

THE WALL STREET JOURNAL EUROPE.

As Berlin's TVs Go Digital, Airwaves Lie Unused

November 24, 2003

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In August, Berlin became the first place on earth to turn off its analog TV broadcasts. Viewers without digital receivers (priced between €88 and €279), or cable or satellite feeds, saw their TV screens go blank. Given that countries around the world are taking decades to make the analog-to-digital switch, the Berlin experience is extraordinary.

The TV switchover from analog produces two important benefits, both related to the fact that digital technologies allow radio waves to be used much more intensively. First, going digital delivers lots more TV channels. Second, it frees up abundant spectrum space for innovative wireless services.

Regulators in Berlin grasped the first of these social savings. Under the all-analog system in Berlin-Brandenburg, 12 stations broadcast. But given the magic of digital multiplexing (transmitting additional video signals in the bandwidth one analog channel occupied before), there are now 27. These additional channels calmed the passions that make governments tremble -- namely the anger of television devotees watching their TV screens go black. Although forced to pay for new gizmos to continue tuning in, Berliners found much better choices as their reward.

The "Berlin Switch" is so far an international novelty. Other nations are likely to spend a tedious decade (or two) pushing away from analog signal standards developed in the 1940s. But the real payoff offered by the digital TV transition is not more or better (including high-definition) pictures for TV viewers. It is in clearing out the TV band for an array of exciting and productive wireless technologies -- an opportunity that Berlin regulators have been strangely slow to embrace.

While Berlin's TV stations were increasing to 27 from 12, the number of channels used to broadcast these programs actually declined to seven from 12. Five channels, or 35MHz, worth of prime airspace, is now available to deliver new services.

Regulators in Berlin have yet to seize this opportunity, even as scores of wireless applications would die for a chance to use these valuable airwaves. In particular, high-speed wireless Internet access could compete with cable modems and digital-subscriber-line (DSL) technologies, promoting high-speed Internet deployment. The bandwidth could also be used to offer a competitive alternative to local phone service (through wireless voice service or voice-over-Internet offerings). Wireless equipment maker Nokia argues that "datacasting" services (such as high-speed Internet services) should be given an opportunity to use the frequencies, but notes that "regulators need convincing of the business case behind Datacast before supporting it fully . . . [they] require proof of the commercial viability of such a platform."

This industrial policy blocks enormously valuable technological advance. The stakes escalate when one considers that Berlin is largely a special case. Under the federal-state divisions in the German regulatory system, the Berlin regulator controls a small fraction of the country's TV band. (This appears to have provided the key pressure on regulators to quickly abandon analog TV, as simulcasting TV programs in both analog and digital formats, as is done elsewhere, was virtually impossible. Berlin regulators simply did not have the spectrum to waste.) Throughout the European Union, the TV band blankets over 400 MHz of lush radio waves, nearly twice the bandwidth reserved for mobile-phone service.

Consider the provocative case of the Netherlands, where 96% of households subscribe to cable (just a bit ahead of Luxembourg and Belgium, which also sport near-universal cable penetration). Cable-television-equipped homes watch broadcast-TV stations, but receive them via wire, not over the airwaves. Out of seven million Dutch households, just 280,000 families receive their television broadcasts over the air.

In July 2000, five third-generation phone licenses were sold by the Dutch government for a total of \$2.5 billion. The total spectrum allocated for those licenses was less than one-third the bandwidth currently allotted to the TV band. At a similar valuation, licenses to use TV band spectrum for wireless telecommunications might bring over \$7.5 billion. This implies that it now costs an astounding \$27,000 per household to keep the TV band reserved for the tiny number of homes not subscribing to cable. (This estimate may be conservative: In contrast to the sky-high prices fetched in countries such as Germany and the U.K., Dutch 3G license prices were modest, owing to an auction that attracted more controversy than competitive entrants.)

Such considerations are pushing the Netherlands toward digital TV; digital stations are now broadcasting alongside analog stations, and an analog switch-off is scheduled for next year. Dutch authorities also claim to be motivated by a desire to promote an alternative to cable TV monopolies. The rich irony is that cable TV has prospered precisely because governments have been so parsimonious with broadcast TV licenses, particularly to protect state monopolies. Consumers have embraced cable to bypass this protectionism. (The exception proves the rule. Italy's regulatory agency actually boasts -- quite correctly -- that the Italian cable TV sector is today virtually nonexistent because Italian law liberally awarded broadcast TV licenses in the 1970s, allowing the thickest deployment of stations anywhere in the world.)

The sharpest picture digital TV delivers is not in video, but in public policy. Unplugging spectrum blockages imposed by analog TV should unleash a cornucopia of wireless innovation. That can be done expeditiously by allowing entrepreneurs to get access to TV band airspace, buying and selling spectrum parcels as market demands dictate. So long as spectrum use remains rigidly controlled by government fiat, with business plans approved by the state, disruptive technologies will be stifled.

There are at least three major roadblocks. Bureaucratic inertia is one. Taking years to make decisions that markets make in minutes is not an entirely unprofitable way to spend a career in the civil service. Then there is the influence of dyspeptic incumbents. Whether wireless or wireline, telecoms operators are ill disposed towards most new capacity -- particularly if that capacity might end up in the hands of aggressive new rivals deploying advanced technologies.

And perhaps most important is the special place TV regulation holds in the hearts of policy makers. Letting the market determine the use of TV spectrum naturally undercuts the traditional power political incumbents have had to influence the content of broadcast television. Wireless Internet services are themselves treated as "nonbroadcast" services, meaning that content is unregulated. The classification depends on the information qualifying as "not opinion forming." But data-service operators today feature video streaming and the hope is that these and other technologies emerge to challenge broadcasting, cable and satellite TV. This sends a chill down the spine of some, driving spectrum regulators to be wary of what advanced wireless services will bring.

A September report by the European Commission noted that the question over how to "reallocate the 'digital dividend'" comes down to a choice between choosing more and better broadcast TV, vs. other wireless services. The assumption is that governments, not markets, will make this call -- and that "the momentum is toward keeping the spectrum within broadcasting."

The commission report solemnly notes that broadcasting is special in its "transmission of social values," and in that it "both influences and reflects public opinion." Political incumbents and establishment elites leverage regulation of frequencies into sway over cultural content. Conversely, rival wireless platforms promise individuals the opportunity to access information on their own terms. Little wonder policy makers are nervous about letting consumer purchases determine how radio spectrum is deployed.

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