

New developments

‘Swift Rail’—funding local rail transit through smarter growth

Reg Harman and Nicholas Falk

Many medium-size cities suffer from severe traffic congestion and poor accessibility, limiting their potential to improve their economy, environment, and social equity. These problems could be addressed by creating high-quality transit linking such cities with suburban and other catchment areas through use of existing rail lines and abandoned former railway alignments. This concept, termed ‘Swift Rail’, would call for an innovative approach to local railway and transport development.

Keywords: Development land; funding infrastructure; housing; railways; tackling congestion.

This article considers how Britain could join up building new homes with upgrading local transport, and thus overcome one of the main objections to development. It shows how development of light rail transit on existing and closed railway lines could contribute significantly to addressing urban pressures and grasping opportunities. It suggests how these might be funded from creative use of public investment and development funds, as in other parts of Europe (Hall with Falk, 2014). The result would not only help get Britain moving, but would create a much better and fairer environment. Indeed, for a fraction of the investment proposed in mega projects such as CrossRail 2 (costed at £33 billion), schemes could be developed that would be largely independent of funding from central government.

The urban challenge

As UK local government faces savage cuts, smart local authorities are starting to change the way they plan and fund investment. Smarter growth means planning for posterity not austerity, looking forward to 2050 and not just to the next election. All parties recognize the need to double house-building, but new homes need to be in the right places and properly connected if they are not to add to congestion and stress, and meet local resistance. Yet at present the UK seems quite able to plan mega projects like the High Speed 2 (HS2) railway, Hinkley Point C (a new nuclear power plant) and replacing the Trident missile system, but it is unable to fix potholes or cut car use, and the

country may soon run short of electricity. So funding local infrastructure is ever more essential, and one potential source of finance is the uplift in land values that occurs when major development or new infrastructure takes place.

Trams and light rail once played an important role in growing the UK’s towns and cities. However, British cities got rid of their trams in the post-war euphoria with the private car. But German cities, such as Freiburg and Heidelberg, have protected and expanded their historic university towns on the back of tramways and light rail. And progressive French cities, such as Grenoble and Montpellier, have created large tramway networks to support urban and economic growth. Public investment has resulted in livelier, car-free city centres and attractive new suburbs, with benefits for the economy, environment, and social justice (URBED, 2015)

Investment in light rail can also work for historic cities in the UK if the options are properly designed and evaluated within a multi-criteria assessment. So far, British tramway development has been confined to relatively few larger cities or urban agglomerations, such as Manchester, Sheffield and Nottingham, and around Croydon in London. But many medium-sized cities, such as Oxford, Cambridge, York or Cheltenham/Gloucester for example, face strong pressures for growth, reflected in high house prices, but lack the space and capital budgets to tackle congestion. The proposals for ‘Uxchester Garden City’ that won the 2014 Wolfson Economics Prize showed that extending a city like Oxford at the edge

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enables the capital costs of infrastructure to be covered from the uplift in land values (Rudlin and Falk, 2014). Oxford could double in population by taking less than 7% out of the current green belt, which might then be redistributed to protect environments of real quality. (Green belts are areas around urban areas that forbid development, except in very special circumstances.) But this requires an agreed strategic spatial plan, as well as a focused delivery organization, like the London Docklands Development Corporation (discussed more fully later).

The 'Oxford Metro'

Having examined possible routes to support expansion of Oxford, we put forward a comprehensive proposal for what we have called the 'Oxford Metro', inspired by experience in Oxford's twin city of Grenoble (Falk and Harman, 2015). This involves as the core two complementary transit systems. For the city itself we have identified a pair of radial tramway lines, north-south and east-west, with the latter forming the initial line. It could be funded by the landowner or developer, as a condition for extending into the tight Oxford green belt. It would provide a link to the city centre, including the railway station, probably via hospital and university areas, to ensure high levels of utilization.

