. Vivo, owned by Spanish group Telefonica, accounts for 35% [Chart 6]. Brazilian group Oi and Italian group TIM both have pieces of the M2M pie—13% and 11%, respectively. Porto Seguro, a Brazilian-owned insurance company, is an important player in M2M as well, offering automotive insurance services to owners of connected cars over the TIM Brasil network, using the MVNE platform of Datora. While accounting for only 3% of total M2M connections, Porto Seguro accounts for 10% of M2M especial connections—over 60% of its connections are M2M especial.

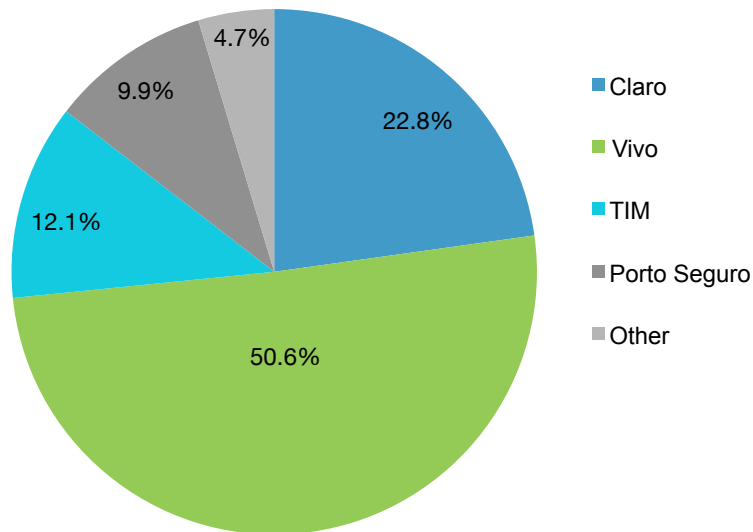
Chart 6: M2M Total Market Share in Brazil, January 2015



Source: Anatel, analysis by TechPolis.

When we look at the share of M2M especial connections in Brazil [Chart 7 next page], we see a shake-up in the market share of operators. The second-largest provider of M2M as a whole, Vivo, is the largest provider of M2M especial with 51% of connections. Claro provides 23% of all M2M especial services in Brazil. TIM is emerging as a strong player in special M2M services, increasing its market share from 7.25% to 12.05% by adding 108,784 connections from January to April 2015 alone. Among the key players, Claro, which added only 5,908 connections, has lost the most market share in M2M especial this year, from 27.79% in January to 22.79% in April. Vivo added the most connections (186,007), to maintain its status as the largest provider of M2M especial services.

**Chart 7: M2M Especial Market Share, April 2015**



Source: Created by TechPolis from data in report published by Anatel.<sup>[6]</sup>

The numbers of M2M business units among mobile operators, vendors, and car manufacturers are growing, but they still represent a small section of the total revenues of those companies.

Anatel itself has very few dedicated analysts working on M2M. Regulatory requirements for the M2M environment are addressed as needed—Anatel has no overarching policy on M2M.<sup>[7]</sup> Leading automakers in Brazil are building their M2M teams to identify market trends and navigate regulatory requirements. But M2M remains a small part of total business operations. Mobile operators appear to have devoted the most attention to M2M, in order to grow key verticals and expand service and connectivity to new devices. With the Brazilian mobile market reaching maturity, M2M/ IoT is one of the few avenues for new growth. Although, M2M business units are still weak within the institutional environment of operators' businesses.

[6] Anatel. "Comunicação Máquina a Máquina". Published on June 1st, 2015. [http://www.anatel.gov.br/dados/index.php?option=com\\_content&view=article&id=282](http://www.anatel.gov.br/dados/index.php?option=com_content&view=article&id=282)

[7] Information gathered from interview with Anatel on 27 May 2015

## M2M Verticals in Brazil

In our qualitative interviews with several industry leaders in May 2015, we asked how the market will develop in the short to medium term. In the short term, the market is at a nascent stage and susceptible to changes in the regulatory and industry alliances environment. In the medium term, when the IoT becomes more established, we expect to see several key M2M verticals taking root.