Beyond the city, existing railway lines, including the freight line to Cowley, would be upgraded, with new and reopened stations, to nearby towns whose close links with the city's employment, education and entertainment currently generate very substantial road traffic. This system, termed 'Swift Rail' and discussed below, would increase ease of local travel along the main demand corridors and link up the growth points of Didcot and Bicester while reducing car use and hence congestion on the main roads around the centre of Oxford. In addition, city bus services could be revamped to complement these two systems. Beyond the city, fast bus transit services along the A40 ring road that skirts Oxford could connect the market towns of Witney with Abingdon and employment sources along the way. Furthermore, the long overdue redevelopment of the main rail station in Oxford, within substantial new office and commercial facilities and with high-quality tramway and bus stations, would allow it to act as the focal point of local public transport and to handle much increased main line passenger traffic and through freight services.

The Swift Rail concept

While Britain has a good record of implementing new and reopened stations and, indeed, local branch lines (Alderson and McDonald, 2010), these are run as conventional 'heavy' rail services, usually operated by standard diesel multiple units. Our concept for Swift Rail (Falk and Harman, 2016) seeks to create much greater use of existing railway lines and some abandoned line formations to create more local transit services, on a similar basis to those operating in Germany (S-Bahn) or Switzerland, for example. We are looking at lines that serve the cities with greatest growth potential, especially the county towns and others with populations of over 150,000. Swift Rail services would provide key links between these cities and the main settlements in their surrounding catchment area, underpinning a better quality of life in terms of economic activity, education, leisure and social cohesion. At the same time, they would reduce the major congestion that surrounds these cities and the pressure to continue spending very large sums on road expansion in an often vain attempt to tackle increasing jams and delays.

Indeed, some of the funding currently targeted for new roads might go towards the development of Swift Rail and complementary sustainable transport systems, such as cycling. This might be supported by increased business rates, as HM Treasury has now agreed in cities such as Manchester and Cambridge, plus other local income like parking charges, and also contributions from development along the routes (as in the successful LUAS tram system in Dublin). Supporting packages of such funding approaches would enable government to offer cities a real incentive for sustainable and healthier growth and mark a revival of civic enterprise. Making the most effective use of all available funds would require a cohesive strategy complemented by a widely based system for project design and assessment.

The key is to make it smarter and swifter to use the train rather than to jump in a car. This requires a better form of local/suburban train designed for comfort, with rapid acceleration and deceleration, running at high frequencies, and serving stations at the heart of new developments and existing suburban centres. Services would be frequent and fast enough to compete with the private car, and should also enable people on lower incomes to reach jobs and services, without adding to congestion, using some form of smart travel card. It would thus serve both suburban areas and outlying towns and large villages within the catchment

subregion.

We see nine key features as defining the Swift Rail concept:

- Routes linking city station to suburbs and satellite towns within catchment region (travel-to-work area or similar?).
- Main city station to form hub for co-ordinated local transport.
- All stations located and designed as focal points for their area.
- High-standard, but simplified, signalling on exclusively Swift Rail lines.
- Multiple unit trains with high acceleration and deceleration rates, high-density interiors but with high standards and quick boarding and alighting.
- High-frequency services throughout the week, normally 15 minute intervals at rush hours.
- Integration with local bus and other rail services, through links at stations, common ticketing and common promotion.
- Planned and funded by locally-based corporation linked to development, with participation of bus or rail company and/or local authority.
- Overseen and preferably managed by locally-based interests.

Putting the Swift Rail concept into practice would require close co-operation between two or more local authorities, developers and funding organizations, land-owners and business interests. It would require the engagement of various levels of railway providers: in particular Network Rail for infrastructure provision and management, but also an operating company, manufacturers of trains and perhaps signalling and civil engineering companies. Projects would need to be evolved through a cohesive strategy and designed and assessed through a comprehensive process that would take into account all options and factors.

The approach would require strong management from within the city region. In principle, local economic partnerships should be the best focus for this, but in practice the ability of LEPs to act in this way is questionable. Instead, a specific company might be set up to develop the line and co-ordinate investment. This company might be established as part of a development corporation of some form that could link the provision of better transport services to the supply and servicing of land (as happened successfully with the London Docklands Development Corporation which promoted the Docklands Light Railway). This

corporation might also franchise the operation of the line, on the same basis as Merseyrail does in Merseyside.

A major financial contribution could come from higher density commercial development around an upgraded city station (as, for example, in Reading). Funding could also come from new communities developed around intermediate stations, especially new ones.

The conventional 'heavy rail' trains currently operating on Network Rail lines are unsuitable for this. The Swift Rail image and performance call for easily-accessible trains with high acceleration and deceleration. Currently such trains are not available, but the promising Vivarail D-Train, which is understood to meet the stringent British rolling stock regulations, could prove very suitable as it reuses proven but redundant trains from London Underground. Stadler, a leading builder of urban trains for other European countries, is known to be interested in opportunities in the UK, and other manufacturers with suitable trains available, such as Alstom and Bombardier, are already based here.

Strategic opportunities

Discussions with county councils and other interests suggest support would be forthcoming if this does not require ongoing subsidies, and could be one of the benefits of the new combined authorities (CAs). Initial discussions with people in the railway industry show that the involvement of operating companies and experienced consultancies could significantly cut the costs of new stations and enable any perceived technical problems to be fully addressed. Our studies and discussions with interested organizations have brought out a growing number of potential locations for Swift Rail development. As an indication of the scale, we have assessed that about half (17) of the small English cities targeted as New Garden Cities on Uxchester principles form potential bases for a Swift Rail system and 11 more could benefit from limited upgrading of local rail lines to Swift Rail principles. There are probably a few other English cities that could justify the approach, plus some in Scotland and Wales. For example, in South Wales, reopened lines to valley towns are now candidates for electrification and upgrading to a high-quality urban network. Indeed, the Cardiff-based lines have been transferred to local control from Network Rail.

We estimate that up to three dozen local networks are viable.

Pilots

We have examined a few specific locations for possible pilot projects where there could be local support, with branch lines in the Western Region offering some of the best opportunities:

- Around Gloucester and Cheltenham, possible major developments at the airport at Churchdown and near Quedgley could provide Gloucester with two new stations, served by an initial Cheltenham–Stroud half-hourly service. This might subsequently be expanded into a denser local network, with extension to a new town centre station at Cheltenham and incorporating local services to Bristol via Bristol Parkway, where proposals for a local metro are far advanced.
- The Oxford Metro would incorporate a pair of Swift Rail services based entirely on existing lines but with some new stations and much higher levels of local service.
- There are also other branch lines, such as the freight line from Southall to Brentford, where Swift Rail could form part of an integrated development plan.
- Exeter has a small network of local rail services operated at low frequencies with conventional trains. Connectivity across the city and its neighbouring region could be considerably improved, with reduction in the current levels of road congestion, through upgrading to Swift Rail principles. This could include new stations, and the new settlement of Cranbrook just outside Exeter is being built around one of the first new railway stations.

Funding public investment

Smarter growth means joining up development with infrastructure to get more from less. For example Swift Rail services for cities such as Gloucester, Oxford and Cambridge would make use of spare rail capacity, with investment in increased capacity (for example electrification, signalling and points), with some new lines and new stations on and beyond the edge of existing cities to serve expanding suburbs and satellite towns. (In similar vein, heat networks can tap energy from burning waste and green webs can use lakes in country parks and new woods to hold flood water and reduce the threat of flooding and the need for new sewers, while bringing town and country closer together.)

To be most effective, this needs to be planned at the level of a city region, or possibly in a CA if focused on the areas with most growth potential. ‘Sustainable urban

neighbourhoods’ with high-quality public transport, as in cities like Freiburg, reduce car use, and result in more people walking and cycling. Healthier life styles cut demands on the health and social services. URBED’s proposals for Oxford showed how the first stage of a new tram system, like those of its twin city of Grenoble, could be funded by redeveloping poor farm land on the edge of the city. Private landowners, such as colleges, could get 10 times the current agricultural value, but not 100 times, which is what the land is worth when housing is built on it. This could be undertaken by joint ventures, such as the one that between Grosvenor Estates and Oxford City Council: a new community with up to 885 new homes at Barton Park on a peripheral council estate.

Where the land is owned by public utilities, land could be pooled in ‘public land trusts’. Land could then be parcelled up, and sold to developers, within planning briefs that set densities and the mix of uses. A proportion of the ultimate value could be repaid to the current owners or relevant departments. The balance could be invested in local infrastructure, responding to local priorities and investment plans. Importantly, local authorities would then have an interest in more proactive planning.