The market segment with by far the largest share in Brazil is Point of Sale (POS) terminals. These connections account for over half of Brazil's M2M connections, but are not expected to shape the future of M2M in Brazil. The future belongs to newer services aimed at adding value and efficiency to existing markets and processes through connectivity with the Internet of Things. The most valuable M2M services are the Connected Car, Smart Utilities, the Smart Home, Security applications, and manufacturing applications.

Not all M2M verticals are expected to generate the same amount of revenue or grow at the same rates. In terms of revenue, the Connected Car offers the most opportunity for operators and car OEMs. The services offered by the connected car add value to new market segments over the life of the vehicle. The connected car will provide access to security applications, theft lockdown capability, infotainment options, and user-based insurance pricing mechanisms. In terms of the number of connections the Smart Home segment is likely to dominate. Home security, where M2M chips provide back-up connectivity for alarms in homes and offices, already represents a significant part of connections in Brazil.

## Connected Car

The connected car market in Brazil has been slow to mature, largely as a result of insufficient or counterproductive regulatory policy.

SIMRAV has not been successful in incentivizing automakers to adopt connected car technology. SIMRAV locks automakers and customers into a restrictive technology that does not deliver on its promise of connectivity, due to regulatory and procedural difficulties. The SIM card used for SIMRAV is too difficult and costly to implement, according to automakers Volvo and Renault. In the short term, consumers will likely unlock connected car features through tethering their mobile devices, rather than using OEM connectivity offered with the vehicle.

Carlos Briselli, Engineering Supervisor at Renault, states, *“The business model designed by the government doesn’t take in consideration OEM solutions. It is not flexible. This makes the manufacturer invest twice in Connected Solutions—one with the government specs and another with its own specs for the extended features. The manufacturers could be free to decide the right connected strategy for each business model and be able to include the tracker functionality designed by the Brazilian government within its own platform, investing only once in a connected platform with more flexibility.”*

Automakers are concerned they are not receiving M2M tax reductions for SIMRAV connectivity due to doubts about whether it is truly M2M especial in nature—since humans operate the vehicle and initiate some M2M services. However, the M2M services mandated by SIMRAV, such as vehicle tracking and theft prevention, are compliant with requirements for M2M especial services (not requiring “human intervention”), yet not always recognized as such. The non-application of the tax break on all M2M SIMs in connected car applications creates a poor environment for growing connected car numbers, due to regulatory uncertainty.



## M2M Tax Policies

A new tax policy introduced in Brazil in September 2014 with the aim of giving selected Machine-to-Machine (M2M) applications a tax break, has already had a noticeable impact on the take-off of M2M. Brazil levies a tax (Fistel) on all SIM-cards sold within the country. In addition to Fistel, the state value-added tax (ICMS) is significantly higher for telecommunications than other sectors, ranging from 25% to 35% on revenue earned from usage.<sup>[8]</sup><sup>[9]</sup> The standard rate for ICMS is 17% in most states for other goods and services.<sup>[10]</sup>

The 80% tax reduction on Fistel reduces the initial one-time activation fee (TFF) from BRL 28.63 to BRL 5.68 for selected M2M services. The reduction also applies to the ongoing annual operation fee (TFI), which came down from BRL 8.94 to BRL 1.89. The new law necessarily creates two classifications of M2M applications—those services covered by the tax break and those that are not. The applications receiving the tax break are classified as M2M *especial*, which are characterized by a lack of “human intervention” in the operation of the device. M2M *padrão* are the services that are not affected by the tax reduction, typically including services that have some human component in the basic operation of the device. M2M *especial* services are higher growth, thanks in part to the tax break, and will confer significant added benefit to society.

The high taxes under the old tax policy discouraged the uptake of M2M in key verticals, as we can now clearly see from lower growth rates for applications not covered by the tax break. A high initial activation tax deters adoption of M2M modules, which means long-term tax revenue is being lost because annual activation and services taxes are not being collected. The new policy significantly lowers the barriers to consumers and operators for connecting a new M2M SIM.

Mysteriously missing from the list of M2M especial connections are the PoS systems used to process credit and debit cards in business-to-consumer environments, and which account for nearly half of all M2M connections. The government, in deciding the types of M2M SIMs to be covered, determined PoS systems were not eligible for the tax break, as the transactions are not truly “machine-to-machine,” involving human interaction to swipe the cards. In fact, as they represented a pre-existing federal tax base from M2M connections, the government decided to protect those taxes by excluding PoS.

[8] Teleco Brasil. “Seção: Estatísticas Brasil.” Published 7 Feb 2013. Accessed 15 June 2015. <http://www.teleco.com.br/tributos.asp>

[9] ICMS is a services tax; when operators charge clients for usage, they include ICMS at a level dependent on which state the client is based, as the tax is state-centered and varies state by state. Fistel is a federal tax.

[10] KPMG. “Brazil: VAT essentials”. Published 31 August 2014. <http://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/vat-gst-essentials/pages/brazil.aspx>

## Tax Revenues

Importantly, from the government’s perspective, the high upfront tax means lower tax revenue long term as the high taxation discourages adoption of M2M. Since M2M SIMs generally have a lower ARPU than traditional SIMs, normal taxation rates under Fistel create a high cost per M2M connection. According to a recent GSM Association (GSMA) report on M2M, monthly “cellular M2M connectivity ARPU typically ranges between \$2 to \$5.”<sup>[11]</sup> According to GSMA, Vivo Brasil executives quoted monthly M2M ARPU in 2012 at BRL 5.00 or USD 2.49.<sup>[12]</sup> A total initial tax in the first year (Fistel = TFI + TFF) creates a significant burden on standard M2M devices of BRL 37.57 (USD 12.02) and BRL 8.94 (USD 2.86) every year thereafter. For M2M *especial* chips, Fistel amounts to BRL 7.57 (USD 2.42) in the first year and BRL 1.89 (USD 0.60) thereafter—a much lower burden.<sup>[13]</sup> In the short term, the reduced taxes will create substantial growth for M2M *especial*.

[11] GSMA, M2M in Latin America, June 2015.

[12] Exchange rate as of July 1, 2012 from oanda.com. USD 1 = BRL 2.0115.

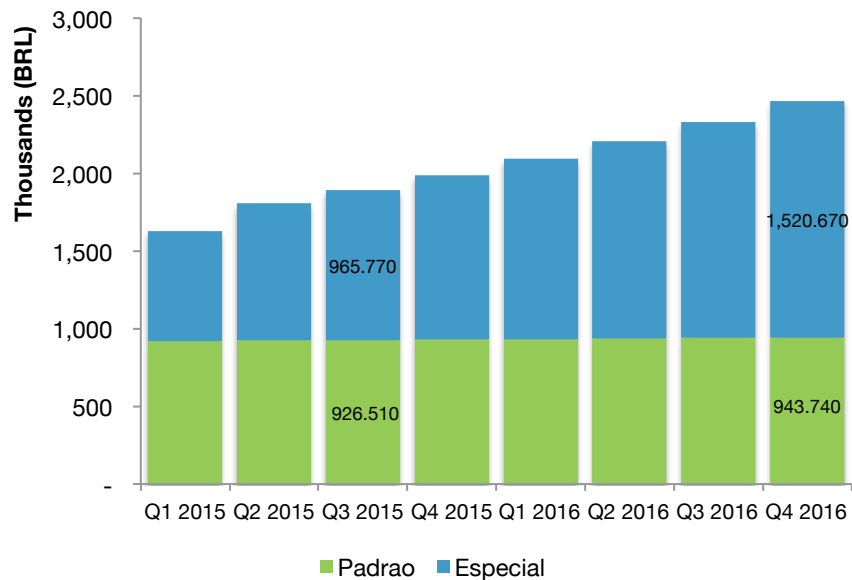
[13] Exchange rates as of June 26, 2015 from oanda.com. USD 1 = BRL 3.12530.

Used for all subsequent USD-BRL conversions.