Where substantial public investment is required to decontaminate a large area of land or open up access, as in the case of former gasworks or some railway land, there may be advantages of setting up a development corporation. One example of this is London Docklands. This major opportunity area was opened up by the Docklands Light Railway and an extension to the Underground Line, both created by the London Docklands Development Corporation, with some contributions from private developers. Whatever the development vehicle, with limits on public finance, maximum advantage should be taken of 20–40 year bonds, secured against the value of the land, and funded through rental incomes and land sales. Perhaps some form of local infrastructure funding trust (LIFT) could be used to package funding from a variety of sources. All this could be achieved with five simple changes:

- Setting up a national municipal infrastructure corporation to assess projects and borrowers and attract institutional funds, underwriting the costs of issuing bonds.
- CAs should establish development agencies, possibly using planning conferences to agree on areas for major growth or regeneration.

- Once identified and designated, land values should be frozen, as in Germany, to avoid speculation, and ensure the uplift in land values is ploughed back.
- Bonds should be issued to draw up development frameworks and fund advance infrastructure from the expected increase in land value.
- Sites should be sold to a variety of builders, with a proportion held back in a 'community land trust' for social purposes.

The way forward

Despite the aim of the National Policy Planning Framework (Department for Communities and Local Government, 2012) to simplify planning, and some progress with City Deals, the UK government seems to have cut red tape lengthwise. Projects are evaluated in simplistic terms, like cutting travel times, not for their whole impact. Increasing complexity and uncertainties add to costs and delay work on the ground, with a vicious circle as the UK imports both labour and capital and the public deficit deepens. Small wonder that there is new interest in looking at how we get hold of land, which can account for half the cost of a new home in the UK compared with a quarter in Germany or the Netherlands, and using what Howard (Hall and Ward, 2014) called the 'unearned increment' to fund better local infrastructure.

For too long the planning of development and transport infrastructure in the UK has operated in silos, and has suffered from the abolition of strategic or sub-regional planning. However, the need to get better value from limited public resources could lead to a renaissance in local and suburban rail, as has happened in London, especially with the recent

success of the London Overground. Two steps are essential to this:

- First, local authorities need to provide the necessary leadership and do so together.
- Second, they need to be creative and open in using available public funding and working with developers and investors who can provide complementary resources.

The UK has a long way to go to catch up with the rest of Europe, but investment in local infrastructure could provide the boost that its economy needs to escape from austerity.

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IMPACT

The Swift Rail concept would use some existing local railway lines plus abandoned trackbeds to create attractive local transit systems. It would provide a key tool for tackling the grave problems of constraints on accessibility, road congestion, and pressures for housing expansion which smaller growth cities face. Addressing these is essential if the economic potential of these cities, and that of the nation as a whole, is to be maximized. Funding would be through use of existing budgets and of new sources, especially from development, but could offer significant benefits in creating innovative infrastructure funding approaches.

Linking governance mechanisms to organizational resources, legal mandate and agency values

Kuo-Tai Cheng and Chun-Fa Cheng

This article explores the links between governance mechanisms, regulatory agency values, organizational resources, and legislation. The authors examined a large regulatory agency in Taiwan (the NCC) with the aim of improving the quality of regulation. The lessons have application in other settings.

Keywords: Accountability; governance; independent commission; regulation; transparency.

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Organizational resources, a legal mandate, and agency values are generally accepted to be the main factors affecting regulatory performance (Berg, 2000). In addition, a series of studies has shown that governance mechanisms in effective regulatory agencies are similar across countries and cultures and have remained fairly stable over time (Stern and Holder, 1999; Gutierrez, 2003; Correa, *et al.*, 2006; Gulen, *et al.*, 2007; Cheng and Heberton, 2008; Parrado and Salvador, 2011; Cheng, 2013; Bartley, 2014). Earlier studies have revealed some of the governance mechanisms that predict good regulation (see particularly Stern and Holder, 1999; Stiglitz, 2003; Cheng and Heberton, 2008; Cheng, 2013). The purpose of the study we report here was to better understand the relationships between governance mechanisms and organizational resources, agency values and the legislation behind regulatory agencies in order to improve the quality of regulation in Taiwan. The lessons have application in other settings.