**Table 1**

<b>FISTEL (Fundo de Fiscalização das Telecomunicações)</b> Fund for the Inspection of Telecommunications		
	<b>Padrão (Standard)</b>	<b>Especial (Special)</b>
<b>TFI*</b>	BRL 28.63	BRL 5.68
<b>TFF**</b>	BRL 8.94	BRL 1.89
<b>TFI + TFF</b>	BRL 37.57	BRL 7.57
<i>*Taxa de Fiscalização de Instalação (TFI: Installation Inspection Fee)</i>		
<i>**Taxa de Fiscalização de Funcionamento (TFF: Operation Inspection Fee)</i>		

**Chart 8: Activation Tax (TFI) Revenue on M2M**



Source: Created by TechPolis from Anatel data. Figures reported in BRL

Our analysis predicts that in just over two and a half years, total tax revenue (TFI + TFF) from M2M *especial* will surpass the tax revenue that would be collected if the status quo had been maintained—i.e., if all chips were still *padrão*.

However, given market projections of revenue collected by the activation tax on new connections, M2M *especial* connections will bring in more revenue (R\$ 965,770) than M2M *padrão* (R\$ 926,510) by Q3 2015 from the Fistel activation tax (TFI). This is a result of the much higher rate at which M2M *especial* connections are coming online. From Q3 2015, onward, TFI Revenue from M2M *especial* will be higher than from *padrão*.

## Future of M2M Taxation in Brazil

If taxation levels and regulatory uncertainty remains high, operators will lack incentive to drive the uptake of IoT. When interviewing stakeholders, we found concern over the possibility that M2M *especial* services could be reclassified as M2M *padrão*, meaning the tax break would no longer apply. This possibility of reversals in regulatory policy has vendors and operators worried. No guarantees have been issued to operators that a service classified as M2M especial will continue receiving the tax break. How the tax break will actually be implemented is still uncertain.

While discussions about completely eliminating the Fistel tax on M2M services are being held at the Ministry of Communications, the current economic situation and political climate in Brazil makes the adoption of a zero tax on M2M unlikely. As a matter of fact, the current fiscal adjustment in Brazil could lead to a Fistel tax hike, which would result in an increase of the activation tax for M2M as well. The Ministries of Finance and Planning are exploring the possibility of increasing Fistel for all types of connections by up to 189%. A recent report by JP Morgan outlined the negative effects of increasing Fistel on operators' bottom lines.<sup>[14]</sup>

In addition, the low ARPU of M2M SIMs would heighten the impact felt in these service lines and deter additional innovation. The potential for damage is high—investors would reconsider investments in M2M in Brazil, adoption of M2M services for IoT applications would slow down due to the high cost per unit, technological innovation and expansion to new verticals could be negatively impacted and, last but not least, long-term tax collection from M2M would diminish.

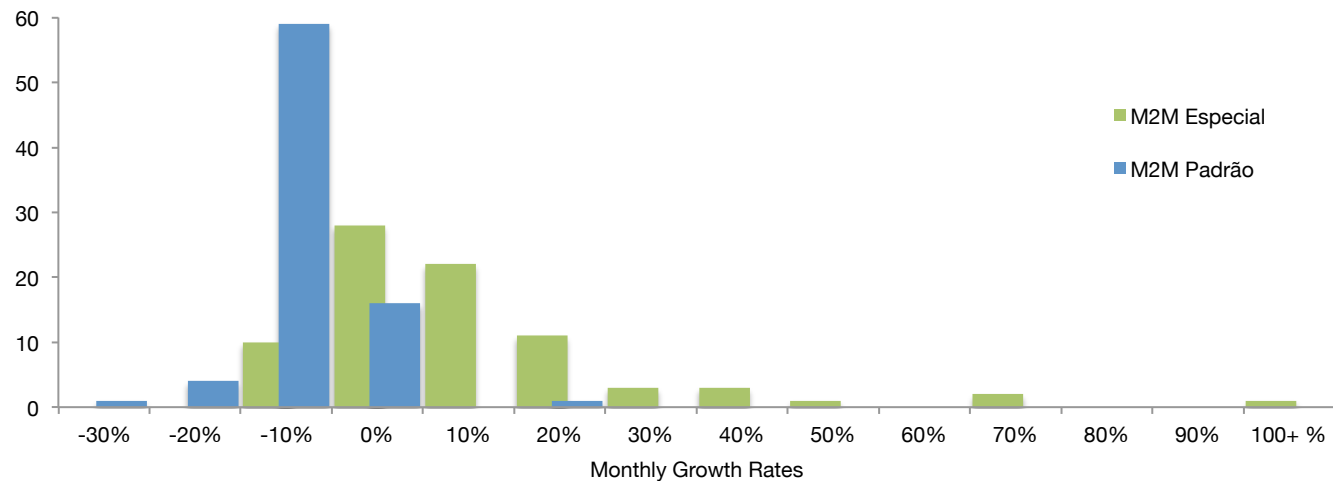
[14] J.P. Morgan. *Latin America Equity Research*, 12 June 2015: "Brazil Telcos: An increase in FISTEL tax is unlikely, but potential damage is very meaningful."