Governance mechanisms, organizational resources, agency values and legal mandate

Organizational resources

'The one main problem the small island countries have in establishing effective regulatory regimes is resourcing their agencies. The quantity and quality of the human resources of the regulatory institutions are critical to their success' (Abbott and Ma, 2013, p. 14). Berg (2000) suggested that the resources available to a regulator are generally determined by the legal instrument that created the regulatory agency (Correa *et al.*, 2006). Resource levels and resource mix (such as the presence of highly-motivated professionals) determine the range of activities the organization can perform (Berg, 2000). It is important to ensure that a regulatory agency is not weakened

due to inadequate staffing and lack of resources.

As mentioned by Smith (1997), organizational autonomy can enhance the independence of a regulatory agency. Regulatory agencies gain independence when they have maximal control over the resources on which they are dependent, such as funding and staff appointments. Hence our first hypothesis:

Hypothesis 1: Independence will positively relate to organizational resources.

Values

Agency values, or the principles supporting an agency, are derived from the national culture and a shared political vision (Cheng, 2013). At the birth of the agency, leaders and key professional staff may not have reached a consensus regarding priorities. Agreement on fundamental principles is essential if an agency is to develop a consistent set of policies (Berg, 2000). However, regulatory agencies are particularly vulnerable when it comes to agency capture and the establishment of rigid structures (Mitnick, 1980). One of reasons for this is that staff turnover is limited due to the technical specialization of sector-specific regulatory agencies. This lack of turnover means that many things come to be taken for granted and staff can over-identify with the regulatees (Cheng, 2015). This problem is amplified by regulatory capture or political capture (Stigler, 1971), both of which harm the values of regulatory agencies (Mitnick, 2011; Cheng, 2015):

Hypothesis 2: Independence will negatively relate to agency values.

Regulatory agency values and principles should remove any confusion about what the agency does, and is responsible for, and what the

government ministers or others do and are responsible for (National Economic Research Associates, 1998; Thatcher and Sweet, 2002). Agencies should have a clear statement of their roles and their objectives, as well as rules that ensure cost-effectiveness in their operations (Cheng, 2016). The implication is that clarity of roles has helped regulatory agencies make impressive gains in protecting a wide range of economic and social values:

Hypothesis 3: Clarity of roles will positively relate to agency values.

Under a traditional command-and-control regime, there is certainty and tight government control of objectives, which could otherwise be compromised if the provisions were opaque and did not give regulatory agencies freedom and decision-making power (Minogue, 2002; Deng, *et al.*, 2003; Ball, 2012). The main challenges are to ensure regulatory agency independence from public and private interests, to foster coherence and transparency in decision-making, and to build regulatory capacities:

Hypothesis 4: Transparency will positively relate to agency values.

Legal mandate

Since legislation is often the product of political compromise, initial legislation may be inadequate in terms of having agencies performing effectively. Agency initiatives can precede formal legislative revisions, but these are likely to be challenged by some stakeholders. The arguments in favour of independent regulatory agencies generally build on some implicit or explicit assumption that agency experts will make decisions based on rationality, balancing divergent interest and thus favouring the common good or the public interest (Baldwin and Cave, 1999; Hall, *et al.*, 2000; Gutierrez, 2003). In other words, independent regulatory agencies are assumed to embody impartiality, expertise and rationality unblemished by party politics and/or regulatees. As Smith (1997) said, there is strong consensus about the formal safeguards required for independence to provide the regulatory agency with a clear legal mandate, free of ministerial control:

Hypothesis 5: Independence will positively relate to legal mandate.

Discussion

We sampled 183 employees from the National Communications Commission (NCC)—an

independent regulator in Taiwan. The survey was administered to a stratified random sample of the entire organization. This meant that we obtained information from a significant number and diversity of departments. The study adopted a cross-sectional approach to measure all variables simultaneously. An anti-CMV (common method variance) strategy was also embedded in the measurement system.

A series of standardized scales was used, for example the 'Governance mechanisms scale', to measure governance mechanisms for regulation. This scale was composed of 25 items (Cheng and Heberton, 2008). Sample items included:

- How do you evaluate financial support to the operations of the regulatory agency?
- How would you evaluate interference from other government authorities to the practices of the regulatory agency? (See Cheng, 2013.)