## M2M Tax Break Analysis

TechPolis performed a quantitative analysis on the growth rates of M2M state by state over the quarter running from November 2014 to January 2015, in order to determine if M2M *especial* is growing at a faster rate than M2M *padrão*. The result of this comparison provides statistical backing to the claim the tax break is aiding the growth of M2M *especial* services. Over this period, the average state growth rate for M2M *especial* was 17%, whereas the average growth rate for M2M *padrão* connections was -2%. This dramatic difference shows the positive effect of low-taxation levels on growing mobile technologies. Over this period, 63,658 *padrão* connections were added, and 235,781 *especial* connections, 3.7 times higher for *especial*!

With only three months of usable data (from Anatel's most recent M2M dataset release) covering the tax break, monthly state growth rates, from all 27 states, were used to gain statistical relevance—allowing for inferences about what to expect in the future. States were chosen as the unit of analysis for conducting this study, due to the availability of data and diverse growth rates among the states. In this analysis M2M *especial* acted as the treatment group, which received the tax reduction, and M2M *padrão* as the control group, not receiving the reduction. As both groups were sampled during the same period, the analysis assumes the same macroeconomic and market influences acted on the groups equally.

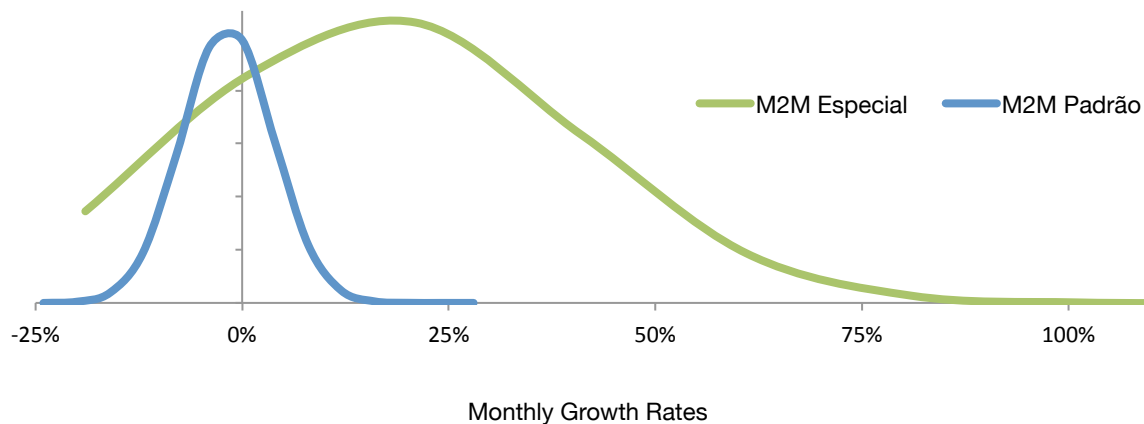
**Chart 9: Distribution of State Growth Rates (November 2014 - January 2015)**



Source: Anatel,  
analysis by TechPolis.

Each bar represents the observed frequency of the indicated level of growth rates. This selection allows robust hypothesis testing between the average monthly state growth rates of M2M *Especial* and M2M *Padrão* to determine if the tax break has really made a difference.

Chart 10: Probability Distribution of State Growth Rates (November 2014 - January 2015)



Source: Anatel,  
analysis by TechPolis.

The above shows our comparison of M2M *especial* and *padrão* growth rates. We can see that M2M *padrão* is tightly clustered around the average, -2%, and is significantly lower than the average of M2M *especial*, with 95% confidence. From the graph, we can see lower taxes correspond to a greater probability of high growth. Assuming all else equal in the states, the only different impact on growth rates is the lower tax rate.