Participants' responses were recorded using a five-point Likert scale (1 = completely disagree, 5 = completely agree). Higher scores meant higher levels of governance mechanisms, indicating that participants demonstrate more governance mechanisms for good regulation. The 'Agency values, organizational resources, and legal mandate scale' was also used (Berg, 2000). Sample items included:

- Do you agree that the action or regime is supported by legislative authority?
- Do you agree that procedures are fair, accessible and open?

Participants' responses were again recorded using a five-point Likert scale. Higher scores indicated that participants had strong expectations of good regulation.

Table 1 lists the means, standard deviations, partial correlations, and reliabilities for the variables. The partial correlations provided some initial support for our hypotheses. In support of Hypothesis 1, independence was found to be positively correlated with organizational resources ($r = 0.20, p < 0.01$); and was negatively correlated with agency values ($r = -0.23, p < 0.01$), supporting Hypothesis 2. In support of Hypothesis 3, clarity of roles was positively correlated with agency values ($r = 0.26, p < 0.01$). Transparency was positively correlated with agency values ($r = 0.21, p < 0.01$), supporting Hypothesis 4. In support of Hypothesis 5, independence was positively correlated with legal mandate ($r = 0.17, p < 0.05$). In addition, we found significant correlations between

transparency and organizational resources ($r = 0.19, p < 0.05$); participation and agency values ($r = -0.24, p < 0.01$); and accountability and legal mandate ($r = 0.19, p < 0.05$).

To test the hypotheses, a hierarchical regression analysis was performed for each component of agency values, organizational resources, and legal mandate. The goal was to determine if the hypothesized governance mechanisms added a unique contribution in the prediction of the criteria above and beyond the control variables and other governance mechanisms. Therefore the control variables (for example demographics) were entered into the equation. Next, governance mechanisms not hypothesized to have any relationships with the criteria were added. Finally, the hypothesized governance mechanisms were entered. All reported coefficients are standardized in the discussion of the results.

Current results suggest that the governance mechanism serves as an informative framework in examining the dispositional sources of sustainable regulatory systems (Berg, 2000). Specifically, independence emerged as the most consistent predictor, significantly relating to all three factors of sustainable regulatory systems—agency value, legal mandate, and organizational resources:

- First, consistent with previous findings that independence and organizational resources are positively related (Abbott and Ma, 2013), independence was positively related to organizational resources because independence is at the core of communications regulatory agency (Melody, 1997; Gilardi and Maggetti, 2011).
- Second, independence was negatively related to agency value. Possibly, due to their nature,

independence is more likely to damage traditional agency values (Levy and Spiller, 1996; Stern, 1997).

- Third, independence was positively related to legal mandate. Because a legal mandate comes from the central government (Baldwin and Cave, 1999; Scott, 2000; Gutierrez, 2003; Baldwin *et al.*, 2010), independence may be enhanced where the rule of law is established and regulatory agencies created by law have a history, regulatory governance is taken for granted. Regulators could be required to desist from pursuing interests which could be in conflict with their position of authority. Moreover, to achieve the goals of regulation, the regulatory agency must have adequate resources to engage in the regulatory process—a legal mandate that legitimizes the decision-making, and values that uphold the reforms (Berg, 2000).

Interestingly, the direction of the correlation between clarity of roles and sustainable regulatory systems varied according to the specified component of agency values, organizational resources, and legal mandate. Clarity of roles displayed a negative (non-significant) relationship with organizational resources, a positive relationship with agency values, and a positive (non-significant) relationship with legal mandate. These findings are consistent with earlier research (Stern and Holder, 1999; Cheng, 2013).

Although transparency did not significantly predict organizational resources, this governance mechanism was significantly correlated with organizational resources, suggesting a relationship of some kind between them. Investing in transparency allows regulatory agencies to look at new ideas and new sources of information and resources when making decisions. As expected, transparency was positively related to agency values because

Table 1. Means, standard deviations (SDs), partial correlations, and correlations alphas of study variables.