## M2M Taxation Policy

Turkey eliminated taxes on M2M services in 2012.<sup>[15]</sup> Since the elimination, there has been a rapid increase in M2M growth. According to quarterly reports from Turkish regulator, ICTA, M2M connections experienced nearly a 100% growth from Q412 to Q413, and nearly a 20% increase in the following year.<sup>[16]</sup>

The Turkey case shows the negative effect of upfront, fixed-activation fees on the uptake of M2M, and on any other mobile services for that matter. Many stakeholders are warning of the effect of overburdening the M2M market in its early stage. Turkey is a prime example of how elimination of taxes can immediately help the uptake of M2M.

Activation taxes are a fixed-cost above the yearly revenue for several IoT business models. By discouraging new subscriptions with the activation tax, regulators are missing out on tax revenue further down the line from usage and from the positive impact of IoT on economic growth. If the total tax cost per unit continues to fall, higher growth and greater economic and social benefits will result.

Mobile tax reduction will have important effects on key market verticals in Brazil. Across all verticals a decrease in total cost of ownership will result in greater uptake. As with all taxation, lower taxes mean a higher social benefit to the user. For the government, low activation fees could create higher revenue streams in the future as more M2M devices enter and remain in the market due to lower costs.<sup>[17]</sup>

PoS terminals would benefit from a tax reduction, as the most numerous M2M service in Brazil, by lowering the burden on vendors and operators for their use. If the tax were reduced an increase in government revenue would likely occur—resulting from an increase in total taxable units.

[15] GSMA. *Digital inclusion and mobile sector taxation in Pakistan*, (p.24). February 2015.

[16] Turkcell quarterly reports 2012, 2013, 2014. Retrieved from <http://www.turkcell.com.tr/en/aboutus/investor-relations/key-financial-and-operational-data/financial-reports>

[17] GSMA. *Mobile telephony and taxation in Turkey*, (p.10). 2012.



# Key Findings and Policy Recommendations

## Taxation

- Uncertainty over taxation policy on M2M connections is hindering growth in key IoT verticals. The Ministry of Finance announced intention to explore raising Fistel on all mobile SIM cards would be disastrous to the nascent industry—inhibiting growth, technological innovation and long-term tax collections from the telecommunications sector.
- Uncertainty also lingers over whether or not a number of M2M services can be classified as especial and be entitled to the 80% activation tax break. There is also no clear process of arbitration on how the exemption from “human interaction” to secure the tax break can be decided in ambiguous cases.
- Recognition of all types of M2M connections as entitled to the tax break would be important as the definition of “human intervention” will be further blurred by the Internet of Everything (IoE).
- Activation taxes are unique and rare, only a few countries have them—elimination of all activation taxes would be the most helpful policy; this step is essential to encourage M2M growth.

## *Pro-M2M growth policies*

- Policy mandates for road security, such as eCall, could represent an important step in Brazil. Reduction in taxation of M2M services could help initiatives such as eCall take root in Brazil, conferring security benefits, location services, mapping, and user-based insurance policies.
- Re-design of SIMRAV program. The current program for vehicle theft prevention is taking away flexibility from car manufacturers to implement their own connected car solutions and require redesign.
- Developing regional M2M growth strategies to promote growth in areas with low M2M penetration will help the entire country to obtain economic gains from IoT more evenly.
- Verticals such as agriculture and mining require special attention in Brazil and Latin America, as these are sectors, which are beginning to achieve significant productivity and efficiency gains thanks to IoT, to the benefit of Brazil's export competitiveness as well as its domestic consumers.

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## About Techpolis

TechPolis provides international consulting services to leading players in the mobile technologies sector. We help them navigate ever-evolving policy and regulatory challenges. This includes guiding government relations, building solid industry alliances, designing advocacy campaigns, and providing crisis management. We combine a deep understanding of political and governmental structures with detailed, ongoing monitoring of market developments and state-of-the-art knowledge of technology innovation. TechPolis has extensive international experience, having implemented projects in Latin America, the Middle East, Russia, South Asia, Southeast Asia, and Africa.

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