Variables	Mean	SD	1	2	3	4	5	6	7	8
Age	37.19	5.67								
Gender	0.13	0.33								
Job tenure	2.06	0.91								
Organizational tenure	7.05	2.03								
1. Independence	5.30	1.38	(0.83)							
2. Clarity of roles	4.19	1.46	-0.29**	(0.83)						
3. Accountability	6.53	1.40	0.20**	-0.29**	(0.88)					
4. Participation	5.99	1.49	0.21**	-0.19*	0.12	(0.90)				
5. Transparency	5.64	1.35	0.25**	-0.22**	0.28**	0.05	(0.86)			
6. Organizational resources	4.43	1.27	0.20**	-0.14	0.05	-0.03	0.19*	(0.82)		
7. Agency value	4.38	1.48	-0.23**	0.26**	0.02	-0.24**	0.21**	-0.01	(0.88)	
8. Legal mandate	4.32	1.27	0.17*	0.03	0.19*	0.05	0.04	0.06**	0.15	(0.89)

Notes: $N = 183$; * $p < 0.05$; ** $p < 0.01$ (two-tailed).

increasing transparency in the decision-making process should lead to a stable and accessible environment that promotes competition between communications companies, and helps ensure against undue influence by special interests. Transparency also enhances agency values and the efficiency of the regulatory process. An enhanced flow of information will obviously also contribute to overall market efficiency and regulatory governance.

The relationships that were found between participation and agency values, accountability and legal mandate could be because greater participation and strict legislation are likely to increase accountability and reduce the likelihood of the agency being 'captured'. On the other hand, the demands of democratic accountability require regulators to publish regular reports on their work. For example, under legal mandate, direct reporting to the parliamentary is a mechanism for democratic accountability.

Implications and conclusion

Best practice regulatory governance is undoubtedly resulting from international experiences being shared. We found that independence was significantly related to agency values, organizational resources, and legal mandate. Therefore regulatory agencies need to be protected from external influences and regulatory decisions must be transparent. A regulatory agency's values must permit transparency, clarity of roles, and participation to adapt effectively to changing technological and market conditions (Cheng, 2015). Moreover, legal mandates must ensure that the agency has the resources to be democratically accountable, especially in those countries where these kinds of agencies are relatively new and the incumbent political interests are strongly opposed to them.

Creating an independent regulatory agency, which is not an easy task in any country, is even more challenging in countries with a limited tradition of independent public institutions and limited regulatory experience and capacity, such as Taiwan (Smith, 1997; Gulen *et al.*, 2007). The legal framework needs to be carefully constructed, especially where there are monopoly service suppliers. The administration and control of the legal objectives requires the appointment of a regulator with a specialist and independent staff.

Independence and accountability are two sides of the same coin. By making actions and decisions transparent, opportunities for interference will be reduced. However, the independence of NCC in Taiwan, and the

transparency and accountability of its decisions, do not go as far as they should.

Generally, market participants need to be confident that any government intervention in the communications market will be transparent. Further, independence from the regulated companies is needed to ensure transparent, fair, and reasonably predictable decisions. Essential features include:

- Complete independence from the regulated companies.
- Legislation that provides for separation of the regulators and the regulatory body from political control (for example by removing the power over appointments to the regulatory body from political control).
- A degree of organizational autonomy.
- Clear rules about transparency (for example what must be published and how).
- Clear rules about accountability (for example appealable decisions and public scrutiny of expenditure).

In the case of the NCC, improved transparency of objectives, processes, decisions, and information will enable the public to evaluate how the regulator is performing (OECD, 2002). In addition, this will deal with concerns that have been raised in Taiwan regarding the actions and independence of the NCC. Some new market entrants have made allegations that NCC has been selective and discretionary in its implementation and enforcement of the existing regulatory regime and that the NCC's decisions lack transparency.

Regulatory governance is changing in Taiwan. The transfer of power from central government to independent regulatory agencies needs to be accompanied by clear and defined accountability mechanisms (OECD, 2005). Although the reasons for building a regulatory regime in Taiwan may be quite different from those of other countries, our findings will help policy-makers in other countries understand the factors that ensure effective regulation.

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IMPACT

Regulation is an essential means of preventing the worst excesses of monopolies. Governance mechanisms have been one of the least addressed issues in regulation and this article opens up the discussion. To deliver good regulation, independent regulatory agencies must have adequate resources; a legal mandate that legitimizes their decision-making; and values that allow them to respond to fast-changing technological and market conditions.